

**SPECTRUM
ALL-IN-ONE®**

Series

E-COMMERCE

B.Com (OU) III-Year VI-Semester (Computers & Computer Applications)

As Per the Latest 2016-17 Syllabus of B.Com (OU) (CBCS)

Prepared by
SIA Team of Experts

SIA®

Publishers & Distributors Pvt. Ltd.

Available Books for B.Com (OU) III-Year VI-Semester

- Theory and Practice of GST
- Company Law
- Managerial Accounting
- Commerce Lab

DISCIPLINE SPECIFIC ELECTIVE

- Financial Institutions and Markets
- Advanced Corporate Accounting
- E-Commerce (Computers, Computers Application)
- Business Forecasting (Computers, Computers Application)
- Relational Database Management System
- Business Analytics Programming (Computers, Computers Application)
- Management Information System (Computers Application)

SKILL ENHANCEMENT COURSE

- Regulations of Insurance Business (SEC-4)

GENERIC ELECTIVE

- Sectors of Indian Economy (Generic Elective-2)



UNIVERSAL BOOK SHOWROOM

Satisfying customers since 1979

OUR OUTLETS :

MAIN BRANCH - PUTLI BOWLI

94 BUS STOP, PUTLI BOWLI,
Lane Opposite to
OSMANIA MEDICAL COLLEGE GATE (HYD)

KOTI

Beside Gokul Chat,
Opp. Women's
College Road (HYD)

S.R.NAGAR

Beside HDFC Bank,
Gajalaxmi Estates
(HYD)

A.S. RAO NAGAR

Opp. Sharada Bus Stop,
1st Floor Kalyan Plaza Bldg.,
Main Road (Sec-bad)

SHAIKPET

Opp. D-Mart, Beside G. Narayanamma
Engineering College for Women,
Gachibowli Road-(HYD)

ASHOK NAGAR

G2, No. 1-10-213, Ground Floor,
H K Math Lane,
ASHOK NAGAR SIGNAL
Indrasagachy Apartments (HYD)

VIJAYAWADA

28-5-1, 1st Floor, Lalitha Complex,
Eluru Road, Kuppavari Street,
Opp. Hotel Raj Towers, Arundaha

Copyright © Reserved
with the Publisher

Despite every effort taken to present the book without errors, some errors might have crept in. We do not take any legal responsibility for such errors and omissions. However, if they are brought to our notice, they will be corrected in the next edition.

Printed at:

SIA Publishers & Distributors Pvt. Ltd.,

Shed No: C-8/2, IDA Uppal, Hyderabad-39.

For Books Enquiry Call Our Customer Care No.

040 - 44 999 999

Remember as **Double Four Six Nines**

SIA Publishers & Distributors Pvt. Ltd.

Office Address:

5-1-911/5, Biyabani Square Building, Putli Bowli,
Lane Opp. to Osmania Medical College, Koti,
Hyderabad -500 095, Telangana, India.

Contact between : (9am to 9pm)
(Monday - Saturday)

PREFACE

ABOUT THE SUBJECT

E-Commerce or Electronic Commerce is simply an “online business” wherein buying and selling of the product and services are carried out through Internet. It comprises of both the business-to-business and business-to-consumer transactions. E-commerce also helps in marketing and servicing, as well as delivering and payment of product through Internet, Extranet or some other network.

E-commerce is mostly considered as a mean of carrying out business activities in such a way that the firm's value chain is greatly effected in positive manner. E-commerce provides potential benefits to organizations, consumer and society. The other online businesses beside E-commerce are Online marketing, E-business, Online trading, E-learning and E-training.

ABOUT THE BOOK

The book entitled '**E-Commerce**' is designed for B.Com III-Year VI-Semester students. The content provided in this book is strictly as per the latest (2016-17) syllabus prescribed by Osmania University.

Every concept is explained in a simple manner with sufficient number of examples so as to facilitate better understanding and easy learning in a shorter span of time. Keeping in view the examination pattern of B.Com students, this book provides the following features,

- ❖ **Frequently Asked Questions** are included to help the students to repare for Internal and External Assessment.
- ❖ Every unit is structured into two main sections viz. **Short Questions & Essay Questions** with solutions along with Learning Objectives and Introduction.
- ❖ **Very Short Answers** are also provided.
- ❖ **Three Model Papers** are provided in order to help the students to understand the paper pattern in the end examination.
- ❖ **List of Important Definitions** are provided before units.
- ❖ **Lab Practical with Solutions** are also Provided.

An attempt has been made through this book to present theoretical knowledge of “**E-Commerce**”. This book is especially prepared for undergraduate students.

The table below illustrates the complete idea about the subject, which will be helpful to plan and score good marks in the end examinations.

Unit No.	Unit Name	Description
1.	Introduction	The unit covers the topics like E-Commerce: Meaning, Advantages and Limitations, E-Business: Traditional and Contemporary Model, Impact of E-Commerce on Business Models, Classification of E-Commerce: B2B – B2C – C2B – C2C – B2E, Applications of E-Commerce: E-Commerce Organization Applications, E-Marketing, E-Advertising, E-Banking, Mobile Commerce, E-Trading, E-Learning, E-Shopping.
2.	Framework of E-Commerce	This unit covers the topics like Framework of E-Commerce: Application Services, Interface Layers, Secure Messaging, Middleware Services and Network Infrastructure, Site Security, Firewalls and Network Security, TCP/IP, HTTP, Secured HTTP, SMTP, SSL. Data Encryption: Cryptography, Encryption, Decryption, Public Key, Private Key, Digital Signatures, Digital Certificates.
3.	Consumer Oriented E-Commerce Applications	This units covers the topics like Introduction to Consumer Oriented Applications, Mercantile Process Model : Consumers Perspective and Merchant's Perspective, Electronic Payment Systems: Legal Issues and Digital Currency, E-Cash and E-Cheque, Electronic Fund Transfer (EFT), Advantages and Risks, Digital Token-based E-Payment System, Smart Cards.
4.	Electronic Data Interchange	This units covers the topics like Introduction EDI, EDI Standards, Types of EDI, EDI Applications in Business, Legal, Security and Privacy Issues in EDI, EDI and E-Commerce, EDI Software Implementation.
5.	E-Marketing Techniques	This units covers the topics like Introduction to E-Marketing Techniques, New Age of Information, Based Marketing, Influence on Marketing, Search Engines and Directory Services, Charting the On-line Marketing Process, Chain Letters, Applications of 5P's (Product, Price, Place, Promotion, People), E-Advertisement, Virtual Reality and Consumer Experience, Role of Digital Marketing.

It is sincerely hoped that this book will satisfy the expectations of students and at the same time helps them to score maximum marks in exams.

Suggestions for improvement of the book from our esteemed readers will be highly appreciated and incorporated in our forthcoming editions.

E-COMMERCE

B.Com (OU) III-Year VI-Semester

CONTENTS

Syllabus (As per (2016-17) Curriculum)

List of Important Definitions

L.1 – L.3

Unit/Topic No.	Unit/Topic Name	Question No.	Page No.
UNIT-I	INTRODUCTION		1 - 42
	SHORT QUESTIONS WITH SOLUTIONS	Q1 - Q16	2 - 6
	ESSAY QUESTIONS WITH SOLUTIONS	Q17 - Q41	7 - 38
1.1	E-Commerce: Meaning – Advantages and Limitations	Q17 - Q25	7
1.2	E-Business: Traditional and Contemporary Model	Q26 - Q29	18
1.3	Impact of E-Commerce on Business Models	Q30	20
1.4	Classification of E-Commerce: B2B, B2C, C2B, C2C, B2E	Q31	22
1.5	Applications of E-Commerce	Q32	23
1.5.1	E-Commerce Organization Applications	Q33 - Q34	27
1.5.2	E-Marketing, E-Advertising	Q35	30
1.5.3	E-Banking, Mobile Commerce	Q36 - Q37	33
1.5.4	E-Trading, E-Learning, E-Shopping	Q38 - Q41	34
	INTERNAL ASSESSMENT		39 - 42
UNIT-II	FRAMEWORK OF E-COMMERCE		43 - 70
	SHORT QUESTIONS WITH SOLUTIONS	Q1 - Q12	44 - 46
	ESSAY QUESTIONS WITH SOLUTIONS	Q13 - Q31	47 - 66
2.1	Framework of E-Commerce: Application Services – Interface Layers – Secure Messaging – Middleware Services and Network Infrastructure	Q13 - Q15	47
2.2	Site Security – Firewalls and Network Security	Q16 - Q20	49
2.3	TCP/IP – HTTP – Secured HTTP – SMTP – SSL	Q21 - Q27	54
2.4	Data Encryption		61
2.4.1	Cryptography – Encryption – Decryption – Public Key – Private Key	Q28 - Q30	61
2.4.2	Digital Signatures – Digital Certificates	Q31	65
	INTERNAL ASSESSMENT		67 - 70
UNIT-III	CONSUMER ORIENTED E-COMMERCE APPLICATIONS		71 - 106
	SHORT QUESTIONS WITH SOLUTIONS	Q1 - Q10	72 - 75
	ESSAY QUESTIONS WITH SOLUTIONS	Q11 - Q31	76 - 102
3.1	Introduction	Q11 - Q12	76

3.2	Mercantile Process Model: Consumer's Perspective and Merchant's Perspective	Q13 - Q16	81
3.3	Electronic Payment Systems	Q17 - Q19	87
3.3.1	Legal Issues and Digital Currency – E-Cash and E-Cheque	Q20 - Q23	91
3.3.2	Electronic Fund Transfer (EFT)	Q24	95
3.3.3	Advantages and Risks	Q25	98
3.3.4	Digital Token-based E-Payment System – Smart Cards	Q26 - Q31	99
INTERNAL ASSESSMENT			103 - 106
UNIT-IV ELECTRONIC DATA INTERCHANGE			107 - 138
SHORT QUESTIONS WITH SOLUTIONS		Q1 - Q8	108 - 110
ESSAY QUESTIONS WITH SOLUTIONS		Q9 - Q24	111 - 134
4.1	Introduction	Q9 - Q13	111
4.2	EDI Standards	Q14	116
4.2.1	Types of EDI	Q15	117
4.2.2	EDI Applications in Business	Q16 - Q20	120
4.2.3	Legal – Security and Privacy Issues in EDI	Q21	128
4.2.4	EDI and E-Commerce	Q22	129
4.2.5	EDI Software Implementation	Q23 - Q24	130
INTERNAL ASSESSMENT			135 - 138
UNIT-V E-MARKETING TECHNIQUES			139 - 168
SHORT QUESTIONS WITH SOLUTIONS		Q1 - Q8	140 - 141
ESSAY QUESTIONS WITH SOLUTIONS		Q9 - Q25	142 - 164
5.1	E-Marketing Techniques – Introduction	Q9	142
5.1.1	Search Engines – Directory Services – Chain Letters	Q10 - Q13	144
5.2	New Age of Information Based Marketing	Q14	147
5.3	E-Commerce Influence on Marketing	Q15	149
5.4	Charting on the Online, Marketing Process	Q16	150
5.5	Applications of 5P's (Product, Price, Place, Promotion, People)	Q17	152
5.6	E-Advertisement	Q18 - Q19	154
5.7	Virtual Reality and Consumer Experience	Q20 - Q21	159
5.8	Role of Digital Marketing	Q22 - Q25	161
INTERNAL ASSESSMENT			165 - 168
LAB PRACTICAL WITH SOLUTIONS		LP.1 - LP.4	
UNIT-WISE FREQUENTLY ASKED QUESTIONS		F.1 - F.6	
MODEL QUESTION PAPERS WITH SOLUTIONS (As per OU Curriculum)			
Model Paper-I	MP.1	-	MP.1
Model Paper-II	MP.2	-	MP.3
Model Paper-III	MP.4	-	MP.4

SYLLABUS

UNIT-I

INTRODUCTION

E-Commerce: Meaning – Advantages and Limitations – E-Business: Traditional and Contemporary Model, Impact of E-Commerce on Business Models – Classification of E-Commerce: B2B – B2C – C2B – C2C – B2E – Applications of E-Commerce: E-Commerce Organization Applications – E-Marketing – E-Advertising – E-Banking – Mobile Commerce – E-Trading – E-Learning – E-Shopping.

UNIT-II

FRAMEWORK OF E-COMMERCE

Framework of E-Commerce: Application Services – Interface Layers – Secure Messaging – Middleware Services and Network Infrastructure – Site Security – Firewalls and Network Security – TCP/IP – HTTP – Secured HTTP – SMTP – SSL.

Data Encryption: Cryptography – Encryption – Decryption – Public Key – Private Key – Digital Signatures – Digital Certificates.

UNIT-III

CONSUMER ORIENTED E-COMMERCE APPLICATIONS

Introduction – Mercantile Process Model: Consumers Perspective and Merchant's Perspective – Electronic Payment Systems: Legal Issues and Digital Currency – E-Cash and E-Cheque – Electronic Fund Transfer (EFT) – Advantages and Risks – Digital Token-based E-Payment System – Smart Cards.

UNIT-IV

ELECTRONIC DATA INTERCHANGE

Introduction – EDI Standards – Types of EDI – EDI Applications in Business – Legal – Security and Privacy Issues in EDI – EDI and E-Commerce – EDI Software Implementation.

UNIT-V

E-MARKETING TECHNIQUES

Introduction – New Age of Information-based Marketing – Influence on Marketing – Search Engines and Directory Services – Charting the On-line Marketing Process – Chain Letters – Applications of 5P's (Product, Price, Place, Promotion, People). E-Advertisement – Virtual Reality and Consumer Experience – Role of Digital Marketing.

LIST OF IMPORTANT DEFINITIONS

UNIT - I

1. E-commerce

E-commerce or electronic commerce is simply an 'online business' wherein the buying and selling of products and services are carried out through Internet.

2. World Wide Web

The World Wide Web (WWW) or the web is a repository of information spread all over the world and linked together. The WWW has a unique combination of flexibility, portability and user-friendly features that distinguish it from other services provided by the Internet.

3. Internet

It is the network of networks, the Internet is massive, worldwide collection of networks connecting many subnetworks and computing information resources located on these subnetworks.

4. Search Engine

Search engine is defined as a technique of finding data according to the user typed query without being concerned about its location.

5. E-banking

Electronic banking is an Internet-based banking process in which users are allowed to connect to the legitimate websites of their respective bank.

6. E-Learning

Education, training or knowledge management achieved through the content delivered via Internet is known as E-learning.

7. E-shopping

E-shopping or online shopping is a new form of shopping which enables the customers to purchase their desired product from intended seller over the Internet.

8. Online Trading

E-trading/online trading is also known as E-broking. E-broking provides up-to-date and on-time information about the stock exchange prices to everyone across the world.

9. M-Commerce

Mobile commerce or M-commerce refers to any business activity or transaction that is done through mobile devices which are connected to wireless networks.

10. Relationship Marketing

Relationship marketing is a strategy where companies advertise their product in a selected market in such a way that a good relationship is built up and maintained with their customers.

UNIT - II

1. Architectural Framework of E-Commerce

Architectural framework of E-commerce is a combination of different available resources such as DBMS, data repository, communication protocols and computer languages.

2. SGML

SGML is Standard Generalized Markup Language used for text based documents.

3. HTML

HTML stands for Hypertext Markup Language used for documents like hypertext, multimedia etc.

4. Authentication

The process wherein two entities can verify each other to know that they are the only users who claim to be called authentication.

5. Authorization

It is the process of ensuring a person or a program that they have right to access particular resources.

6. Information Security

Information security refers to the process of protecting data or information from unauthorized user and to allow legitimate users to access the data.

7. Computer Security

It refers to the branch of computer science that describes the application of 'secure' behaviour on the operation of computers.

8. Network Security

Network security refers to the plans or arrangements made in the network infrastructure along with the various techniques used by the network administrator.

9. HTTP

HTTP is a stateless protocol that is used for delivering the web pages over the Internet.

10. Cryptography

Cryptography is a method of transforming the plaintext into an unreadable form.

11. Cryptanalysis

Cryptanalysis is a type of attack that makes certain attempts possible for obtaining the plaintext and the key used.

12. Cryptology

Cryptology is the study of both cryptography and cryptanalysis.

13. Encryption

Encryption is a method of converting plain text into cipher text.

14. Snooping

Snooping is the process of accessing the confidential information in an unauthorized way.

UNIT - III

1. E-cash

Electronic cash is a form of electronic payment system which provides high level of security and reduces the overhead of paper cash.

2. Debit Card

A debit card is a card that is used instead of cash in shopping.

3. Electronic Payment

Electronic payment means paying the amount for purchased goods electronically.

4. EPS

Electronic Payment System (EPS) is a building block of E-commerce which refers to the online exchange of money.

5. Smart Cards

Smart cards store massive volume of customer's information such as verification ID, health sector care, financial banking.

UNIT - IV**1. VAN**

VAN is a network that makes communication possible among different business partners.

2. Intra-organizational E-commerce

Intra-organizational E-commerce refers to the activities that are performed within the organization so as to consistently deliver superior quality service to consumers.

3. Electronic Data Interchange

Electronic Data Interchange (EDI) can be defined as a medium of transmitting business information in a standardized format.

4. Electronic Mailbox

Electronic mailbox is a feature of software that stores EDI messages which user fetches depending on their needs.

5. Customization

Customization refers to the process of building the product according to the specifications given by the consumers.

UNIT - V**1. Spam Mail**

Spam mail refers to the unwanted and unrequested on-line email called 'junk mail' which is repeatedly sent to multiple recipients at a time.

2. E-Mail

Electronic mail is simply an information that is sent electronically from one computer user to another.

3. Digital Marketing

Digital marketing refers to the management and execution of marketing activities by using digital electronic technologies and channels like digital TV, E-mails, web, wireless media and digital data concerning consumer behavior and its attributes.

4. E-marketing

E-marketing is the achievement of marketing goals through the utilization of the Internet and the web based technologies. E-marketing is also known as Internet marketing or marketing on the web or online marketing.

5. E-Advertisement

Online advertising is a marketing strategy that make use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers.

6. Directory Services

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites.

UNIT 1

INTRODUCTION



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Meaning of E-business and E-commerce
- ❖ Benefits, limitations of E-commerce
- ❖ Types of E-commerce
- ❖ Impact of E-commerce on Business model
- ❖ Different applications of E-commerce.

INTRODUCTION

E-business performs business activities such as designing of products, operating supply chain, managing marketing and providing services through the use of electronic technology. The E-business can be divided into six types i.e., business-to-business, business-to-consumer, consumer-to-business, consumer-to-consumer Govt. to business and Govt. to consumer. When goods or services are purchased and sold through networks like Internet then it is termed as E-commerce, which facilitates the companies to promote their sales internationally. It is even possible to carryout E-marketing globally across the world with the help of electronic methods.

A business model involves basic process flow and linkages of various business functions. Information and communication technology. Internet and World Wide Web (WWW) has a wide range of applications for various business activities like E-auctions, E-banking, E-directories, E-manufacturing, E-governance, etc.

In today's competitive world of globalization, business is expanding quickly around the world without any global regulations either at national or international level as well as delivery of products electronically has become a competitive issue.

PART-A**SHORT QUESTIONS WITH SOLUTIONS****Q1. Define E-commerce.**

Model Paper-II, Q1

OR

E-commerce**Answer :**

(March/April-15, Q1 | March/April-14, Q2 | Oct./Nov.-12, Q1)

E-commerce or electronic commerce is simply an 'online business' wherein the buying and selling of products and services are carried out through Internet. It comprises of both the Business-to-Business (B2B) and Business-to-Consumer (B2C) transactions.

In addition to buying and selling, e-commerce also helps in marketing and servicing, as well as delivery and payment of products through Internet, Extranets, Intranets or some other networks.

Q2. What are the key components of E-commerce?

OR

Key Components of E-commerce**Answer :**

Sep./Oct.-15, Q1

The components of E-commerce vary based on the business and role of E-commerce in it. Generally, there are three basic components of E-commerce. They are as follows.

1. Systematic Approach Requirement

To conduct business, a systematic approach is needed. Just like traditional commerce, e-commerce should also deal with all aspects of business. Some of these aspects are research and planning, operation and selling, customer service marketing, budgeting and human resource management. Among all, some of them are performed using internet and other electronic means.

2. Business Type

Even though e-commerce is treated as a special type of business but still it comes under the category of a business. Just like any other traditional business, e-commerce businesses have been classified into different kinds. They are,

- ❖ Business- to-business e-commerce
- ❖ Business-to-consumer e-commerce
- ❖ Consumers-to-consumer e-commerce
- ❖ Consumer-to-business e-commerce
- ❖ Govt. to Business
- ❖ Govt. to consumer
- ❖ Non-business e-commerce
- ❖ Intra-organizational e-commerce.

The classification of e-commerce can also be done on the basis of products or services provided by businesses. There are certain E-commerce businesses that sell concrete products like clothes, electronic devices etc. Whereas, the other e-commerce business sells abstract products like reservations, e-learning, etc.

3. Technology

A company in e-commerce can achieve its goals efficiently and effectively by making use of technologies for conducting business. Hence, a company must always prefer to use latest technologies through which they can satisfy the customer needs in the best possible ways. This intun will lead to the growth of the company.

Q3. Write about World Wide Web.

Model Paper-III, Q6

OR

WWW**Answer :**

March/April-15, Q2

The World Wide Web (WWW) or the web is a repository of information spread all over the world and linked together. The WWW has a unique combination of flexibility, portability and user-friendly features that distinguish it from other services provided by the Internet.

The WWW project was initiated by CERN (European Laboratory for Particle Physics) to create a system to handle distributed resources necessary for scientific research. The WWW today is a distributed client-server service, in which a client using a browser can access a service using a server. However, the service provided is distributed over many locations called websites.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Q4. How WWW act as enabler of E-commerce?

OR

WWW as Enabler of E-commerce**Answer :**

Oct./Nov.-11, Q1

Internet is a massive world wide collection of networks connecting set of subnetwork and computing resources which are located on these subnetworks. The growth of Internet is increasing drastically because.

1. It have no geographical bond.
2. It helps the user in finding out the required information within few minutes.

Internet came into existence in 1969 with the name ARPANET. It links together military, scientific, academic researches into a single network. Due to the constant growth, the management of ARPANET became difficult. Later on different networks such as USENET, BITNET, NSFNET came into existence.

The emergence of WWW had positive impact on many IT based organizations. These organizations were able to carryout their transactions and operations online with no difficulty. Because of these potential benefits, WWW can be considered as a mean for conducting many E-commerce based applications such as E-Marketing, E-Advertising and E-Banking.

Q5. What is Internet?

Oct./Nov./16, Q6

OR

Internet.**Answer :**

(March/April-12, Q1 | March-11, Q1)

It is the network of networks, the Internet is massive, worldwide collection of networks connecting many subnetworks and computing information resources located on these subnetworks, including devices such as computers, servers and directories. As a "network", it provides a capability for communication to take place between research institutions, government agencies, businesses, educational institutions, individuals and among all 'Internet citizens'.

Q6. Define E-business.

(Model Paper-II, Q6 | Oct./Nov.-12, Q7)

OR

E-Business**Answer :**

March/April-16, Q1

E-business involve carrying of business activities such as designing of products, operating supply chain, marketing products and providing services to stakeholder using electronic technology. Under E-business, traditional business practices and information system are integrated with World Wide Web (WWW).

Through E-business several online operations can be carried out such as,

- (i) Buying and selling of goods and services.
- (ii) Providing customer service.
- (iii) Providing E-learning facilities
- (iv) Joining with different partners to work together.

Q7. What are the limitations of E-commerce?

OR

Limitations of E-commerce**Answer :**

Oct./Nov.-13, Q7

The limitations of E-commerce are as follows,

1. Lack of communication protocols, system security, standards and reliability.
2. Lack of privacy and security
3. Lack of trust and user resistance.
4. Justification and cost
5. Not successful in rural are as because of lack of Internet facility.
6. Only educated people can use it.
7. Intenet knowledge is necessary.

Q8. What are the benefits of E-commerce to Organization, Consumers and Society?

Model Paper-III, Q1

OR

Benefits of E-commerce.

Answer :

Oct.-14, Q6

Benefits of E-commerce to Organization

The benefits offered by E-commerce to Organization are as follows,

1. Expansion of market (Nationally as well as international)
2. Reduction of purchasing administration cost
3. Reduction in time
4. Increasing the customers.
5. Expansion of the range of products.

Benefits of E-commerce to Consumers

The benefits offered by E-commerce to consumer are as follows,

1. Simplified transactions
2. Wider range
3. Time saving
4. No need of standing in queues
5. Avail discounts.

Benefits of E-commerce to Society

The benefits offered by E-commerce to society are,

1. ECO-friendliness
2. Increase in standard of living
3. Time saving.

Q9. What is hypertext publishing?

Answer :

Oct./Nov.-11, Q2

Web plays an important role in providing required functionalities to e-commerce. It consists of various technologies and concepts such as hypertext publishing, universal reader and client server concepts.

Hypertext publishing provides a mean of accessing and retrieving information online without taking into consideration the environmental boundaries. Hypertext publishing in a simple way can be defined as a primary application of web that concentrates on hypermedia. It is Eco-friendly and does not require storage space.

Q10. Write a short note on Search Engine.

Answer :

Search engine is defined as a technique of finding data according to the user typed query without being concerned about its location. Search engines are replacing WAIS broadband search engines because of their highly developed and complex behaviour. It is being used through web browsers. They provide minute to minute updated information.

Example

Topic is a search engine that is basically used in Lotus Notes, Adobe Acrobat applications. The searching done by employing Topic Search engine is done using both keywords and information. The result of this search is a hit-list arranged according to the preference assigned by the search engine.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Q11. What is E-banking?

Model Paper-I, Q1

OR

E-banking**Answer :**

(March/April-15, Q7 | March/April-13, Q1)

Electronic banking is an Internet-based banking process in which users are allowed to connect to the legitimate websites of their respective bank. Once the connection has been established, the users can use the banking services by using their user ID and password virtually from their home location. Therefore, E-banking is also known as home banking, virtual banking and online banking. The major advantage of E-banking is that, it provides convenient and safe form of anywhere, anytime banking. However, due to wide usage of internet, there is a risk that the confidential information being transferred can be intercepted by an intruder. Hence, it is necessary to ensure that the security is not compromised. For this reason, many financial institutions have adopted many security methods such as providing passwords, verifying the customer's authentication, etc.

Q12. Define E-learning.

OR

E-Learning**Answer :**

(March/April-17, Q1 | March/April-14, Q1)

Education, training or knowledge management achieved through the content delivered via Internet is known as E-learning. It comprises of all electronically supported and web-enabled systems that allow access to the information to anyone, anytime and anywhere. E-learning is highly efficient for both training and teaching purposes. Hence, it has been adopted by many world class universities and organizations.

Q13. List the applications of E-commerce.**Answer :**

Oct./Nov.-12, Q2

E-commerce applications comprise different types of elements which are,

1. Multimedia content
2. Multimedia storage servers
3. Client server architecture
4. Video servers
5. Transport and delivery of information
6. Consumer access devices
7. Internal processes of multimedia servers.

Q14. What is E-shopping?

OR

E-shopping**Answer :**

Oct./Nov.-13, Q1

E-shopping or online shopping is a new form of shopping which enables the customers to purchase their desired product from intended seller over the Internet. It can also be referred as E-store, web store or virtual store.

The advantages of E-shopping are,

1. Customer can carryout shopping irrespective of time and location
2. Customer need not visit the store thereby saving time and effort.
3. Online stores provide the customer with a link that helps them is gaining information regarding the product such as instructions, safety procedures manufactures specification as well as image of product.
4. Customer can perform online price comparison prior purchasing the product.

Q15. Write about online trading.

Model Paper-2 Q1

OR

Online Trading

Answer :

(March/April-17, Q8 | Oct.-14, Q1)

E-trading/online trading is also known as E-broking. E-broking provides up-to-date and on-time information about the stock exchange prices to everyone across the world. People can respond to the changes taking place in the stock market by the information provided by E-broking. People having Internet bank account can buy and sell stocks online.

Before the Internet came into existence, buying and selling stock at the correct time relied upon the availability of eminent brokers. These brokers used to be in shortage. Small investors always used to face difficulty in getting a broker. Apart from brokers, the other sources from where the information about stock prices can be obtained were magazines, newspapers, telecommunications and radios. These sources are cost consuming, slow and less comprehensive compared to Internet.

Q16. What is E-advertising?

Answer :

Oct./Nov.-16, Q1

Online advertising is a marketing strategy that makes use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

Internet advertising or online advertising can be classified into two types,

1. Push-based advertising
2. Pull-based advertising.

Q15. Write about online trading.

Model Paper-I, Q6

OR

Online Trading

Answer :

(March/April-17, Q8 | Oct.-14, Q1)

E-trading/online trading is also known as E-broking. E-broking provides up-to-date and on-time information about the stock exchange prices to everyone across the world. People can respond to the changes taking place in the stock market by the information provided by E-broking. People having Internet bank account can buy and sell stocks online.

Before the Internet came into existence, buying and selling stock at the correct time relied upon the availability of eminent brokers. These brokers used to be in shortage. Small investors always used to face difficulty in getting a broker. Apart from brokers, the other sources from where the information about stock prices can be obtained were magazines, newspapers, telecommunications and radios. These sources are cost consuming, slow and less comprehensive compared to Internet.

Q16. What is E-advertising?

Answer :

Oct./Nov.-16, Q1

Online advertising is a marketing strategy that makes use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

Internet advertising or online advertising can be classified into two types,

1. Push-based advertising
2. Pull-based advertising.

PART-B

ESSAY QUESTIONS WITH SOLUTIONS

1.1 E-COMMERCE: MEANING – ADVANTAGES AND LIMITATIONS

Q17. Define E-commerce from different perspectives along with its goal.

Model Paper-III, Q9(a)

OR

What is the electronic commerce? Discuss briefly the overview of electronic-commerce.

Answer :

March-11, Q9(a)

E-commerce

E-commerce or electronic commerce is simply an 'online business' wherein the buying and selling of products and services are carried out through internet. It comprises of both the Business-to-Business (B2B) and Business-to-Consumer (B2C) transactions.

In addition to buying and selling, e-commerce also helps in marketing and servicing, as well as delivery and payment of products through internet, extranets, intranets or some other networks.

Goals of Electronic Commerce

- (a) Cost reduction
- (b) Lower product cycle time
- (c) Improved service quality
- (d) Faster customer response.

Electronic-commerce can be defined in several ways through different perspectives.

1. Communication Perspective

E-commerce can be defined as the process of delivering products, services, information or payments through computer networks or any other electronic medium.

2. Commercial Perspective

E-commerce can be defined as the process of buying and selling products, services and information through Internet or any other online service.

3. Service Perspective

E-commerce is defined as a tool for dealing with the desires of government firms, management and consumers. Their desire is to reduce the service cost, improve customer service quality, and increase service delivery speed.

4. Business Process Perspective

E-commerce is defined as a process that performs electronic business through electronic networks.

5. Collaborative Perspective

E-commerce is defined as a framework that collaborates both the inter and intra organizations.

6. Community Perspective

E-commerce is defined as a place where all the community members can gather, learn, transact and collaborate.

Q18. Write about importance of E-Commerce.

Oct./Nov.-16, Q9(a)

OR

Bring out the importance of E-commerce in modern business.

March/April-17, Q9(a)

Answer :

Importance of E-Commerce

Widespread adoption of computerization in society are making businesses to become electronic. The following are the significances of E-commerce.

(i) Improvement in Productivity

E-commerce has drastically reduced the time required for creating and processing a business transaction. Additionally, E-commerce avoids several errors like duplication of records and also reduces data entry and re-entry work. This results in the improvement of overall productivity.

(ii) Reduction in Cost

From the earlier experience of E-commerce adopters, a research has shown that using E-commerce in business has resulted in 5% to 10% cost savings. This saving is due to quick and efficient communication and closer access to markets and customers.

(iii) Automation of Business Processes

Computerizing and streamlining business processes involves further reduction in costs. If inventories are automated, then business can use internet to share information like point-of-sale data and it can be used for forecasting sales.

(iv) Good Customer Service

An important advantage of E-commerce is that there is a direct and better communication with customers. The feedback and suggestions of customers can be known quickly and respective changes in the product can be made. Moreover, E-commerce allows customers to shop for 24 × 7 from any part of the world.

(v) Business Expansion Opportunity

Since E-business is done over internet, it has access to a broad range of customers from several parts of the world. Therefore, there is a greater chance of business expansion.

In addition to the above benefits, E-commerce also improves profit margins by automating supply chain managements. We can efficiently forecast the needs of customers. Labour costs can be drastically reduced. Therefore, it can said that E-commerce in the current business world has a greatest significance.

Q19. What are the three pillars of E-commerce?

March/April-15, Q9(a)

OR

Discuss the three pillars of electronic-commerce.

Answer :

March/April-14, Q9(b)

Three Pillars of E-commerce

The three pillars of E-commerce include,

1. Electronic information
2. Electronic relationship
3. Electronic transactions.

1. Electronic Information

The electronic information pillar is about storing information. This pillar is constructed by assigning the information in such a way that it is easily understood by the users. Before constructing the electronic pillar, the following rules need to be considered.

- (i) The content must be in web-readable format.
- (ii) The webpage containing the required information should not hang up.
- (iii) The links provided in the web page must navigate to correct location.
- (iv) The user must easily find the necessary information.

2. Electronic Relationships

The central pillar i.e., electronic relationship pillar specify the way of constructing a web site such that a user viewing the web site must revisit the same site in a positive manner. This pillar concentrates on establishing relationship with the user in an electronic form. This relationship can be maintained if the constructed website consists of the following features.

- (i) The website must be innovative and must contain certain new features that attracts the users.
- (ii) The website must create forms for enabling the user to provide their valuable feedback.
- (iii) This website must provide information and include interaction facility.

3. Electronic Transaction

The electronic transaction pillar is the third pillar which specifies the following two criteria.

- (i) Ability to engage in meaningful and sufficient negotiation process.
- (ii) Ability to provide security of transaction data.

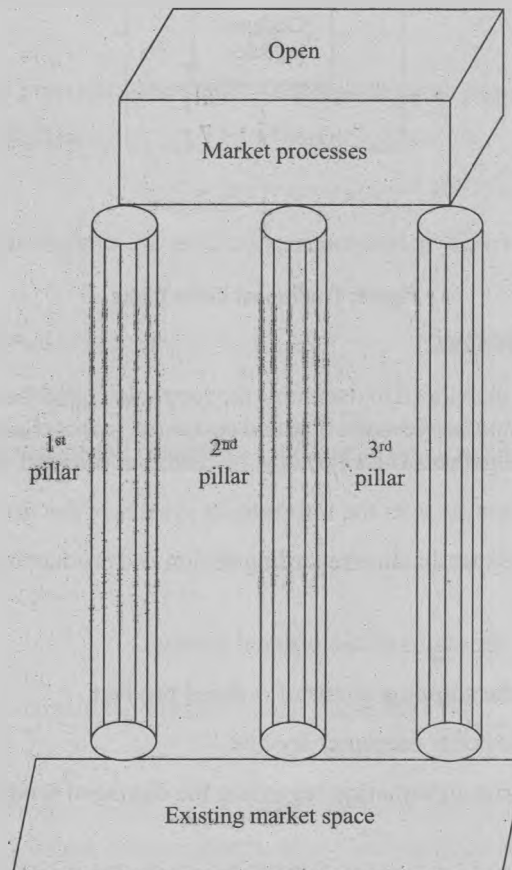


Figure: Three Pillars of E-commerce

Q20. Explain traditional value chain and customer oriented value chain.

Answer :

(Model Paper-I, Q9(a) | March/April-14, Q9(a))

Traditional Value Chain

Traditional value chain shows the way of passing information between the suppliers and the customers in a sequential manner. In this chain, the input/output are provided to the supplier at the back stage. That is, the information regarding suppliers input/output are not revealed to the customer. Moreover, the input/output related to the customer are supplied at the front end stage. This flow of information from supplier to customer is done via different processes such as inbound logistics production and outbound logistics.

The major drawback of the value chain is that it fails to establish strong relationship between firm, customer and supplier.

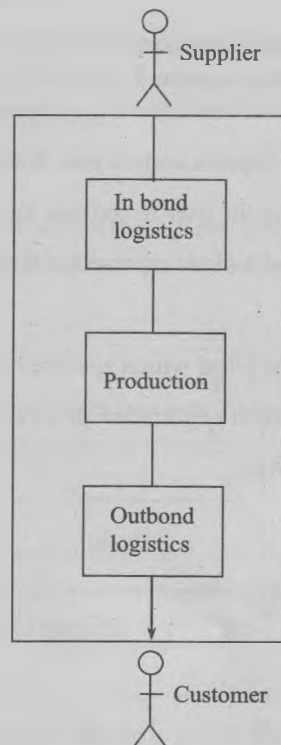


Figure: Traditional Value Chain

Customer Oriented Value Chain (COVC)

Customer oriented value chain is developed to overcome the loophole of traditional value chain. The customer oriented value chain focuses on establishing relation between the firm and customer. In this chain, the information system of respective firm links all the phases of the process together. The advantage of customer oriented value chain are,

- (i) It enables the customer to have access over the information system of the firm irrespective of the place.
- (ii) It enables the customer to receive specification regarding design and product in an electronic format before accessing the sales information.
- (iii) It enables the customers to read the status of the ordered product.
- (iv) It enables the customer to read the shipping status of ordered product.
- (v) It enables the supplier to provide better customer service.
- (vi) It enables the supplier to have prior information regarding the damaged products that a customer is going to return back.

In COVC, the procurement information system is linked with the information system of the supplier. The purpose of enabling the supplier to have access over the information system is to provide better customer service.

In this chain, it is very important that a supplier (who acts as a customer to another supplier) share its procurement system with the information system of its supplier. This is required so that the supplier receives similar information that is provided by him to his own customer.

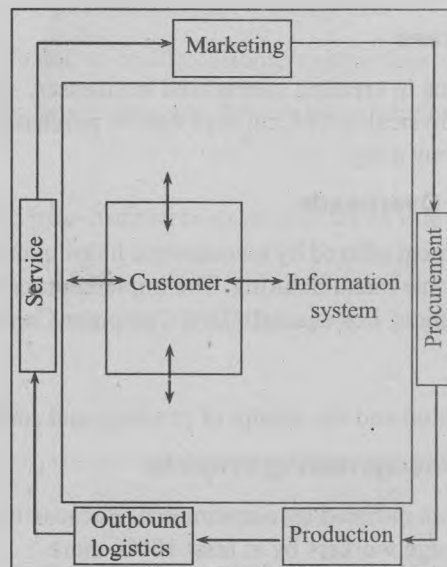


Figure: Customer Oriented Value Chain

Q21. What are potential benefits of E-commerce?

Sep./Oct.-15, Q9(a)

OR

What are the benefits of E-commerce to the organization, consumer and society?

Oct./Nov.-11, Q9(a)

OR

What are the advantages of Internet electronic commerce over consumers?

(Refer Only Topic: Benefits to Consumers)

Answer :

Oct./Nov.-12, Q9(b)

The revolution in e-commerce is same as the revolution in industries. The reasons being,

- ❖ Nature of technology.
- ❖ Reachable to millions of people within short span of time.
- ❖ Rapid growth in supporting infrastructures.

These three reasons mainly result in potential benefits to,

1. Organizations
2. Consumers
3. Society.

1. Benefits to Organization

E-commerce offers a number of benefits to organizations. These include,

(a) Expansion of Marketplace

The market place is expanded from a small region, town, city to national and international level. This makes the companies to quickly and easily locate, best suppliers, most suitable business partners and more customers, with a minimum investment. For expansions of market place, e-commerce provides a number of sites where companies can even request for manufacturing of a subsystem.

(b) Reduction in Purchasing Administrative Costs

The cost of creating, processing, distributing, storing and retrieving paper-based information is reduced due to the introduction of e-procurement system.

(c) Creating Specialized Businesses

E-commerce helps the organizations in creating specialized businesses. An example is the website for purchasing cat toys "www.cattoys.com". In physical world, cat toys can be purchased at departmental or gallery stores, thus incurring the cost of travelling to buy a toy.

(d) Reduction in Inventories and Overheads

"Pull" - type supply chain management offered by e-commerce helps in the reduction of inventories and overheads. The pull-type system uses just-in-time manufacturing. The implementors of a pull-type system achieves expensive services and customization of products. For example Dell Computer Corporation.

(e) Reduction in Time

The time between the outlay of capital and the receipt of products and services is reduced by e-commerce.

(f) Initiating Business Process Reengineering Projects

Reengineering business projects was initiated by e-commerce. Because it helps in increasing productivity of sales people, administrators and knowledge workers by at least 100% more.

(g) Reduction in Communication Cost

The cost of communication is less in e-commerce as internet is cheaper than VANs.

In addition to these benefits, other benefits are as follows,

- ❖ Improvement in image and customer service
- ❖ Compressed delivery and cycle time
- ❖ Increased flexibility and productivity
- ❖ Elimination of paper
- ❖ Faster access to information
- ❖ Simple processes
- ❖ Newly found business partners.

2. Benefits to Consumers

The benefits offered by e-commerce to consumers are as follows,

(a) Easy Transactions

Shopping or exchanging over web can be done 24 hours a day and 7 days a week. This is offered by e-commerce to its consumers so that they can shop or do other transactions from any location and at anytime.

(b) Wider Range

The range of products offered by e-commerce is wider than the range offered by many vendors. Customers can choose from this wider range and do a satisfying e-shopping.

(c) Quick Delivery

E-commerce offers the most desirable feature "Quick delivery" to customers. The quick delivery is more quicker in case of digitized products.

(d) Less Expensive Products and Services

The cost of products and services offered by e-commerce to its customers is very less when compared to the ones offered by other vendors. E-commerce also allows its customers to shop in many places and do quick comparison. Thus, achieving good customer satisfaction.

In addition to these benefits, the other benefits include,

- ❖ Detailed and product relevant information is given to the customer in few seconds but not in days/weeks.
- ❖ Participation in virtual actions is possible through e-commerce.
- ❖ Electronic communities are created to enable customers share their views and experiences.
- ❖ Due to the competition offered by e-commerce, the amount of discount given to customers is more.

3. Benefits to Society

The most important benefits offered by e-commerce to society are as follows,

(a) Eco-friendliness

Air pollution and traffic on roads are reduced by doing shopping at home. E-commerce also enables customer to work from home.

(b) Increase in Standard of Living

Few merchandise are sold at a lower price so that customers from any urban/rural area can buy them and increase their standard of living.

(c) Delivery of Public Services

Public services are delivered by using e-commerce at a cheaper rate but with improved quality. These services include education, distribution of government social services, health-care etc.

Q22. Explain the global information distribution networks.

Answer :

(Model Paper-II, Q9(a) | Oct./Nov.-11, Q9(b))

Global Information Distribution Network

Global information distribution network is a new way of interconnecting different networks that cross various countries and continents. The two technologies that are included in GIDN are,

1. Fiber optic long distance network
2. Satellite network.

1. Long Distance Network

This technology is used for establishing connection between the components bearing longer distance from each other. This connection is made using coaxial or fiber cables which are owned by inter exchange carriers. Among these cables, fibre cable is mostly preferred for carrying out international transmission. A part from this, submarine cables can even be used for enabling transmission, when there is requirement for high communication capacity.

Whenever connection is to be established locally, the interexchange carriers are used. These carriers are getting enhanced so as to reduce the cost and increase the transmission speed.

The different communication technologies used in US for serving long distance connectivity include, AT and T. MCT, WiTel and LiTel telecommunication. The major objective of long distance carrier is to concentrate on acquiring wireless technologies for performing the transmission. Using these technologies, it is possible to connect multiple cellular users and also to develop a reasonable, local area network for reaching their own subscribers.

2. Satellite Network

A combination of nodes used for providing communication from one point to another point on the earth is called satellite network. A node can be a satellite, an end-user terminal or an earth station. The reason why artificial satellites are used instead of natural satellites (such as moon which can be used in the network as a relaying node) is that, if the signal losses its energy during its traversal, then it can be regenerated by installing certain electronic equipments on the satellite which is not possible in case of natural satellites. Also, natural satellite is not preferable because of its long distance from the earth which causes long delay in communication.

The satellite networks are similar to that of cellular networks in which the planets are divided into cells. The satellites provide the capability of transmission to and from any part on the earth irrespective of its remote location. Because of this, even the undeveloped locations of the world can take the advantage of high-quality communication without investing on ground base infrastructure.

Satellite Elevation Categories

The three satellite elevation categories are,

- (i) Low Earth Orbit (LEO)
- (ii) Medium Earth Orbit (MEO)
- (iii) Geosynchronous Earth Orbit (GEO).

(i) Low Earth Orbit or LEO Satellites

These satellites are confined in the altitude range of (500 km to 1500 km). These are also referred to as Non-Geo-Stationary Orbit (NGSO) satellites. These are operated in the frequency range of 1 GHz to 2.5 GHz. The main advantage of LEO satellites is low value of path loss. Since, the LEO satellites are near to the earth, the distance between this is low, hence the loss between the earth stations and space vehicles is very low compared to that of the other high altitude orbit satellites.

Due to the less path loss, the specifications of the system like transmitting power, antenna size, weight are also required to be less. The orbiting period of LEO satellites is above 90 minutes. These satellites are generally used for communication purposes. For example, Motorola's satellite based mobile telephone system called Iridium is a LEO system. It has 67 satellites (forming a constellation) and it orbits approximately at 480 miles above the earth's surface.

(ii) Medium Earth Orbit or MEO Satellites

MEO satellites are at an altitude range of 6000 miles to 12000 miles. These are also called as Intermediate Circular Orbit (ICO) because they are present in the space above the LEO satellites and below the GEO satellites. The orbital period of MEO satellites is 2 to 24 hours.

These orbits are used for satellites that can serve for navigation applications, such as the Global Position System (GPS).

Examples

- (i) The famous experimental satellite 'Telstar' orbits in MEO.
- (ii) NAVSTAR which is a defence based GPS also orbits in MEO.
- (iii) GLONASS, Galileo are also orbiting in MEO.
- (iv) MEO also has satellites that serve the communication for north and south poles.

(iii) Geostationary Earth Orbit or GEO Satellites

These orbits are above the equator, because they are parallel to it and are also called as equatorial orbits.

These are mostly circular in shape. The GEO satellites are at an altitude of 36000 km and above. The orbital period of GEO satellites is same as that of the earth which is 24 hours.

These are used for communication purposes, climate conditions and study purposes. These satellites appear to be stationary, thus they always point a particular earth station. So, there is no necessity to adjust them from time to time. They operate at the frequency range of 2 GHz to 18 GHz and are capable of covering large areas of earth's surface compared to LEO and MEO. But, the power involved is very high and also incur high path loss.

Examples

- (i) The first satellite placed in GEO is Syncom-3.
- (ii) The 'US GOES', METEOSAT, GMS (Japan), INSAT (India) are the GEO satellites launched to study the earth's surface and atmosphere.

Q23. "Internet and WWW are enablers of E-commerce" – Discuss.

Answer :

Sep./Oct.-15, Q9(b)

Internet and WWW as Enablers of E-commerce

Internet is a massive world wide collection of networks connecting set of subnetwork and computing resources which are located on these subnetworks. The growth of Internet is increasing drastically because.

1. It have no geographical bond.
2. It helps the user in finding out the required information within few minutes.

Internet came into existence in 1969 with the name ARPANET. It links together military, scientific, academic researches into a single network. Due to the constant growth, the management of ARPANET became difficult. Later on different networks such as USENET, BITNET, NSFNET came into existence.

These networks were dedicated to be used by academic community, but were later used by commercial organizations as well.

With the advent of Internet, the business can now appear globally and make many international clients around the world. The Internet has come up with various business models belonging to e-commerce. These business models utilize the privileges facilitated by the Internet capabilities which include communication, community building etc. Moreover, e-commerce make use of Internet to perform on-line transactions.

The World Wide Web (WWW), or the web, is a repository of information spread all over the world and linked together. The www has a unique combination of flexibility, portability and user-friendly features that distinguish it from other services provided by the Internet.

The www project was initiated by CERN (European Laboratory for Particle Physics) to create a system to handle distributed resources necessary for scientific research. The WWW today is a distributed client-server service, in which a client using a browser can access a service using a server. However, the service provided is distributed over many locations called websites.

The web consists of many web pages that incorporates text, graphics, sound, animation and other multimedia components. These web pages are connected to one another by hypertext. In a hypertext environment, the information is stored using the concept of pointers. Hypertext is a page linking system that connects the text present on one page with the text on other pages. Inclusion of hypertext in the internet allowed the users to get to the related information with ease. WWW uses a concept of HTTP which allows to communicate between a web browser and web server. The web pages can be created by using HTML (Hyper Text Markup Language). This language has some commands which are used to inform the browser about the way of displaying the text, graphics and multimedia files. HTML also has some commands through which links can be provided to the web pages.

If a user wants to get a page from the web, he should type URL (Uniform Resource Locator) for the desired page, or otherwise he must click on a link that provides the URL. The URL specifies the internet address of the web server, the directory and name of the desired page. If there is no directory or web page specified, then the web server will provide a default home page.

The WWW today is a distributed client-server service, in which a client using a browser can access a service using a server.

The emergence of WWW had positive impact on many IT based organizations. These organizations were able to carryout their transactions and operations online with no difficulty. Because of these potential benefits, WWW can be considered as a mean for conducting many E-commerce based applications such as E-Marketing, E-Advertising and E-Banking.

Thus, both Internet and WWW together has made a huge change in the world of commerce by reducing the traditional way of performing business activities. They allow easy access to information on wide variety of products. Also, they help the companies to service their clients around the world. Thereby, facilitating a world wide connectivity between the clients and the businesses. By performing on-line communication with their clients, they can significantly add extra value to the existing products and services to increase the profit. Also by making research and study, the organizations can launch new products, brands and services. Furthermore, the Internet radically reduces the expense of creating, sending and storing of information with which the companies are able to reach the untouched potential customer.

Q24. Give the limitations of E-commerce.**Answer :**

The limitations of e-commerce can be either of technical type or non-technical type.

Technical Limitations

The technical limitations of e-commerce are given below. However, they can be reduced by appropriate planning and implementation.

- (a) Lack of communication protocols, system security, standards and reliability is the first limitation of e-commerce.
- (b) The telecommunication bandwidth is not sufficient as there is an increase in number of consumers.
- (c) Evolution and changes in software development tools are very rapid.
- (d) Integration of e-commerce and internet software with few existing applications and databases is very difficult.
- (e) In addition to the network servers, vendors need some special infrastructure and web servers.
- (f) Few e-commerce software are not compatible with few operating systems and hardware.

Non-technical Limitations

The non technical limitations of E-commerce are,

(a) Privacy and Security

Security and privacy issues are very important in B2C type of e-commerce. Security issues are a big concern even after using good encryption. Privacy measures are improving at a constant rate. However, convincing customers about secure on-line transactions and privacy in shopping is little difficult. As per the survey, 17.2% voted for security and privacy as major concern.

(b) Justification and Cost

In order to justify the system, intangible benefits like good customer service and advertisement should be dealt carefully and appropriately. The cost incurred in in-house e-commerce development may be high. The reason being, lack of experience, which results in delays. The percentage given to justification and cost was 34.8%.

(c) Lack of Trust and User Resistance

Terms like "paperless transactions", "e-money", "unknown/faceless sellers" are difficult to catch-up in market as customers can't easily trust on faceless sellers. Switching from physical stores to virtual stores is a very slow process. 4.4% people voted for lack of trust and user resistance as one of the major limitations of e-commerce.

Other Limitations

- ❖ Lack of feel and touch plays an important role in stopping customers to switch from physical to virtual stores.
- ❖ Unresolved legal issues and improper government regulations and standards.
- ❖ There is a rapid change and evolution in e-commerce. But, customers look for stable areas before entering into it.
- ❖ E-commerce support services are very less.
- ❖ The number of sellers and buyers in few applications is very less. Thus, no chance for profitable e-commerce operations.
- ❖ E-commerce may lead to barriers in human relationships.
- ❖ Inconvenient and expensive internet access, resist most of the potential users from e-shopping.

Q25. What are the challenges facing the growth and spread of e-commerce in India?

Answer :

Limitations on the Growth of E-commerce

The factors such as internet speed, overall infrastructure etc., have their impact on the growth of e-commerce in India. E-commerce is associated with some major limitations that must be overcome for its full-fledge development. They are as follows,

1. Lack of trust
2. High prices of PCs
3. Computer illiteracy
4. Younger generation
5. Government negligence
6. Inadequate infrastructure.

1. Lack of Trust

For any transaction in e-commerce, both buyers and sellers are unknown to each other and the transaction between the two takes place via electronic devices. The customers are aware of the issues associated with online trading so, they cannot afford to trust any online website unless the following issues are resolved.

- (a) Security
- (b) Privacy
- (c) Authenticity.

(a) Security

This issue is concerned with the integrity and confidentiality of the information being transmitted.

(b) Privacy

This issue deals with the privacy of personal information obtained as a result of electronic transaction.

E.g: Credit card number.

(c) Authenticity

The authenticity is concerned about the verification of business, customers and services offered. The authenticity is provided with the help of user name, IDs, passwords, secret numbers etc.

If security measures are properly implemented, privacy of the customer's information is preserved and proper authentication is provided, the trust of the customer towards the e-commerce will ultimately grow.

2. High Prices of PCs

In India, the cost of an ordinary PC is so high that a common man cannot afford it, this is also a major cause for the slow growth in e-commerce.

If the price of the computer is brought under the affordable range of Indian customers, the significant growth in e-commerce will be evident.

3. Computer Illiteracy

Most of the people in India are e-commerce/computer illiterate. This illiteracy is also responsible for the slow pace in e-commerce development. Even the people in the top positions (like managers) are striving to adapt to this continuous development in the internet technology and e-commerce.

In order to be competitive with the people of other countries, Indian people must undergo an appropriate training on the use of computers and e-commerce applications.

4. Younger Generation

The Indian generation that can quickly adapt to the newer technologies is the younger generation but, in order to make e-commerce successful, matured and reliable decision makers are needed which is not the case in India. So, it will take some more time for viewing the true face of e-commerce growth.

Q25. What are the challenges facing the growth and spread of e-commerce in India?

Answer :

Limitations on the Growth of E-commerce

The factors such as internet speed, overall infrastructure etc., have their impact on the growth of e-commerce in India. E-commerce is associated with some major limitations that must be overcome for its full-fledged development. They are as follows,

1. Lack of trust
2. High prices of PCs
3. Computer illiteracy
4. Younger generation
5. Government negligence
6. Inadequate infrastructure.

1. Lack of Trust

For any transaction in e-commerce, both buyers and sellers are unknown to each other and the transaction between the two takes place via electronic devices. The customers are aware of the issues associated with online trading so, they cannot afford to trust any online website unless the following issues are resolved.

- (a) Security
- (b) Privacy
- (c) Authenticity.

(a) Security

This issue is concerned with the integrity and confidentiality of the information being transmitted.

(b) Privacy

This issue deals with the privacy of personal information obtained as a result of electronic transaction.

E.g: Credit card number.

(c) Authenticity

The authenticity is concerned about the verification of business, customers and services offered. The authenticity is provided with the help of user name, IDs, passwords, secret numbers etc.

If security measures are properly implemented, privacy of the customer's information is preserved and proper authentication is provided, the trust of the customer towards the e-commerce will ultimately grow.

2. High Prices of PCs

In India, the cost of an ordinary PC is so high that a common man cannot afford it, this is also a major cause for the slow growth in e-commerce.

If the price of the computer is brought under the affordable range of Indian customers, the significant growth in e-commerce will be evident.

3. Computer Illiteracy

Most of the people in India are e-commerce/computer illiterate. This illiteracy is also responsible for the slow pace in e-commerce development. Even the people in the top positions (like managers) are striving to adapt to this continuous development in the internet technology and e-commerce.

In order to be competitive with the people of other countries, Indian people must undergo an appropriate training on the use of computers and e-commerce applications.

4. Younger Generation

The Indian generation that can quickly adapt to the newer technologies is the younger generation but, in order to make e-commerce successful, matured and reliable decision makers are needed which is not the case in India. So, it will take some more time for viewing the true face of e-commerce growth.

5. Government Negligence

One more reason for the slow growth in e-commerce is the government's negligence in implementing mandatory rules and regulations. Since the taxation of e-commerce transactions has not yet been fully controlled, any step taken by the government in this regard may have severe impact on the future of e-commerce.

If the rules and regulations laid down by the government are properly implemented and businesses follow those rules, the e-commerce will view a rapid growth.

6. Inadequate Infrastructure

The infrastructure needed for the successful e-commerce transaction is not yet available. The introduction of broadband networks have brought some hope to e-commerce development but, they are not fully implemented as a medium for net access. This is also a major limitation in the growth of e-commerce. Significant changes or improvements have to be made on broadband networks and other distribution media for providing a dominant access to the internet. These improvements include the transmission speed, downloading capability, wider coverage etc.

If the above improvements are accomplished then, the success of e-commerce in India will be assured.

1.2 E-BUSINESS: TRADITIONAL AND CONTEMPORARY MODEL

Q26. Discuss in brief about E-business.

Answer :

Model Paper-I, Q9(b)

E-business

E-business involves carrying out of business activities such as designing of products, operating supply chain, marketing products and providing services to stakeholder using electronic technology. Under e-business, traditional business practices and information system are integrated with World Wide Web (WWW).

Through e-business, several online operations can be carried out such as,

1. Buying and selling of goods and services.
2. Providing customer service.
3. Providing e-learning facilities.
4. Joining with different partners to work together.

This type of business is used by different organization for the following reasons,

(i) Business Efficiency

Most of the companies use e-business because it is capable of providing efficiency in production and distribution. There can be increase in efficiency throughout, from purchasing goods to servicing the customer.

(ii) Transaction Management

Using e-business, the customers and suppliers are brought together, which will decrease the transaction cost of purchasing. This kind of business is also a solution for the problem of time and distance.

(iii) Reaching New Markets and Segments

As e-business is based on internet, it helps in exploring different markets across the globe without any physical presence.

(iv) A Better Customer Relationship

The data collected through internet help organizations in targeting right customers and providing them, their product and services.

To perform e-business, the following four distinct phases must be carried out.

- (a) Implement a website that will help the respective organization in online buying and selling of products and services.
- (b) Link multiple suppliers with enterprise by use of extranets and intranets. This will make the supply chain management processes online.
- (c) The organization must find partners to deal with content, marketing and commerce.
- (d) The convergence will then result in new product and services.

Q27. State how e-commerce differ from traditional commerce.**Answer :**

1. E-commerce is mainly concerned about purchasing and selling of products and services over internet using electronic medium. The traditional or physical commerce involves a direct contact between the buyers and the sellers. For an instance, if customers want to purchase some commodities then, they need to directly approach a departmental store, order goods, make payment and take the goods to home whereas in the pure e-commerce systems, if a customer wishing to purchase a game offered by some software company then instead of making a direct approach to the company, he/she can browse the company's website to locate desired game and download it by paying via electronic means such as credit cards, debit cards, e-checks, e-cash etc.
2. Although the traditional commerce systems and e-commerce systems follow different approaches, there are some instances where both works concurrently. For example, with the existence of multiple online shopping stores, the customer can purchase his/her daily commodities by sitting comfortably at his/her residence with just a click on their mouse and the products are delivered to their doorsteps. In such a case, the payment is made electronically while the products are delivered physically.
3. The study conducted by Schneider and Perry revealed that, e-commerce proves to be much feasible for the standard products, low-value products, intangible products and digital products while, the traditional commerce is feasible for nonstandard products, highly expensive products, very low-value products and perishable products. However, e-commerce and traditional commerce must be combined when dealing with non-standard services and complex products.
4. In traditional commerce, customers can verify the identity of the seller and their physical location whereas in e-commerce, customers feel insecure because they cannot identify the seller and are also unaware of their physical business location.
5. The face-to-face contact offered by traditional commerce is truly uncomparable in terms of convincing the customers.
6. In traditional commerce, the potential customers can directly get feedback about the merchant from other customers whereas, in e-commerce, the feedback is posted by the company personnel themselves which may or may not be correct.
7. Traditional commerce involves all the payments to be made in cash. Thus, customers do not need to worry about transaction privacy whereas, the e-commerce transactions require customers to give their personal information.

Q28. Distinguish between E-commerce and E-business.**Answer :**

March/April-13, Q9(a)

The differences between e-business and e-commerce are,

E-business		E-commerce	
1.	It focuses on customer services, collaboration of partners, distributors and suppliers, with buying selling and information exchange as its primary focus.	1.	It focuses on buying and selling products, services on internet.
2.	More generic than e-commerce.	2.	Less generic than e-business.
3.	It supports the business processes along the entire value chain.	3.	The support is only for buying and selling products, information exchange.
4.	It enables companies to efficiently and flexibly link their back-office (internal) and front-office (external) processes.	4.	Such a linking does not exist in e-commerce.
5.	It places the key processes like CRM, SCM and ERP on web.	5.	CRM, SCM and ERP are not included in the selling process of e-commerce.
6.	The scope of e-business is wider than e-commerce.	6.	Its scope is limited.

Q29. Write about the major features of E-commerce and how is it different from E-Business.

Answer :

March/April-15, Q9(b)

Major Features of E-Commerce

The following are the features of E-commerce technology.

1. Ubiquity

Shopping (or) exchanging business data over web can be done 24 hours a day and 7 days a week. This is offered by e-commerce to its consumer so that they can shop (or) do other transactions from any location at anytime.

2. Global Reach

The market place is expanded from a small region, town, city to national and international level in a cost-effective and user-friendly environment.

3. Richness

E-commerce enables the use of text, video and audio to be delivered by the merchant to its consumers. This makes the communication more attractive from the user's point of view.

4. Reduced Costs

At the merchant's point of view, the cost of creating, processing, distributing, storing and retrieving paper based information is reduced. At the consumer's point of view, the cost of products and services offered by e-commerce to its customers is very less compared to other vendors.

5. Personalization and Customization

The data can be customized with the interests and past purchases of the individual customers. This helps in understanding the user's needs quickly.

6. Universal Standards

Unlike traditional e-commerce which carry different standards at different nations, e-commerce carry universal standards that are shared globally.

Differences Between E-commerce and E-business

For answer refer Unit-I, Page No. 19, Q.No. 28.

1.3 IMPACT OF E-COMMERCE ON BUSINESS MODELS

Q30. Explain about the impact of E-commerce on business model.

(Oct./Nov.-13, Q9(a) | Oct./Nov.-12, Q9(a))

OR

What is the impact of E-commerce on business models?

(Model Paper-II, Q9(b) | Oct./Nov.-16, Q9(b))

OR

Discuss in detail about the impact of E-commerce on business models.

Answer :

March/April-16, Q9(a)

Impact of E-commerce on Business Model

E-commerce is a mean of carrying out business activities in such a way that the firms value chain is greatly effected in positive manner. Generally, a management learning is required for viewing the market place by, crossing the physical boundaries of the organization prior to the implementation of e-commerce application. However, it is very much essential to innovate e-commerce application in accordance to business context, which would otherwise result in the failure of these applications. Therefore, certain business models are to be developed, which have the capacity of integrating e-commerce application with the overall business goals.

Aligning Business Goals and E-commerce Strategy

The strategy of e-commerce must be laid in such a way that is very easy for a business organization to achieve the predefined goals. The goals can mostly be effected because of certain environmental change such as arrival of new competitors in the market and business trends. Therefore, it is necessary to have a strong relationship between the goals of the organization and plan of web-based e-commerce. This relationship is illustrated in the following figure.

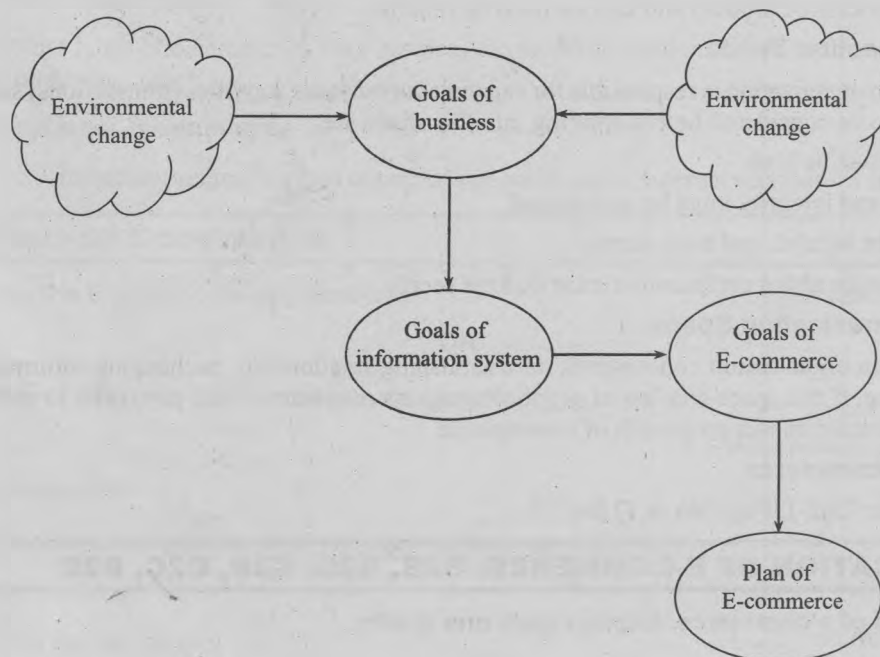


Figure: Relationship Between Goals of Business and E-commerce

After defining the business goals, it is the responsibility of information system to achieve these goals. Finally, when the goals are achieved, the e-commerce can set-up the required plan. Generally, these results help in forcing the organizations to follow the way of setting up the goals and plans, which is however, not followed by every business organization. That is, there are certain organizations which follow up their own strategy process for achieving organizational goals.

Impact of E-commerce on Value Chain

For answer refer Unit-I, Page No. 10, Q.No 20.

ICDT Business Strategy Model

Information, Communication, Transaction and Distribution (ICDT) model is the fundamental model developed by Albert-Angehm for specifying the strategy of business. This model is based on the following virtual spaces.

1. Information virtual space
2. Distribution virtual space
3. Transaction virtual space
4. Communication virtual space.

1. Virtual Information Space

This space of an organization contains information regarding the company, their products and services. In order to enter into virtual market place, it is necessary to initially enter this space. The major concern to be considered here are,

- (i) Only accurate and up-to-date information must be displayed.
- (ii) Only authorized users should be given privilege of accessing the information.
- (iii) Customers must find the required site without any difficulty.
- (iv) Customers must not be allowed to have longer waiting time for accessing the website.

2. Virtual Distribution Space

This space of an organization is responsible for distributing the purchased or requested product to the desired customer. This electronic delivery is possible if the product to be delivered is in digital form or the services provided must be carried out digitally. The major concerns for virtual distribution space are,

- (i) The delivery of product or services must be only to the requested, legitimate and approved customers.
- (ii) The delivery process of product and service must be reliable.

3. Virtual Transaction Space

This space of an organization is responsible for carrying out business activities (transactions) such as purchase order. The major concerns to be considered before entering into this space are,

- (i) Data security must be high
- (ii) Data accuracy and integrity must be maintained
- (iii) Vendors must be reliable and trust worthy.
- (iv) Private information about organization must be kept secure.

4. Virtual Communication Space

This space of an organization concentrates on establishing relationship, exchanging information via chat rooms, forums and negotiating. If this space consists of negotiating agents or members who pay (prior to entering space) then this would really have a drastic impact on growth of e-commerce.

Three Pillars of E-commerce

For answer refer Unit-I, Page No. 8, Q.No. 19.

1.4 CLASSIFICATION OF E-COMMERCE: B2B, B2C, C2B, C2C, B2E

Q31. List the types of e-commerce. Explain each one briefly.

Answer :

E-commerce can be classified into different types on the basis of the nature of ongoing transactions.

1. Business-to-business e-commerce
2. Business-to-consumer e-commerce
3. Consumer-to-business e-commerce
4. Consumer-to-consumer e-commerce
5. Business-to-employee e-commerce
6. Non-business e-commerce
7. Intra-organizational e-commerce.

1. Business-to-Business (B2B) E-commerce (Organization-to-Organization)

In this type of e-commerce, transactions related to exchange of product or services, takes place only among the organizations. Possible transactions of commerce that occur between organizations are,

- (i) Transactions related to electronic market.
- (ii) Transactions related to Inter-organizational Information Systems (IOS). Examples of these systems are EDI systems, EFT (Electronic Funds Transfer) systems etc.

2. Business-to-Consumer (B2C) E-commerce (Organization-to-Consumer)

In this type of e-commerce, retail-based transactions are exchanged among organizations and customers. Here, an organization acts as a retailer or seller.

3. Consumer-to-Business (C2B) E-commerce

In this type of electronic commerce, the consumers play an important role i.e., they act as a retailer who sells their products and services to the business organization.

4. Consumer-to-Consumer (C2C) E-commerce

In this type of electronic commerce, transactions take place among customers themselves that is, a customer purchases the product from another customer. In short, customer acts as a retailer or seller in C2C electronic commerce.

5. Business-to-Employee (B2E) E-Commerce

In this type of e-commerce, transactions related to products or services are exchanged among organizations and their employees. Here, the aim is to increase the productivity of employee with respect to their personal use. These systems treat their employees as customers. With such systems, the organizations get their work done in a productive way while minimizing the cost. An example of B2E system is training employees over intranets.

6. Non-business E-commerce

In contrast to other types of e-commerce, non-business e-commerce involves small scale organizations for carrying out all the transactions.

7. Intra-organizational E-commerce

In this type of electronic commerce, various organizations make use of Internet services for conducting transactions.

1.5 APPLICATIONS OF E-COMMERCE

Q32. Explain about the E-commerce applications.

(March/April-12, Q9(a) | March-11, Q9(b))

OR

Write about E-commerce applications.

Answer :

(Model Paper-III, Q9(b) | March/April-17, Q9(b))

E-commerce Applications

E-commerce applications comprise different types of elements which are,

1. Multimedia content
2. Multimedia storage servers
3. Client server architecture
4. Video servers
5. Transport and delivery of information
6. Consumer access devices
7. Internal processes of multimedia servers.

The diagrammatic representation of the E-commerce application elements is shown in figure (1).

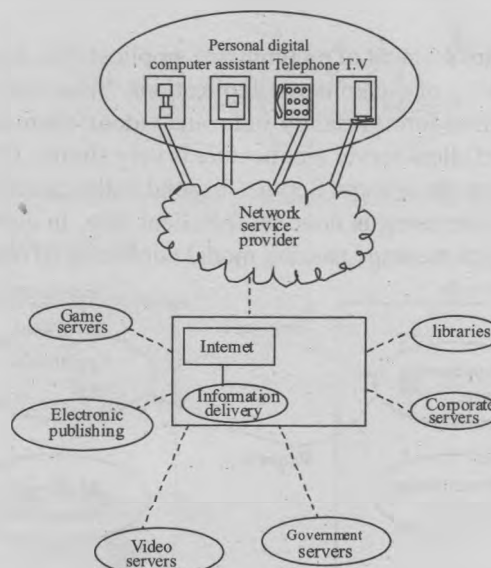


Figure (1): E-commerce Application Elements

1. Multimedia Content

Multimedia content is the most important element of E-commerce applications. The word multimedia itself specifies that it is a combination of more than one media. In other words, combination of various kinds of information like graphics, text, audio, video etc., is called multimedia. Accessing of multimedia content is based on the hardware capabilities of the customer. In addition to it, a variety of multimedia content and the type of packaging used are the important factors for the success of E-commerce applications.

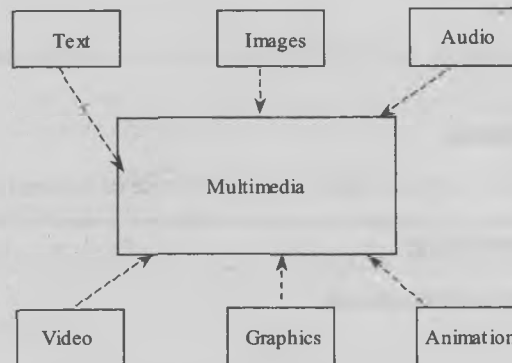


Figure (2): Multimedia Content

2. Multimedia Storage Servers

Multimedia storage servers is the second element of E-commerce applications. For transmitting and storing large amount of digital information, a large storage space is required. This form of storage is referred to as multimedia storage servers. These servers are capable of handling large volumes of data ranging from books, newspapers and catalogs to movies, X-ray images etc.

Responsibilities

The responsibilities of these servers include the following,

- (i) Providing information when requested
- (ii) Handling large volumes of data
- (iii) Assuring information security
- (iv) Providing reliability.

The main advantage of digitizing the multimedia content is that it reduces the bulkiness and unreliability of data, thereby making it cost-effective to implement.

3. Client/Server Architecture

Client/server architecture is the third element of e-commerce applications. Apart from this architecture, mainframe based architecture was used for the working of e-commerce applications. Since this architecture was very expensive and was unable to transmit information of various forms (mainly audio and video), client server architecture was preferred over main frame based models. The working of client server architecture is very simple. Clients are the systems that can request the desired information for processing from the servers. Servers respond to the clients by providing the desired information as requested by the client. Most of the processing is done on the client side. In client server architecture, the clients and server can interact with each other through message passing model consisting of request and response messages.

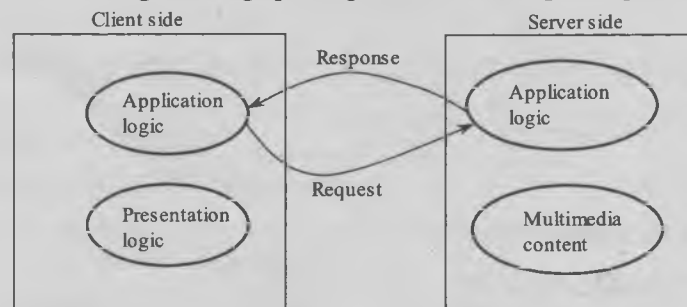


Figure (3): Client/Server Architecture

4. Video Servers

Video servers are the fourth element of E-commerce applications. E-commerce applications involving transmission of digital video information, require different processing methods like,

1. Telecommunicating method
2. Video conferencing method.

For storing large amounts of video information, some special devices are required. These devices are called video servers. The main function of video server is that it acts as an interface between the information provider and transport provider. The information can be available in multiple forms like entertainment information, multimedia related information etc., and the transmission can be done through cable wires, wireless networks, etc.

The main advantage of video servers architecture over client server architecture is that the video servers have the ability to transmit information to several people at the same time with the help of telecommunication or cable devices / networks.

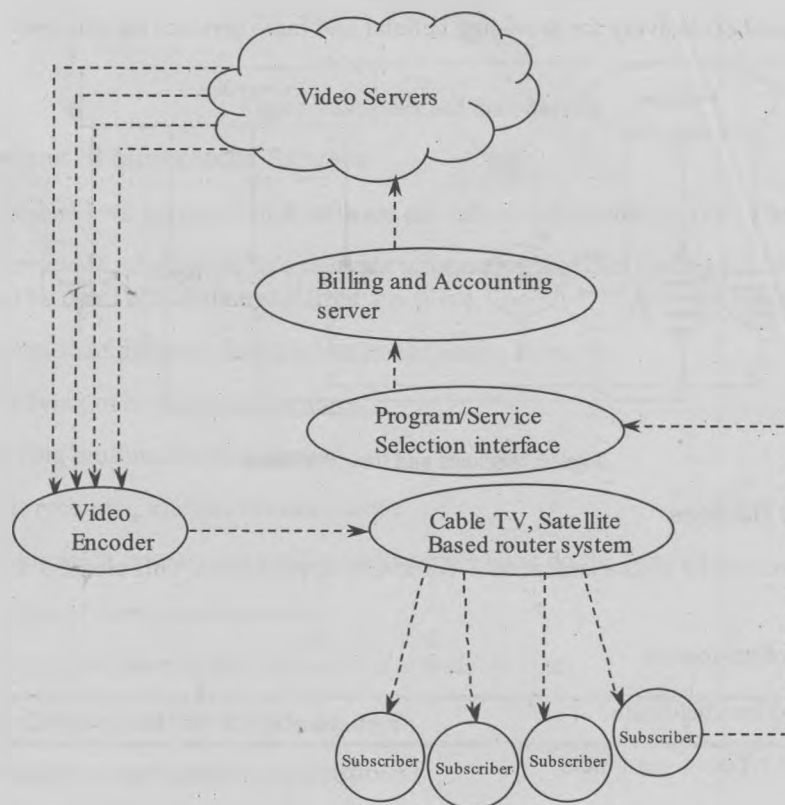


Figure (4): Video Servers/Video on Demand Systems Architecture

5. Transport and Delivery of Information

This element focuses on two important processes,

- (i) Mediums through which information is transmitted.
- (ii) Providers to transport through each medium.

The four types of medias are,

- (a) Long distance as well as local telephone lines.
- (b) Coaxial, fire optic cables, cable based T.V.
- (c) Internet.
- (d) Cellular as well as radio networks device.

Providers for each of the medium are,

(a) Telecom Based Providers

These providers include both long distance and local telephone lines. These providers only provide telephone line services for transmission of information. It employs a technique called 'Asymmetric Digital Subscriber Line' (ADSL) which cannot handle live transmissions and fails to display pictures clearly.

(b) Cable Based Providers

These providers provide only cable services for transmission of information through fibre optic coaxial cables.

(c) Computer Network Based Providers For Internet

These providers are used only to provide on-line services for transmission of information.

(d) Wireless Based Providers For Cellular and Radio Networks/Devices

These providers are used exclusively for providing cellular and radio services for transmitting information.

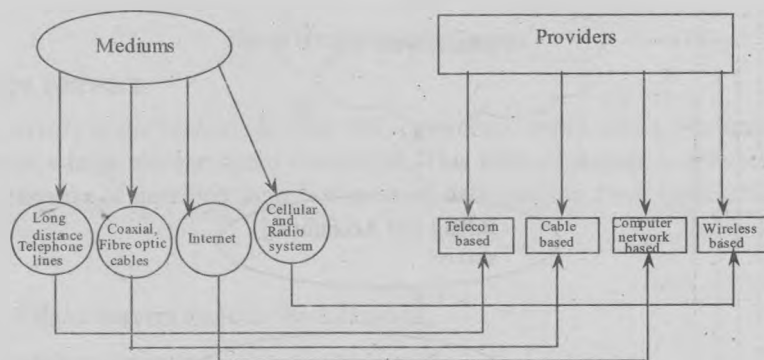


Figure: Mediums and their Providers

6. Consumer Access Devices

Consumer access device is the sixth element of E-commerce applications. This element focuses on two important processes,

- (i) Different types of customers.
- (ii) Devices required for customers.

There are mainly four types of customers,

1. Customers who use audio and video information.
2. Customers who prefer telephonic information.
3. Customers who make use of electronic information.
4. Customers who employ PDAs (Personal Digital Assistants) for information.

Different Devices Required by Different Customers

1. Personal as well as Mobile Devices for Customers for Audio and Video Information: Examples of personal devices are work stations, multimedia, personal computers etc. Examples of mobile devices are laptop device, note book computers etc.
2. Video Phone Devices: For customers of telephonic information.
3. Television / Game Devices: For customers for electronic information.
4. Pen Based Devices / Voice Driven Devices / Software Agents: For customers of PDA information.

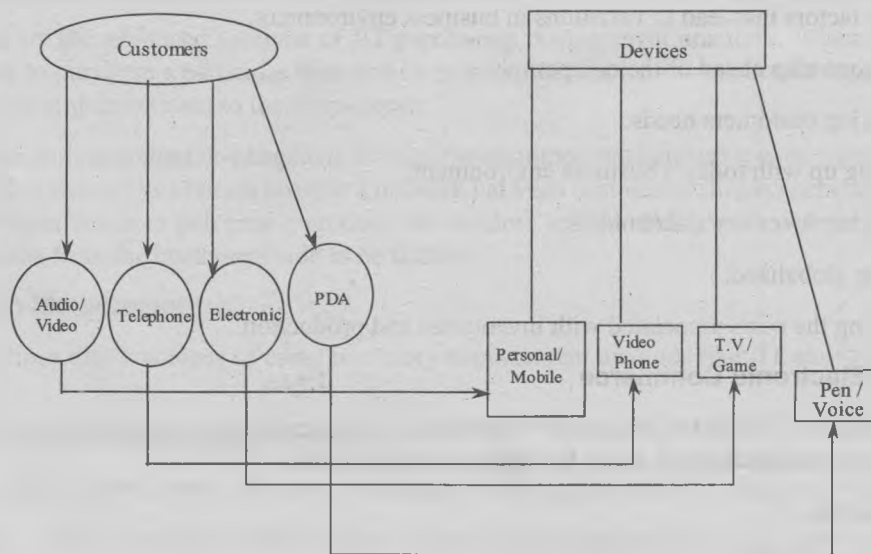


Figure: Customers and their Servers

7. Internal Processes of Multimedia Servers

Systems that consist of both hardware and software are called multimedia servers. These servers are used for,

- Converting any irrelevant information into relevant information and distributing the information in such a way that it can be accessed by users at any time and from any place.
- Hand lines information of different formats like image audio, video etc.
- Creating and modifying of multimedia documents.
- Storing and retrieving multimedia documents.
- Sending as well as receiving multimedia documents.

For making an application interactive, a multimedia server must do the following,

- Handle large number of users simultaneously
- Deliver the desired information to the customers at affordable costs.

1.5.1 E-Commerce Organization Applications

Q33. Explain E-commerce organization applications.

Answer :

The different E-commerce organization applications are,

- Variations in business environment
- Marketing
- Inventory Management
- Supply Chain Management
- Electronic Commerce and retail industry

1. Variations in Business Environment

Most of the companies today are adopting various ways to improve their business. Instead of working with the same business partners, they are looking for new business partners to extend or globalise their business. The most surprising thing is that companies are looking for business partners not only within their own fields but also in the other fields.

Following are the factors that lead to variations in business environment,

- (i) Pressure of being one step ahead of the competitor.
- (ii) Pressure of satisfying customers needs.
- (iii) Pressure of keeping up with today's business environment.
- (iv) Pressure of satisfying investors/stakeholders.
- (v) Pressure of getting globalized.
- (vi) Pressure of reducing the costs associated with inventories and production.

2. Marketing and Electronic Commerce

Most of the companies are forced to change their marketing strategies due to various pressures on the business. The most common marketing strategies that are in use by various companies are,

- (i) Target Marketing
- (ii) Relationship Marketing
- (iii) Event Marketing.

(i) Target Marketing

A marketing strategy where companies advertise their product in selected segments of the market for only a limited set of people.

(ii) Relationship Marketing

It is a strategy where companies advertise their product in a selected market in such a way that a good relationship is built up and maintained with their customers.

(iii) Event Marketing

A marketing strategy where companies are not interested in targeting any set of people or establishing any relationship with them. In this strategy, companies advertise their product into the market in such a way that if people are interested, they can buy the product.

One marketing strategy that can be used by various companies and is much better than the existing marketing strategies is called interactive marketing. In this type of marketing strategy, companies can advertise their product to the people by providing special graphics to the product with the help of multimedia like giving a logo to the product.

3. Inventory Management

In order to get globalized, companies are looking to try out various business methods. One business method used by many companies for globalization is inventory management.

This method is known by different names in various industries. For instance,

- (i) In manufacturing industry, inventory management is known as JIT (Just In Time) inventory systems.
- (ii) In retail industry, inventory management method is known as Quick Response (QR) retailing systems.

(i) Just in Time (JIT)

These systems can be defined as a collection of various management practices used by different production systems. The working of JIT systems is based on two important laws,

- (a) Removing unnecessary materials, devices required for production and avoid wastage of time in manufacturing of products.
- (b) Providing good working conditions to the workers of the different management practices. JIT Purchasing is the most widely used management practice which helps in establishing a good relationship between suppliers and customers.

(ii) Quick Response (QR) Systems

These systems are the advanced versions of JIT purchasing management practices. Whenever someone goes to a shop and wants to purchase a particular item and he is informed that item is not available, it leads to frustration of the customer and embarrassment to the shopkeeper.

In order to avoid getting embarrassed again in front of the customer, retailers use special type of systems called quick response or QR systems. QR systems provide a network between customers, shopkeepers/retailers and vendors. So, whenever customer wants to purchase a product, the vendors will be asking to the retailers whether there are any new requirements from the customers side to be fulfilled.

4. Supply Chain Management

There were various disadvantages of using inventory management methods like JIT and Quick Response systems which include,

- (i) Cost of using these systems was very high.
- (ii) These systems were not ideal for those companies where suppliers take a long time in delivering the products.

In order to overcome these drawbacks, a special type of management chain was used called as Supply Chain Management.

This management system established a chain/link between partners (internal as well as external) involved in supplying and processing the products so that the manufacturers get their desired raw materials and customers get their desired products.

There are mainly seven different types/functions of supply chain management,

- (i) Supplier Management
- (ii) Inventory Management
- (iii) Distribution Management
- (iv) Channel Management
- (v) Payment Management
- (vi) Financial Management
- (vii) Sales force Productivity.

5. Electronic Commerce and Retail Industry

There has been a lot of changes in the economy system of the retail industry. Customers are expecting a lot more from their retailers. For instance, improved quality of products, more products at lower costs. As a result, retailers are looking for suppliers from outside the country in order to decrease the cost of the product. One more reason is that the labour costs outside the country are more cheaper.

Q34. Discuss the key factors affecting online entertainment industry.

Answer :

Online Entertainment Industry

The key factors affecting online entertainment industry are as follows,

1. Scale and Growth of Populations

The major sources of online entertainment are generally the music downloads, online games, films and sports. But this does not make the customers to spend more time on music sites, because they usually download the music and store it for the future. However, the usage of those sites that allow high participation and control of the customers is quite high. Further, new versions of non-traditional entertainment are defined by the customers in the absence of TV and film on the site. These versions do not include the traditional media, which consists of blogs and user-generated content on social networking sites.

2. Content

There have been wide alterations in the packaging, distribution, marketing and sales of music tracks with the introduction of the Internet. That is the users can search for any song in the online digital searchable music archives and can mix one another so as to produce their own personalized library. Due to this service, the users are capable of creating their own music packages and distributing them. Hence the online entertainment provides high control to the users over program content as well as program focus.

3. Revenue Models and their Results

Marketing model is used by most of the television and movie sites in order to publicize their products and for increasing the number of customers. In case of Apple's La-carte model, the customer can only pay for the downloading of single music track which lead to an unexpected success. Furthermore, pay-per-view rental model and pay-for-download model are used by most of the film sites which are also quite successful.

4. Convergence

The convergence in entertainment industry has been very slow because of technological and market forces. That is, music systems have been converged from PC's to handheld devices such as ipads and ipods etc. The PC's behave as game station competing with dedicated game stations. And on the other hand, most of the dedicated game stations are connected with the web for the purpose of interactive play.

1.5.2 E-Marketing, E-Advertising

Q35. Explain about online marketing and advertising.

Answer :

Online Marketing

Online marketing is the achievement of marketing goals through the utilization of the internet and the web based technologies. Online marketing is also known as internet marketing or marketing on the web. It is a part of e-business or e-commerce. The Internet marketing has changed the way of working, buying and living of the people. It involves the exchange of products, services, information and payments through the electronic medium of networks.

E-market is a virtual online market wherein, large number of buyers, suppliers, traders, sellers interact with each other so as to perform information exchange. They try to build up a relationship with one another through content aggregation created by different suppliers and member communications which are supported by collaboration tools. The major advantage of e-market is that, it reduces the inefficiency by tightly coupling the relationship among customers and vendors and even by increasing the reach of suppliers.

The following are the services offered by e-markets,

- (i) Settlement services
- (ii) Conflict resolution services
- (iii) Logistic services
- (iv) Risk management services.

All the above services are generally needed by the trading members. All the operations of markets are carried out at a single point referred to as trading hub. This hub is responsible for gathering relevant information from different suppliers and then processing it in such a way that it becomes useful to all buyers.

Online marketing has two channels. They are as follows,

- 1. Commercial online services and
- 2. Internet.

1. Commercial Online Services

Online services such as American online, CompuServe and Prodigy offer marketing services to subscribers that pay a monthly fee. These services also provide information on education, sport, entertainment, shopping and the latest international news.

2. Internet

This is a vast international network, connecting other computer networks as well as companies, universities, libraries and so on. With the introduction of the world wide web, the usage of the internet increased very rapidly. The use of the Internet itself is free. Users only need to pay for the services of a commercial provider that enables the user to access the Internet.

Online Advertising

Online advertising is a marketing strategy that makes use of Internet to fetch website traffic and target, deliver marketing related information (in the form of message) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

Internet advertising or online advertising can be classified into two types,

1. Push-based advertising
2. Pull-based advertising.

1. Push-based Advertising

It is also known as active advertising. Push-based advertising is the most inefficient type of advertising. This is because it does not convey relevant information to customers. In short it can be said that information sent through this advertising is meaningless.

There are two types of push-based advertising,

- (a) Broadcast advertising
- (b) Direct mail advertising.

(a) Broadcast Advertising

This is the first type of push-based advertising. Through broadcast advertising, different companies can advertise their products to unlimited number of customers. One of the ways by which broadcast advertising can be done is by using television. Doing broadcast advertising with television has benefits and drawbacks.

• The benefit is companies through television can visually explain the importance of their products.

Using television for advertising is expensive. The time duration allotted for showing advertisements on television is usually thirty sec. Hence in such short span of time, customers cannot get the complete idea about the product. Thus, product advertisement has to be displayed at periodic intervals of times in order to understand the customer. To display the add more than once requires a lot of cost.

Another way in which companies can do broadcast advertising is by using news groups. In other words, company can advertise their products through news groups.

(b) Direct Mail Advertising

This is the second type of push-based advertising. Direct mail advertising is the process in which companies advertise their products by sending mails to different customers. The benefits of this advertising technique are,

- (i) Through direct mail advertising, companies can target only those customers who seems interested in buying their products.
- (ii) Companies can send the product information in their own way. In other words, companies have full control over presentation of the message.

The drawbacks of direct mail advertising are,

There is a possibility that some messages received by customers will be of less importance.

For this reason, direct mail is also referred to as junk mail. These junk mail messages not only waste the customers time but also unnecessarily utilizes the space of the customers mailbox.

Another interesting point to note here is that companies sometimes purposely send junk mails thinking that there will be few customers who will read the message and buy their products.

2. Pull-based Advertising

This type of online advertising is also called as passive advertising. Companies by using pull-based advertising can have a better customer response than through push-based advertising. This is because with the help of pull-based advertising paradigm, a feedback loop which directly connects a company and customer is established thereby providing meaningful information to the customers.

Pull-based advertising can be classified into three types or forms,

- (a) Bill board advertising
- (b) Advertising through yellow pages
- (c) Advertising through endorsements.

(a) Bill Board Advertising

This is the first type of pull-based advertising. It is also known as world wide web advertising. In this type of advertising, one company has to take the help of other company for promotion of its products online. In other words, one company promotes its products through other company's online services.

Advantages

- (i) Inexpensive to implement.
- (ii) Companies through this advertising, can make their products reachable to different customers.

Disadvantage

Most of the customers don't browse through one site for a long period of time. They constantly switch from one site to another. So the product information provided by the company should be in such a format that it is simple and short so that the customers can easily understand.

(b) Advertising through Yellow Pages or Yellow Pages Advertising

In this type of pull-based advertising, companies can promote their products by using yellow pages directory services.

Advantages

- (i) Information can be kept for long time.
- (ii) Using yellow pages for advertising is cheap.

Disadvantages

- (i) Product information cannot be frequently updated.
- (ii) Limited creativity in the ads.

There are different types of yellow pages that can be used by companies for promoting their products,

- ❖ Traditional yellow pages
- ❖ Audio text yellow pages (talking yellow pages)
- ❖ Interactive or consumer search databases.

(c) Advertising through Endorsements or Endorsement Advertising

In this type of pull-based advertising, companies ask different celebrities, famous personalities, etc., to promote their products. But in case of online endorsement advertising, a company asks the customers to give feedback for its products. In other words company ask the customers to endorse its products.

Advertising on Internet has its own advantages and disadvantages. The advantages of advertising over internet are,

- (i) Through Internet advertising, companies can promote their products more efficiently.
- (ii) By advertising through Internet, companies can satisfy the needs of different customers.
- (iii) Customers get to know about the latest products available in the market.
- (iv) Income of companies will increase as a result of advertising on Internet.

The disadvantages of advertising over Internet are,

- (i) Customers sometimes receive unwanted messages in their mailbox.
- (ii) No specific rules have been defined till date that describe how advertising should be done.

1.5.3 E-Banking, Mobile Commerce

Q36. Discuss briefly on,

- (i) **E-banking**
- (ii) **M-commerce and its limitations.**

Answer :

(i) E-Banking

Electronic banking is an Internet-based banking process in which users are allowed to connect to the legitimate websites of their respective bank. Once the connection has been established, the users can use the banking services virtually from their home location. Therefore, E-banking is also known as home banking, virtual banking and online banking. The major advantage of E-banking is that, it provides convenient and safe form of anywhere, anytime banking. However, due to wide usage of internet, there is a risk that the confidential information being transferred be intercepted by an intruder. Hence, it is necessary to ensure that the security is not compromised. For this reason, many financial institutions have adopted many security methods such as providing passwords, verifying the customer's authentication, etc.

(ii) M-Commerce

Mobile commerce or M-commerce refers to any business activity or transaction that is done through mobile devices which are connected to wireless networks. Here, the mobile or wireless devices like cell phones, Personal Digital Assistants (PDAs), tablet PCs, laptops etc., are used. All these devices are required to have internet connection via the wireless networks like GSM, CDMA, GPRS etc. The internet connectivity provided by these networks can be used to access information stored on several providers and web servers.

Limitations of M-Commerce

The following are the limitations of mobile commerce,

- (i) Mobile devices are battery operated handheld devices with limited hardware and software capability.
- (ii) They have a small microprocessor, which cannot perform heavy computations.
- (iii) They offer a small screen whose resolution is less and hence rich user experience like web browsing is not possible on mobile devices.
- (iv) Due to less computing power, they cannot run complex application and encryption services.

- (v) The wireless networks provide limited bandwidth which is insufficient for supporting multimedia and other advanced m-commerce applications. However, with the advent of 3G networks, the bandwidth of wireless networks has improved a lot.
- (vi) Mobile devices cannot fully handle HTML. Hence, to support web in mobile devices, two different standards were developed (by two different organization), they are Wireless Mark up Language (WML) and CHTML needs to be used.

Q37. Explain the applications of mobile commerce.

Answer :

March/April-13, Q9(b)

Applications of M-commerce

M-commerce applications were introduced in order to serve time critical services. These applications enable the users to accomplish their tasks more efficiently. Some of the M-commerce applications and services are given below,

1. Location-based Services

M-commerce helps the user in determining the location of nearby restaurants, food courts, ATMs, Petrol pumps, theatres etc., using certain applications like zomato, smarter agents. Along with the locations, the user is also provided with a map showing the way to reach the desired location.

2. Banking and Financial Services

With the emergence of M-commerce, several banks have become participants of mobile banking wherein, a user can check his/her account balance, transfer amount, pay utility bills etc., via a cell phone.

3. Advertisement Over a Mobile

The mobile service providers have a complete record of their subscriber's locations, their age, name, games and other services they frequently use on their cell phones. This information is very essential for marketers. It helps them to find millions of potential customers with an ease. Mobile marketing will certainly result in higher success rate if done at the right time and in the right way.

4. Entertainment

Now-a-days, mobile phones serve as a portable platform for entertainment with their ability to play videos, audio, 3D games, movies etc. The service providers offer different forms of digital games, music, ringtones, news clips, weather reports, mobile TV etc., with a minimal surcharge. Therefore, many companies are developing and selling different mobile compatible softwares and games.

5. Mobile Brokerage

M-commerce enables the subscriber to have up-to-date information regarding the marketing developments irrespective of physical location.

6. Mobile Purchase

M-commerce enables the customer to perform their shopping online irrespective of the time and location.

1.5.4 E-Trading, E-Learning, E-Shopping

Q38. Discuss in brief about online trading.

Answer :

E-trading/Online Trading

E-trading/online trading is also known as E-broking. E-broking provides up-to-date and on-time information about the stock prices to everyone across the world. People can respond to the changes taking place in the stock market by the information provided by E-broking. People having Internet bank account, can buy and sell stocks online.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Before the Internet came into existence, buying and selling stock at the correct time relied upon the availability of eminent brokers. These brokers used to be in shortage. Small investors always used to face difficulty in getting a broker. Apart from brokers, the other sources from where the information about stock prices can be obtained were magazines, newspapers, telecommunications and radios. These sources are cost consuming, slow and less comprehensive compared to Internet.

Online-trading/E-trading is the best solution to the requirements of investors. All the problems which investors used to face before the introduction on Internet will be sorted out by E-trading.

Advantages

1. The transaction cost is reduced by carrying out automating process.
2. The transactions are executed quickly since there is no paper work document involved.
3. The market efficiency is increased since there is a possibility of achieving greater liquidity i.e., more number of buyers and sellers.
4. The information regarding the price is transparent i.e., the user can have information regarding price of the stock, currencies etc., which was opaque earlier.
5. The level of completion has increased to maximum level.

Q39. Discuss in detail about,

- (a) E-training
- (b) E-shopping.

OR

Explain about E-Shopping? List out the advantages and disadvantages of it.

(Refer Only Topic: E-Shopping)

Answer :

March/April-16, Q9(b)

(a) E-training

E-training is an application provided by e-commerce and is defined as any where, any time training delivered over the Internet. It is an affordable and easy-to-use learning management system based on Internet. Learning management system provides a trainer who is responsible for monitoring the student's participation and for calculating student's performance. The purpose of providing this application is to help students in,

- (i) Accessing the knowledge remotely.
- (ii) Making immediate assessment of their understanding.
- (iii) Providing peer-guidance.

Apart from students, e-training application is even employed in many business-oriented organizations, where in the higher level management spend large amount of money in engaging their employees in using internet-based training programmers. This training provides the employees with complete knowledge about the newer enhanced technology. The software technologies of e-training made it possible for educator, administrator and learning service provider in creating, launching and evaluating the process of learning over Internet using the student Internet browser. Before selecting this learning management system, it is necessary to ensure that the system is capable of offering a wide range of features and can update and build the site with advanced educational features.

The following are the two primary models of e-training using which instructions are delivered.

- (i) Asynchronous model
- (ii) Synchronous model.

(i) Asynchronous

In this type of model, the instruction is self-directed and self-paced.

Example

E-mail, Newsgroup, Webforums (bulletin boards).

(ii) Synchronous Model

In this type of model, an instructor is provided that trains the user in understanding the required concept.

Example

ChatRooms, ShareWhiteBoards, Teleconferencing, Video Conferencing.

Advantages

1. There is no travel costs.
2. There is no time spent commuting to class.
3. The user can learn at his/her own convenience location.
4. It reduces the cost of both provider and organization that require training.
5. It is effective for learners who are shy and language challenged.

Disadvantages

1. The instructor needs to be an effective online instructor.
2. It consumes huge amount of instructors time when individual feedback is required.
3. It requires students and providers to have prior knowledge about the technologies and equipments being used.

(b) E-shopping

E-shopping or online shopping is a new form of shopping which enables the customer to purchase their desired product from intended seller over the Internet. It can also be referred as E-store, web store, virtual store.

Advantages

The advantages of online shopping are,

1. Convenience
2. Better information
3. Competitive prices
4. Any where and anytime shopping
5. Save time and fuel
6. Compulsive shopping.

Disadvantages

1. There is lack of security while performing online transactions.
2. There is no concept of look and touch (feel).
3. There is great chance of frauds to occur.

Q40. Define E-learning. Discuss its benefits and drawbacks.

Answer :

E-learning

Education, training, or knowledge management achieved through the content delivered via the Internet is known as E-learning. It comprises of all electronically supported and web-enabled systems that allow access to the information to anyone, anytime and anywhere. E-learning is highly efficient for both training and teaching purposes, hence, it has been adopted by many world class universities and organizations.

Benefits of E-learning

Some particular useful benefits of E-learning are as follows,

1. Time Reduction

It cuts down the amount of time required for teaching or training purposes to almost half.

2. Large Volume and Diversity

It can offer training to a large number of employees with different cultural and educational backgrounds at the same time, even if they are at different geographical locations in different time zones.

3. Reduction in Expenses

When used as an alternative to classroom lectures, E-learning reduces the total expenditure on the education to 50-70 percent.

4. Higher Content Retention

In contrast to the students that opt for traditional classroom learning, the student's of e-learning retain the content of the course upto 60% more. This is because, such students are self-initiated and self-paced and their motive for obtaining more knowledge could be to increase their scope of view, or enhance career skills.

5. Flexibility

It offers a high level of flexibility to the students in learning, as it allows them to choose the time, locations, content and speed of learning according to their convenience.

6. Up-to-Date and Consistent Material

As E-learning does not have any necessity of changing the teachers, it offers upto 60% more consistency of the material when compared to its counter part classroom learning. And, it also provides instant and timely updation of the information which is not possible with text-books.

7. Fear-free Environment

E-learning is a very good platform for the student's who are shy and reserved and does not like to join a face to face group discussion in class. Hence, it offers a fear-free and privacy protected environment to the students in which they can put forth their ideas, view, expression with ease.

Drawbacks of E-learning

Some of the major drawbacks faced by e-learning are as follows,

1. Need for Instructor Retraining

As every instructor is not competent and comfortable in teaching through electronically supported system, it requires time and money to prepare them for this task.

2. Need for Tools and Support Services

Offering support services for E-learning's creation, use and maintenance requires a whole bunch of multimedia equipments which consumes more money.

3. Lack of Human Interaction and Campus Life

As it is a virtual classroom, E-learning cannot replicate the intellectual simulation that happens via, instruction in a classroom with a live instructor.

4. Assessment

Unlike real world classroom's where the tutors can examine whether every student has completed his/her assignment, E-learning cannot assure such a facility and thus lacks one of the necessary features of education.

5. Maintenance and Updating

Though updating of content or information is easy in E-learning, it consumes a lot of resources such as time, money and effort. Also, because of lack of ownership and accountability for website material, it is difficult to maintain the content of the e-learning material.

6. Protection of Intellectual Property

Monitoring and controlling the transfers of copyrighted content downloaded from the E-learning platform is difficult.

7. Computer Literacy

It is mandatory for the students of E-learning to be equipped with computer knowledge. Hence, it cannot be extended to the students who are computer illiterate.

8. Student Retention

It is difficult to keep all the students psychologically interested and enthusiastic regarding E-learning for a long time without some human feedback.

Q41. Explain the approaches of E-learning.**Oct.-14, Q9(b)****OR****What are the different approaches of E-learning?****Answer :****Oct./Nov.-13, Q9(b)****E-learning Approaches**

There are many pedagogical approaches which are used for creating content that can be used for performing.

1. Computer based learning.
2. Computer based training
3. Technology based learning.

Pedagogical Approaches

The different pedagogical approaches include,

1. Social-constructive approach
2. Laurillard's conversational approach
3. The cognitive perspective approach
4. The emotional perspective approach.

1. Social Constructive Approach

The content for e-learning can be gathered by performing social meeting where in discussion can be made regarding the required concept. This approach is generally used by different online communities like forums, wiki articles, blogs etc.

2. Laurillard's Conversational Approach

This approach is used for conducting higher learning processes in which the student can practically observe the world. General conclusion even can acknowledge other peoples experiences. The content creation for e-learning via this approach is done using message boards and forums. Wherein users unite themselves to share their knowledge and information.

3. The Cognitive Perspective Approach

This is a new approach that concentrates on the working of a human brain that is how learner's brain work is considered as an effective tool for gathering, conceptualizing, organizing the information. This way helps in creation of home lessons and other type of e-learning content.

4. The Emotional Perspective Approach

This approach gives importance to name learners as it focuses on emotional factors like, fun, motivation and memorability.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. _____ is a goal of e-commerce. []
 - (a) Cost reduction
 - (b) Faster response time
 - (c) Improved service quality
 - (d) All the above
2. The central pillar of e-commerce is _____. []
 - (a) Electronic information
 - (b) Electronic relationship
 - (c) Electronic transactions
 - (d) None of the above
3. WWW stands for _____. []
 - (a) World Wide Web
 - (b) World Wide Website
 - (c) Websites and Webpages on Web
 - (d) None of the above
4. In _____ e-commerce, transactions related to exchange of product or services, exchange takes place only among organizations. []
 - (a) B2B
 - (b) B2C
 - (c) C2C
 - (d) B2E
5. _____ e-commerce involves small scale organizations for carrying out all transactions. []
 - (a) B2C
 - (b) B2E
 - (c) Non-business
 - (d) Intra-organizational
6. ICDT business strategy model is based on _____. []
 - (a) Information virtual space
 - (b) Distribution virtual space
 - (c) Transaction virtual space
 - (d) All the above

7. _____ providers include both long distance and local telephone lines. []
- (a) Telecom based
 - (b) Cable based
 - (c) Computer network based
 - (d) Wireless based
8. _____ is a marketing strategy where companies advertise their products in selected segments of the market for a limited set of people. []
- (a) Relationship marketing
 - (b) Target marketing
 - (c) Event marketing
 - (d) All the above
9. _____ is also known as active advertising. []
- (a) Push-based advertising
 - (b) Pull-based advertising
 - (c) Bill-board advertising
 - (d) Yellow pages advertising
10. _____ is used for shopping over the internet. []
- (a) E-training
 - (b) E-shopping
 - (c) E-learning
 - (d) All the above

II. Fill in the Blanks

1. E-Commerce stands for _____.
2. The first pillar of e-commerce is _____.
3. In _____ chain, input/output are provided to the supplier at the back stage.
4. In _____ chain, the information system of respective firm links all the phases of the process together.
5. Quick response systems are the advanced versions of _____.
6. M-Commerce stands for _____.
7. Education, training or knowledge management achieved through the content delivered via the Internet is known as _____.
8. _____ is also known as E-broking.
9. In _____, banking transactions can be done over the internet.
10. _____ e-commerce involves retail-based transaction exchange among organizations and customers where organization acts as retailer.

KEY**I. Multiple Choice**

1. (d)
2. (b)
3. (a)
4. (a)
5. (c)
6. (d)
7. (a)
8. (b)
9. (a)
10. (b)

II. Fill in the Blanks

1. Electronic Commerce
2. Electronic information
3. Traditional value
4. Customer Oriented value
5. JIT purchasing management practices
6. Mobile commerce
7. E-learning
8. E-trading
9. E-banking
10. Business-to-consumer

III. Very Short Questions and Answers**Q1. What is the role of central pillar of e-commerce?****Answer :**

The central pillar i.e., electronic relationship pillar specify the way of constructing a web site such that a user viewing the web site must revisit the same site in a positive manner. This pillar concentrates on establishing relationship with the user in an electronic form.

Q2. What is the authenticity issue of e-commerce?**Answer :**

The authenticity is concerned about the verification of business, customers and services offered. The authenticity is provided with the help of user name, IDs, passwords, secret numbers etc.

Q3. Define relationship marketing.**Answer :**

Relationship marketing is a strategy where companies advertise their product in a selected market in such a way that a good relationship is built up and maintained with their customers.

Q4. What is online advertising?**Answer :**

Online advertising is a marketing strategy that makes use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

Q5. Write a note on pull-based advertising.**Answer :**

This type of online advertising is also called as passive advertising. Companies by using pull-based advertising can have a better customer response than push-based advertising.

UNIT 2

FRAMEWORK OF E-COMMERCE



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Functionality of different layers of E-commerce architectures.
- ❖ Different security protocols.
- ❖ Working of basic and security enhanced mail protocol.
- ❖ Various web security issues.
- ❖ Symmetric and asymmetric encryption techniques.
- ❖ Digital signatures and Digital certificates.

INTRODUCTION

Architectural framework of E-commerce is a combination of different available resources such as DBMS, data repository, communication protocols and computer languages. Some of the functionalities in this framework are application services, brokerage services, interface and support layers and middleware services. Each of these services have their own significance. For instance, the application services determine the type of E-commerce application to be implemented. Whereas, the brokerage services and data management govern and manage massive amount of data on Internet. Since data is transferred over the Internet, it is necessary to carry out this transmission in a secured manner. This can be done using different security protocols like FTP, SMTP and HTTP. Apart from this, there are various messaging protocols which are used for performing data transfer. One way of ensuring data security is through the concept of encryption. Encryption ensures that the data being transferred is in the form of cipher text that cannot be intercepted by any intruder. The various encryption techniques include symmetric and asymmetric techniques.

PART-A**SHORT QUESTIONS WITH SOLUTIONS**

Q1. List the types of application services in e-commerce.

OR

Application Services

(March/April-15, Q6 | March/April-13, Q7)

Answer :

The different types of e-commerce applications available are as follows,

1. Business-to-business e-commerce
2. Business-to-consumer e-commerce
3. Consumer-to-business e-commerce
4. Consumer-to-consumer e-commerce
5. Business-to-employee e-commerce
6. Non-business e-commerce
7. Intra-organizational e-commerce.

Q2. Write about interface and support services.

Model Paper-I, Q2

OR

Interface layers.

Answer :

March/April-16, Q2

The functions of this layer is to provide interface for e-commerce applications which include,

(i) Interactive Catalogs

These are the customized interfaces for applications such as web based shopping. They are an extension to the paper-based catalogs which possess additional characteristics like graphics and video for making the advertisement much attractive.

(ii) Directory Support Services

Directory services help the user in searching and accessing the information by making data appear as local irrespective of its remote locations. They usually work in the background and try to manage the huge amount of information and transaction that are generated to ease electronic commerce.

The basic difference among interactive catalogs and directory services is that the former handles the people, whereas the latter interacts directly with software applications.

Q3. Write a short note on web security.

OR

Web Security

Answer :

Oct./Nov.-13, Q6

Web security services ensure reliable and secure electronic transmission or communication. There may be several web security issues.

1. Auditing
2. Authentication
3. Authorization
4. Confidentially
5. Non-repudiation
6. Availability
7. Integrity.

Q4. What is HTML?

Oct./Nov.-16, Q7

OR

HTML

March/April-15, Q5

Answer :

HTML stands for HyperText Markup Language and is immensely used in developing web pages. Here the word "markup" in real sense refers to highlighted instance of a given aspect i.e., an author can highlight a particular word of his written document to grab attention of readers. In the similar way, the Hyper Text Markup Language highlights different views of a given web page in terms of headers, titles, plain text, images, sounds etc.

It does these things by taking into consideration its numerous inbuilt tags. A tag is nothing but a special keyword supported by HTML, inscribed under gulliments "<" & ">".

Q5. What is the TCP/IP reference model?

Model Paper-II, Q2

OR

TCP/IP**Answer :**

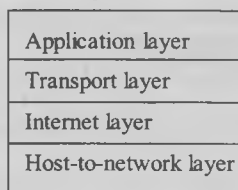
(March/April-12, Q4 | March/April-17, Q2)

The TCP/IP reference model was developed prior to the OSI model. The major design goals of this model were,

- (i) To connect multiple networks together so that they appear as a single network.
- (ii) To survive after partial subnet hardware failures.
- (iii) To provide a flexible architecture.

The TCP/IP reference model has only four layers. They are,

1. Host-to-network layer
2. Internet layer
3. Transport layer
4. Application layer.

**Figure: TCP/IP Reference Model****Q6. What is HTTP?**

Model Paper-III, Q7

OR

HTTP.**Answer :**

(March/April-12, Q2 | March-11, Q2)

HTTP is a stateless protocol that is used for delivering the web pages over the Internet. It defines how clients and server communicate. Moreover, it even provides the structures of the communication. It generally follows the request-response paradigm wherein the client sends a request and the server acknowledges with a response.

HTTP transaction consists of the following stages,

- ❖ Connection: The client establishes a connection with the web server.
- ❖ Request: The client sends a request message to the web server.
- ❖ Response: The web server sends a response (for example, HTML document) to the client.
- ❖ Close: The connection is closed by the web server.

Q7. Write a short note on S-HTTP.

OR

S-HTTP**Answer :**

March/April-13, Q2

S-HTTP or Secure Hyper Text Transfer Protocol is an extension of HTTP protocol. It is a message oriented communication protocol that was designed to allow secure exchange of messages on Internet. This protocol is used in conjunction with HTTP message model so that it can be integrated with applications of HTTP.

This protocol was developed in order to encrypt HTTP based messages present on web and transmit them between client and server. Hence, to perform this encryption, various cryptographic algorithms like RSA, DES as well as digital signature and authorization are used so as to protect the data from unauthorized or illegitimate access.

Q8. Write about FTP.

Model Paper-I, Q7

OR

FTP**Answer :**

(Oct./Nov.-13, Q2 | Sep./Oct.-15, Q6)

FTP stands for File Transfer Protocol. It is a standard protocol used to exchange files over internet. FTP runs on port 21 i.e., the client establishes a TCP connection on port number 21 of the server machine. It has been developed for the client/server architecture wherein the FTP server allows people located at remote locations over the internet to login and download the required files located on the FTP sever.

FTP operates in two modes, active or passive modes. In active mode, the client sends the IP address along with the port number on which the client listens, to the server machine which then establishes the TCP connection. In passive mode, the client can't accept the incoming TCP connection as it is behind the firewall. Here, the IP address and port number are received in response to the PASV command sent by the client to the server machine.

Q9. Write about SMTP.

Oct./Nov.-16, Q8

OR

SMTP

March/April-14, Q3

Answer :

SMTP is a simple ASCII protocol. After establishing the TCP connection to port 25, the sending machine (operating as the client) waits for the receiving machine (operating as the server) to respond.

The server starts by sending a line of text giving its identity and telling whether or not it is prepared to receive mail. If it is not, the client releases the connection and tries again later. If the server is willing to accept e-mail, the client announces from whom the e-mail is coming and to whom it is going. If such a recipient exists at the destination, the server gives the client the go-ahead message. Then the client sends the message and the server acknowledges it. Checksums are generally not needed because TCP provides a reliable byte-stream.

When all the e-mails have been exchanged in both directions, the connection is released. The exchange of mail using TCP/IP is performed by a Message Transfer Agent (MTA). Users normally do not deal with MTA. The system administrator is responsible to set-up the local MTA.

Q10. What is meant by NNTP?

OR

NNTP

Answer :

(Oct.-14, Q2 | Sep./Oct.-15, Q2)

NNTP stands for "Network News Transfer Protocol". It is an application protocol that uses reliable stream like TCP for distributing, retrieving and posting news articles on web. The main idea behind designing this protocol is, to store news article on single server host and allow subscribers residing on the network of other host to read it by establishing reliable connection. NNTP uses interactive mechanism in order to make decision regarding the transmission.

Q11. Define Encryption.

Model Paper-II, Q7

OR

Encryption.

(March/April-13, Q6 | March/April-17, Q6)

Answer :

Encryption

Encryption is a method of converting plain text into cipher text. Using this method, security of data can be achieved effectively. An encrypted file can be decrypted if the user has the capability of accessing a secret key or password. In this context, unencrypted data is referred to as plain text whereas encrypted data is referred to as cipher text.

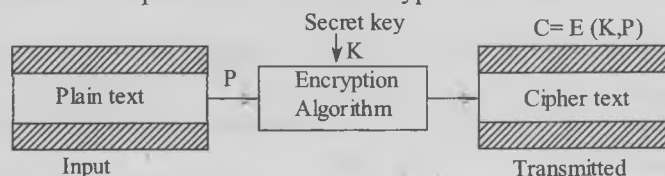


Figure: Encryption Process

Types of Encryption

The following are the two major types of encryption,

1. Symmetric encryption
2. Asymmetric encryption.

Q12. Write about digital signatures.

Model Paper-III, Q2

Answer :

A digital signature is one of the methods of encryption used to provide authentication. The main idea of the digital signature is to protect the message or data from modifications. Digital signature is very popular in the world of network security. Basically, it is a kind of asymmetric cryptography used to support the security properties of a handwritten signature on paper. The digital signature scheme provides two algorithms where one algorithm is for signing, which requires the user's secret or private-key, and the other algorithm is for verifying signatures which requires the user's public-key. The result of the signature process is called the "digital signature".

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****2.1 FRAMEWORK OF E-COMMERCE: APPLICATION SERVICES – INTERFACE LAYERS – SECURE MESSAGING – MIDDLEWARE SERVICES AND NETWORK INFRASTRUCTURE**

Q13. Explain architecture framework of E-commerce.

(Oct./Nov.-12, Q10(a) | March/April-17, Q10(a))

OR

Discuss about the framework of E-commerce.

Sep./Oct.-15, Q10(a)

OR

Explain the different E-commerce application services.

Oct.-14, Q10(a)

(Refer Only Topic: Application Services)

Answer :

Architectural Framework of E-Commerce

Architectural framework of E-commerce is a combination of different available resources such as DBMS, data repository, communication protocols and computer languages. These resources allow the unification of data and software, for generation of superior applications.

The framework has six functionalities or service layers. They are,

1. Application services.
2. Brokerage services and data management.
3. Interface and support layers.
4. Secure messaging and structured document interchange services.
5. Middleware services.
6. Network infrastructure of basic communication services.

1. Application Services

This layer of framework determines the type of E-commerce application which is to be implemented. The different types of E-commerce applications available are as follows,

For remaining answer refer Unit-I, Page No. 22, Q.No. 31.

2. Brokerage Services and Data Management

It is an information handling layer of the framework that governs and manages huge amounts of data on the network. It acts as a broker, or mediator that offers service integration between customers and information providers when provided with some constraints like, low price, fast service, or profit maximization for a client. For instance, a customer looking to purchase a specific book from the web goes through the sites of different publications. But, for this he/she will have to be aware of the URL's of these sites. In addition, the customer has to feed the details of the book repeatedly on different sites to search the services at best prices. However, if the customer finds an information brokerage site which can provide the book as per the need, then huge amount of time and effort is saved.

Some other characteristics of this layer are,

- (i) It supports the data management and usual transaction services.
- (ii) It offers tools to achieve much better, updates for future-compensating transactions.

3. Interface and Support Layers

The functions of this layer is to provide interface for e-commerce applications which include,

(i) Interactive Catalogs

These are the customized interfaces for applications such as web based shopping. They are an extension to the paper-based catalogs which possess additional characteristics like graphics and video for making the advertisement much attractive.

(ii) Directory Support Services

Directory services help the user in searching and accessing the information by making data from any server to appear as local file. They usually work in the background and try to manage the huge amount of information and transactions that are generated to ease electronic commerce.

The basic difference among interactive catalogs and directory services is that the former handles the people, whereas the latter interacts directly with software applications.

4. Secure Messaging and Structured Document Interchange Services

This layer of the framework deals with the secure transmission of messages by using an appropriate messaging system. The messaging systems usually used in transmission of messages are fax, post, courier and phone. However, none of these is totally dependable and expectedly fast. This is because, anything can go wrong in their transmission and these mechanisms consume time, depending on the distance between the source and destination. Therefore, enhanced electronic messaging systems like e-mail, enhanced fax and Electronic Data Interchange (EDI) are adopted in this layer to overcome this problem. The primary advantages of using these systems are security, privacy and confidentiality, which are obtained by using encryption and authentication techniques.

Furthermore, this messaging systems are a form of structural documents which consist of the automated interchange of standardized and approved messages between computer applications.

5. Middle Ware Services

This layer of the framework is very important as it brings together the different components of the architecture such as, networks systems, software programs and acts as a mediator among them to make them communicate with each other. Also, these services shift the computing from application centric to data centric. The advantage with this shift is that the application can be controlled by the remote data in the network instead of applications controlling the data.

6. Network Infrastructure of Basic Communication Services

This layer of the framework is responsible for providing a network infrastructure that creates an effective and efficient linkage between the customer and the supplier. Initially, telephone companies were the medium of creating the computer networks. But, advancements in computer connections led to the development of centrally-controlled single connection model known as circuit-switching.

But, this was not suitable in case of large networks, hence another technique was introduced in the Internet which could send data efficiently across large networks and was known as packet switching.

Q14. What are the different middleware services?

Answer :

March/April-13, Q10(b)

Middleware Services

For answer refer Unit-II, Page No. 48, Q.No. 13, Topic: Middle Ware Services.

Documents of Middle Ware Services

The different documents of middleware services are,

1. Structured documents
2. Compound documents.

1. Structured Document

This type of digital documents are more flexible than the image documents. The reason is, they focus on different document formats like audio, video etc.

Apart from this, structured documents have a solution for documents whose content is too long and difficult to understand. Structured documents use a technique called Table of Contents (TOC). It categorizes the book into various chapters, subtopics of the chapters, along with their page numbers. This makes searching of particular information easy. Similar procedure is followed for different document formats.

Standards

Different standards used in structured document are,

- (i) SGML
- (ii) HTML.

(i) SGML

The full form of SGML is Standard Generalized Markup Language. This standard is only used for text based documents because,

- ❖ It defines how these documents can be transmitted properly.
- ❖ It defines how text based documents can be formatted more than once.

In addition to this, SGML also describes the structure of text documents. This standard was developed by ISO (International Standards Organization).

(ii) HTML

HTML stands for Hypertext Markup Language. This standard was created under W3C consortium. HTML standard is mainly used for documents like hypertext, multimedia etc.

2. Compound Documents

Compound documents consist of data structures that include data types like text, audio and video. This document is a collection of user interfaces. This interface helps in creating single integrated perceptual environment. Compound documents also create application environment by defining program object so as to interlink and interact with users.

Standards

Different standards used in compound documents are,

- (i) Object Linking and Embedding (OLE)
- (ii) OPEN DOC.

(i) Object Linking and Embedding (OLE)

OLE is a technology that integrates several applications and multimedia data types within an active document framework. It was developed on top of DDE which is a technique of Interprocess Communications (IPC). Here various applications are allowed to interact with each other during execution. But, the links between applications were found to be easily disconnected while moving a file or updating application software, due to DDE fragility.

(ii) OPEN DOC

OpenDoc contains document parts as its basic building blocks. Here, each document part comprises of data. The data can be,

- ❖ Text containing characters.
- ❖ Graphics containing lines and shapes.
- ❖ Spreadsheet containing spread sheet cells with formulas.
- ❖ Multimedia containing digitized videos.

Q15. Explain the applications of information technology infrastructure.

Answer :

March/April-15, Q10(b)

Information technology is considered as the backbone of e-commerce. It mainly relates to the authorization and verification of the identities of all its associated merchants and customers. If a problem arises with respect to security and authentication, it uses second-site mirroring system with increase in the development of e-commerce, advanced multimedia with high security including firewalls, encryptions and decryptions.

Applications of IT Infrastructure Services

- ❖ They are needed to manage network services for uninterrupted communications over the organization.
- ❖ They provide standards for various components such as operating system, data, hardware etc., of the IT architecture.
- ❖ They provide help and support services.
- ❖ They provide services related to security and disaster recovery of the business and applications.
- ❖ They are required to provide multimedia support for various operations such as video conferencing.
- ❖ They can implement security services including disaster management for individual business units of the infrastructure.
- ❖ They manage messaging services associated with a group, business-unit (or) entire organization.
- ❖ They can enforce certain architecture for the organization.

2.2 SITE SECURITY – FIREWALLS AND NETWORK SECURITY

Q16. Discuss the security issues faced by e-commerce site.

Model Paper-I, Q10(a)

OR

Explain the security services of E-commerce.

Oct.-14, Q10(b)

OR

Explain the issues related to security, when using Web.

March/April-16, Q10(b)

OR

Explain about the various issues involved in web security.

Answer :

Sep./Oct.-15, Q10(b)

Web Security Services

Web security services ensure reliable and secure electronic transmission or communication. There may be several web security issues. The major security issues faced by e-commerce site are,

1. Auditing

According to e-commerce, it refers to the process of gathering information about usage of privileges, accessing of specific resources, performing of security actions etc. It helps in re-development of particular actions taken and also lets the IT personnel to determine the actions performed by the person or program.

2. Authentication

The process wherein two entities can verify each other to know that they are the only users who claim to be called authentication. This ensures different types of users that their transaction or data will be secured.

In e-commerce content, it ensures the web page viewer that the site is not fraudulent and the sender is a correct person etc. It is carried out through some types of credentials like, password, smart card and signature.

3. Authorization

It is the process of ensuring a person or a program that they have right to access particular resources. It is determined by comparing access control information associated with the resource being accessed with a person or a program information.

4. Confidentiality

Confidentiality refers to the process of protecting the data being transmitted, from all types of passive-attacks. In case of the release of message contents, higher levels of protection can be provided. All the data which is transmitting between the two systems for some specific period of time can be protected in case of broader forms of this service. For example, in case of virtual connection between the two systems, any user data is prevented from its release over the virtual circuit. Confidentiality can also be applied in a narrower form which protects a single message or some fields within the message but this approach is more complex and expensive to implement.

5. Non-repudiation

This provides protection against the denial by one of the entities involved in communication. Thus, once a message is sent, the receiver assures that the message was sent by an intended sender and upon reception, the sender assures that the message is received by the correct receiver.

6. Availability

The availability can be significantly affected by a variety of attacks which are susceptible to authentication, encryption, etc., whereas some attacks require physical action for preventing and recovering from the loss of availability.

7. Integrity

Integrity can be applied to a single message within a stream or to an entire stream. It can also be applied to some specific fields within a message. Two types of integrity services are available,

- (i) Connection-oriented integrity service
- (ii) Connectionless integrity service.

A connection-oriented integrity service is concerned with the message streams. It ensures that the messages are received in the order in which they are sent with no alterations, insertions, deletions, duplications, reordering or replays. It also deals with the destruction of data. Hence, it attends to both message-stream modification and denial of service.

A connectionless integrity service tackles only the individual messages irrespective of any context thereby providing protection against the message alterations only.

An integrity service can be applied with or without recovery. As these services are related to active-attacks, the major concern is to detect them rather than preventing them. If the integrity is violated and detected, then the service must simply notify its violation and find out the ways of recovering from it.

Q17. Discuss in detail about firewalls.**Answer :**

A firewall can be viewed as an information security program located at a network gateway server. It protects the confidential information present in the network against attacks or by other insecure networks. It acts as a barrier that allows only the authorized network traffic to pass through and stops the unauthorized traffic. In simple terms, firewalls are designed to function either as a filter or as a security device. It is installed on a system so as to prevent the unauthorized users to access the secure networks. In case of mobiles, firewalls use secure procedures and authentication keys to allow remote access into the secure network.

Most organizations use firewalls to protect their private networks and communication facilities. These organizations develop firewall programs that include features like remote logging and reporting, computerized alarms and a graphical user interface to control firewall. As most of the applications are placed on the internet, they are inherently insecure. This can lead to mishandling of information that can be a risk to the organization. Therefore, to avoid such type of offensive activities, organizations use firewall to protect a public network that is connected to an insecure network.

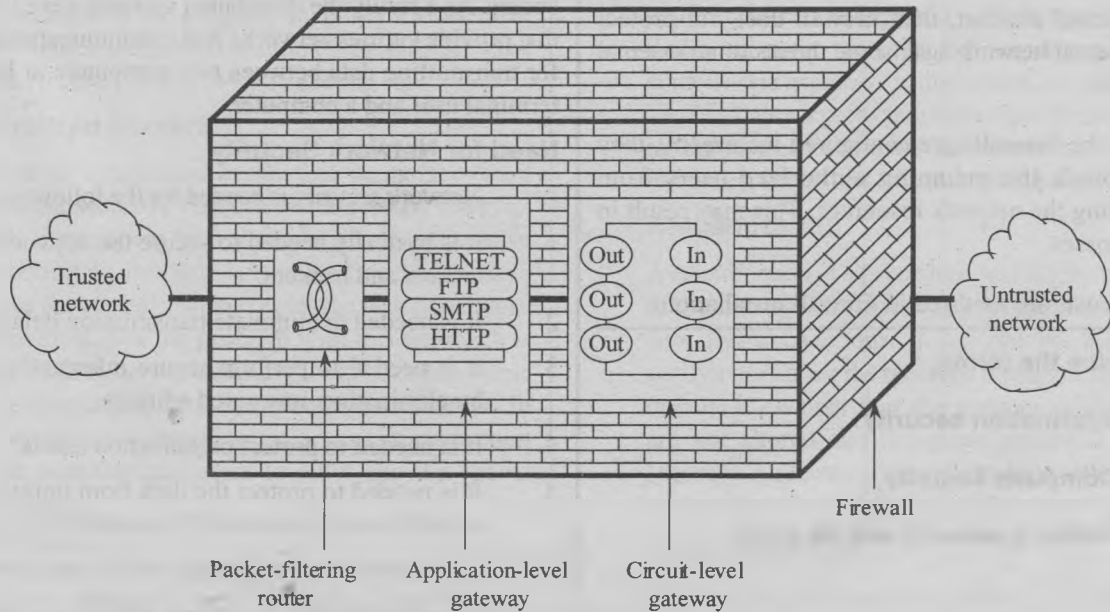


Figure: Firewall Consisting of Packet-filtering Router, Application Level Gateway and Circuit-level Gateway

The above figure represents that a firewall is a networking device that is placed between an internal LAN (trusted network) and internet (untrusted network). This firewall protects the internal LAN from being attacked by the unauthorized internet users. Thus, firewall can be considered as an effective software that is used to provide security to the local and remote systems from other network risks.

Principles of a Firewall

The following are the design goals of a firewall,

1. To block the unauthorized network users from entering into the (secured) network.
2. To stop the vulnerable incoming services that attack the authenticated users and also protect the network from various types of IP address spoofing and routing threats.
3. To reduce the burden of security management services.
4. To handle the security related consequences by implementing alerts and audits on the firewall system.
5. To provide a well-suited platform for performing internet functions like network address translation, network security management, etc.
6. To provide a platform for implementing virtual private network and IP sec.
7. To track various security-related events by establishing a monitoring point.

Limitations of a Firewall

1. Sometimes, the authorized users use their granted access permissions for doing malicious operations. In such situations, the firewall stops functioning properly hence, cannot protect the network from such type of attacks.
2. Firewalls cannot fix the problems related to poorly designed security features.
3. Firewalls cannot prevent the attacks made on those packets that do not pass through them.
4. Firewall reduces its effectiveness if permissive rules (easy going) are frequently used during its configuration.
5. Firewall cannot stop the attacks made against the authorized networks when the network itself is insecure or faulty.

6. It is impossible for the firewalls to scan the malicious code like incoming messages, attachment files etc. There are various operating systems and applications present in the internal boundary network.
7. When an internal user unknowingly interacts with an external attacker, then firewall does not protect the internal network against the threats of an external network.
8. When the firewalls are configured incorrectly, they may block the incoming authorized users from accessing the network resources. This may result in huge losses.
9. Huge costs are incurred in firewall installations.

Q18. Describe the terms,

- (i) **Information security**
- (ii) **Computer security**
- (iii) **Network security and its need.**

Answer :

(i) Information Security

Information security refers to the process of protecting data or information from unauthorized user and to allow legitimate users to access the data. Hence, it prevents the data from unauthorized access, revelation, alteration or disruption. It usually deals with the confidentiality, integrity and availability regardless of the existential form of the data.

The major changes in the information security requirements occur before the advancement in the use of data processing equipment. Security to the valuable information in any organization was provided either by physical or by administrative means. An example of physical security is the usage of rugged filing cabinets along with the proper locking facility for preserving sensitive documents. An example of the administrative approach is personnel screening process employed during recruitment process.

(ii) Computer Security

It refers to the branch of computer science that describes the application of 'secure' behaviour on the operation of computers. Hence, with the advancements in computer science, the requirement for protecting and securing files and other useful information by using a variety of automated tools have become necessary. This type of security is more prevalent in case of shared systems such as time-sharing systems. Thus, the technique of employing a wide variety of tools for protecting data and preventing hackers from accessing the data is called 'computer security'.

(iii) Network Security

Network security refers to the plans or arrangements made in the network infrastructure along with the various techniques used by the network administrator. This is done for protecting network and its resources from unauthorized access. As a result, the distributed systems were introduced that provide various networks and communication facilities for transmitting data between two computers or between a terminal user and a computer.

Need for Network Security

Network security is needed for the following reasons,

1. It is basically needed to secure the network from attackers and hackers.
2. It is needed to eliminate transmission delays.
3. It is needed to perform secure information transfer by eliminating unwanted editings.
4. It is needed to protect organization assets.
5. It is needed to protect the data from unintentionally or intentionally accessed by unauthorized users.
6. It protects the network against passive and active attacks.
7. It is also required to prevent data from getting misused.
8. It is also required to recover the system from failures and data losses by applying various policies and procedures.
9. It is also required to protect the data from threats which occur due to change technology infrastructure.
10. It is also required to avoid modification, exploitation and refusal of the network and resources.
11. It is also required to deliver accurate data to its destination.
12. It is also required to protect the data against cyber-crime.

Q19. Write short notes on threats.

Answer :

Threats

A threat violates the security that arises upon the occurrence of an event, action or a circumstance. It affects the network security and causes damage to it. In short, a threat is an expected danger that may lead to vulnerability. The possible threats to network security are discussed as follows,

1. Insecure Network Architecture

A network which is not configured in a proper manner becomes an easier entry point for intruders. When a trust-based local network opens an insecure connection, it ultimately causes someone to make use of this opportunity to enter the network in an unauthorized way.

2. Broadcast Networks

The hardware devices such as hubs and routers are dependent on the broadcast or non-switched principles. According to this principle once the data is transmitted to a recipient over a network, the connecting device i.e., a hub or a router broadcasts the data packets till it is received by the receiver. It causes a vulnerable effect on the Address Resolution Protocol (ARP) and Media Access Control (MAC) addressing.

3. Centralized Servers

The use of centralized computing is another threat to network security. This can be reduced by integrating all the services into a single server rather than distributing on multiple server configurations. This reduces the overall cost and eases the task of network management. But the problem with this approach is that it leads to network failure. It occurs when some malfunctioning occurs in the centralized server. In such situations, a central server acts as an entry point for the unauthorized users to enter and disrupt its functioning.

4. No Firewall

The most common error, often made by the administrators and home-users is their assumption about the network security. Hence they ignore the implementation of a firewall or network packet filtering service. The firewall installation in a stand-alone or a gateway is important for segmenting internal and external network. It simplifies the task of finding the network's external IP address for the crackers. Hence, an intruder enters into the network and acts as a proxy. This problem can be prevented by employing firewalls that perform the task of packet filtering, port forwarding and network address translation. Improper firewall implementation makes the network completely vulnerable.

Q20. Explain in detail about security services.

Answer :

Security Services

A security service is a service that enhances the security of a data processing system and the information flow within an organization. They are meant to tackle security attacks by employing one or more security mechanisms.

Security services available are as follows,

1. Confidentiality
2. Authentication
3. Non-repudiation
4. Integrity
5. Availability
6. Access control.

1. Confidentiality

Confidentiality refers to the process of protecting the data being transmitted from all types of passive-attacks. The data which is transmitted between the two systems for some specific period of time can be protected using this service. However, confidentiality can also be applied in a narrower form to protect a single message or some fields within the message. But this approach is more complex and expensive to implement. Another feature of confidentiality is protecting traffic flow, because of which an intruder can't monitor the source and destination, frequency, length and any other traffic characteristics.

2. Authentication

Authentication is a procedure which gives protection to the data against active attacks like falsification of data and transactions. It is a process that helps in verifying whether the received messages are authentic or not. It ensures that the content of the message are not altered and the given source is authentic. Message Authentication can be done either by using conventional encryption or without encryption.

3. Nonrepudiation

It is a service that provides protection against the denial by any of the entities involved in communication. Once a message is sent, the receiver can assure that the message was sent by an intended sender. Upon reception, the sender can assure that the message is received by the correct receiver. Digital signature mechanism is used so as to ensure non-repudiation in the message being transmitted.

4. Integrity

Integrity refers to correctness of data. It is applied to a single message within a stream or to an entire stream. It can also be applied to some specific fields within a message. Two types of integrity services are available,

- (i) Connection-oriented integrity service
- (ii) Connectionless integrity service.

(i) Connection-oriented Integrity Service

A connection-oriented integrity service is concerned with the message streams. It ensures that the messages are received in the order in which they are sent with no alterations, insertions, deletions, duplications, re-ordering or replays. It also deals with the destruction of data.

(ii) Connectionless Integrity Service

A connectionless integrity service tackles only the individual messages irrespective of any context thereby providing protection against the message alterations only.

5. Availability

The availability can be significantly affected by a variety of attacks which are susceptible to authentication, encryption, etc., whereas some attacks require physical action for preventing and recovering from the loss of availability.

6. Access Control

An access control refers to the ability for restricting and controlling the access to the host systems and applications through various communication links. For achieving this access control, each entity wishing to get control must first identify and authenticate itself in order to obtain the access rights according to the requirements.

2.3 TCP/IP – HTTP – SECURED HTTP – SMTP – SSL

Q21. Explain briefly about TCP/IP model.

Answer :

Model Paper-I, Q10(b)

TCP/IP Reference Model

The TCP/IP reference model was developed prior to the OSI model. The major design goals of this model were,

- (i) To connect multiple networks together so that they appear as a single network.
- (ii) To survive after partial subnet hardware failures.
- (iii) To provide a flexible architecture.

Unlike OSI reference model, TCP/IP reference model has only four layers. They are,

1. Host-to-network layer
2. Internet layer
3. Transport layer
4. Application layer.

Application layer
Transport layer
Internet layer
Host-to-network layer

Figure (1): TCP/IP Reference Model

1. Host-to-Network Layer

Host-to-network layer in TCP/IP reference model is equivalent to the combination of physical and data link layer in OSI model. The TCP/IP reference model does not describe the functionality of this layer. However it specifies that a host must connect to a network using some protocol to send IP packets over it. The model does not define any specific protocol to be used. It varies from host to host and network to network.

2. Internet Layer

The functionality of this layer is very similar to the network layer in OSI model. The responsibility of this layer is to send IP packets from a source in one network independently to the destination potentially in a different network. The packets are routed independently each taking a different path between source and destination. So they may arrive at the receiver in a different order. The Internet layer defines the format of these packets and a connectionless protocol called Internet protocol.

3. Transport Layer

The transport layer allows peer entities on the source and destination hosts to exchange data with each other. The layer defines two end-to-end protocols namely TCP (Transmission Control Protocol) and UDP (User Datagram Protocol).

TCP is a reliable connection-oriented protocol and allows error-free transmission. At the source end, it segments the incoming byte stream into discrete messages and passes them to the Internet layer. At the receiving end, it groups the received messages into the output stream. It also handles flow control so that the fast sender does not overwhelm the slow receiver.

UDP is an unreliable connectionless protocol. Unlike TCP, it does not handle message sequencing and flow control. It is widely used in applications where prompt delivery is more important than accurate data, for example, speech and video.

4. Application Layer

The application layer defines all the higher-level protocols including TELNET, File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP) and Domain Name Service (DNS).

Figure (2) shows the initial protocols and networks defined in the TCP/IP model.

TELNET	FTP	SMTP	DNS	Application layer
TCP		UDP		Transport layer
IP				Internet layer
ARPANET	SATNET	Packet radio	LAN	Host-to-network layer

Figure (2): Protocols and Networks in TCP/IP Reference Model

Q22. Explain in detail about following protocols.

- (a) FTP
- (b) HTTP
- (c) SMTP.

Answer :

Model Paper-II, Q10(a)

(a) FTP

FTP stands for File Transfer Protocol. It is a standard protocol used to exchange files over Internet. FTP runs on port 21 i.e., the client establishes a TCP connection on port number 21 of the server machine. It has been developed for the client/server architecture wherein the FTP server allows people located at remote locations over the Internet to login and download the required files located on the FTP sever.

Objectives of FTP

The following are the main objectives of FTP.

- (i) To transfer data in a reliable and efficient manner.
- (ii) To allow sharing of files and other computer resources.
- (iii) To permit implicit or indirect usage of remote computers.
- (iv) To protect the users from the variations in the file storage systems.

FTP operates in two modes, active or passive modes. In active mode, the client sends the IP address along with the port number on which the client listen, to the server machine which then establishes the TCP connection. In passive mode, the client can't accept the incoming TCP connection as it is behind the firewall. Here, the IP address and port number are received in response to the PASV command sent by the client to the server machine.

Drawback

FTP is not a secure protocol. It is susceptible to spoof attacks, brute force attacks, packet sniffing, etc.

(b) HTTP

HTTP is a stateless protocol that is used for delivering the web pages over the Internet. It defines how clients and server communicate. Moreover, it even provides the structures of the communication. It generally follows the request-response paradigm wherein the client sends a request and the server acknowledges with a response.

Stages

HTTP transaction consists of the following stages,

- ❖ Connection: The client establishes a connection with the web server.
- ❖ Request: The client sends a request message to the web server.
- ❖ Response: The web server sends a response (for example, an HTML document) to the client.
- ❖ Close: The connection is closed by the web server.



Http Request

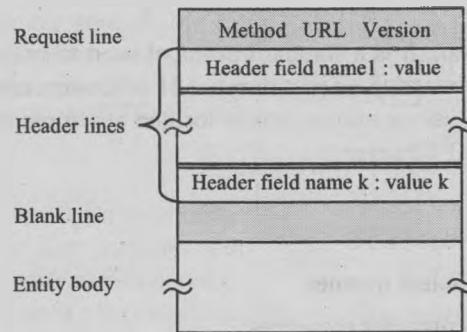


Figure: Request Message Format

Example

GET/servlet/index.jsp HTTP/1.1

Host : www.sia.com

Connection : close

User-agent : Mozilla/5.0

Accept-language : en-us

The first line of HTTP request message is called the request line and the subsequent lines are called header lines till a blank line. The request line has three fields separated by a space.

1. The method field also called request type indicates the action to be performed (GET, POST, DELETE, PUT).
2. The URL field indicates the page to be accessed.
3. The HTTP version field (HTTP/1.1).

The majority of HTTP request messages use the GET method. When a URL is requested in a web browser, the GET method is used. A GET request does not have a body (i.e., the body is empty). When HTML form is sent, either GET or POST can be used. When GET request parameters are encoded in the URL with a POST request, they are transmitted in the body. HTML editors and upload tools use PUT requests to upload resources to the web server and DELETE requests to delete resources.

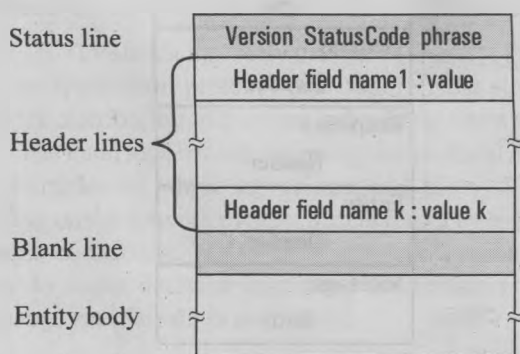
The main HTTP request types (or methods) are,

1. GET – Retrieves the resource the user has requested.
2. POST – Transfers data to the specified resource. Usually the data sent comes from HTML form that the user had filled in.
3. HEAD – Similar to GET, but forces the server to return only HTTP header instead of response data.
4. PUT – Uploads the resource to the server.
5. DELETE – Deletes the resource from the server.
6. OPTIONS – Requests the server configuration options (for example the request methods supported by server).

Some of the header field names are, Host, Connection, User-agent, Accept, Accept-charset, Accept-encoding, Accept-language etc.

In the above example, the header line Host:www.sia.com specifies the host on which the object resides. By including the Connection:close header line, the browser is telling the server that it should close the connection after sending the requested resource. The User-agent header line specifies the browser type that is making the request to the server. Finally the accept-language header indicates the user preferred language. The header is separated from the body by a blank line.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

HTTP Response**Figure: Response Message Format****Example**

Status line	HTTP/1.1 200 OK
	Connection : Close
	Server : Apache Tomcat/
	5.5 (HTTP/1.1 connector)
Header line	Content-type : text/html
	Content-length : 625
	Date : Sat, 02 May 2007
	09:50:03 GMT
	Last-modified : Fri, 01 May
	2007 09:27:02 GMT
body	{data for the client}

The first line of HTTP response message is called status line, /* Blank line does not store anything, hence it is blank or empty*/ the subsequent lines till the blank line are called header lines. The entity body contains the requested object itself. The status line has three fields separated by space.

1. The protocol version field (HTTP/1.1).
2. The status code which is a 3-digit integer result code indicates success or failure (200).
3. The phrase is intended to give a short textual description of the status code, hence it is intended for the human (OK).

The first digit of the status code defines the class of response. The last two digits do not have any categorization role. There are 5 values for the first digit. They are,

- 1XX : Gives information message. For example, request received, continuing process.
- 2XX : Gives success message. For example, the action was successfully received, understood and accepted.
- 3XX : Indicates that redirection should occur.
- 4XX : Indicates client error. For example, the request contains bad syntax or cannot be fulfilled.
- 5XX : Indicates server error. For example, the server failed to fulfill an apparently valid request.

The server uses the Connection:close header line to tell the client that it is going to close the TCP connection after sending the message. The Date header line indicates the time and date when the HTTP response was created and sent by the server. The Server header line indicates that the message was generated by Apache Tomcat server. The Last-modified header line indicates the time and date when the resource was created or last modified. The Content-length header line indicates the number of bytes in the object being sent. The Content-type header line indicates that the object in the entity body is HTML text.

(c) SMTP

SMTP is a simple ASCII protocol. After establishing the TCP connection to port 25, the sending machine, operating as the client, waits for the receiving machine, operating as the server, to respond.

The server starts by sending a line of text giving its identity and telling whether or not it is prepared to receive mail. If it is not, the client releases the connection and try again later. If the server is willing to accept e-mail, the client announces from whom the e-mail is coming and to whom it is going. If such a recipient exists at the destination, the server gives the client the go-ahead message. Then the client sends the message and the server acknowledges it. Checksums are generally not needed because TCP provides a reliable byte-stream.

When all the e-mails have been exchanged in both directions, the connection is released. The exchange of mail using TCP/IP is performed by a Message Transfer Agent (MTA). Users normally do not deal with MTA. The system administrator is responsible to set-up the local MTA.

The SMTP protocol describes how two MTAs communicate with each other using a single TCP connection. The SMTP standard is one of the most widely used upper layer protocols in the Internet Protocol Stack. As its name implies, it is a protocol that defines how to transmit messages (mail) between two users.

SMTP uses the concept of spooling. The idea of spooling is to allow mail to be sent from a local application to the SMTP application, which stores the mail in some device or memory. Once the mail has arrived at the spool, it will be queued.

A server checks to see if any messages are available and then attempts to deliver them. If the user is not available for delivery, the server may try later. Eventually, if the mail cannot be delivered, it will be discarded or perhaps returned to the sender. This is known as an end-to-end delivery system, because the server is attempting to contact the destination to deliver and it will keep the mail in the spool for a period of time until it has been delivered.

Q23. Describe in detail about S-HTTP.

Answer :

Model Paper-II, Q10(b)(i)

S-HTTP

S-HTTP or Secure Hyper Text Transfer Protocol is an extension of HTTP protocol. It is a message oriented communication protocol that was designed to allow secure exchange of messages on internet. This protocol is used in conjunction with HTTP message model so that it can be integrated with applications of HTTP.

This protocol was developed in order to encrypt HTTP based messages present on web and transmit them between client and server. Hence to perform this encryption, various cryptographic algorithms like RSA, DES as well as digital signature and authorization are used so as to protect the data from unauthorized or illegitimate access.

S-HTTP protocol also defines a set of security mechanisms to HTTP client and server so as to provide wide range of security services to end user. It also defines symmetric capabilities on web client and server in order to generate equal response and request to all the required user. The request response format of S-HTTP which is similar to HTTP is shown in figure below.

Request line
General Header
Request Header
Entity Header
Message Body

Figure (1): Request Format

Status line
General Header
Response Header
Entity Header
Message Body

Figure (2): Response Format

Advantages of S-HTTP

1. It allows secure end to end transactions.
2. It supports symmetric key encryption modes.
3. It provides compatibility with HTTP.
4. It supports various cryptographic algorithms like RSA and DES in order to protect the data from unauthorized access.

Q24. Explain in detail about SSL.

Answer :

Model Paper-II, Q10(b)(ii)

Secure Socket Layer (SSL)

Secure socket layer is a protocol developed by Netscape communication to ensure the security of data transmission over the internet. SSL has been universally accepted as a provider of secure data communication between web browser (client) and web server through HTTP, LDAP or POP3 application layers. SSL runs on top of TCP and FTP layers to enable services for the application layer. These services help higher layer protocols such as HTTP, LDAP or IMAP to use SSL functionality. The purpose of SSL design is to use TCP as a communication layer to provide a reliable end-to-end secure and authenticated connection between two points over a network.

Advantages of SSL

1. **Integrity**
SSL ensures the correctness of data being passed between the client and server on a network.
2. **Confidentiality**
It ensures that the SSL response being transferred between the client and server on a network is secured by encryption in order to avoid deciphering by a third party.
3. **Authentication**
The server provides a set of credentials like username/ password to the browser in the form of a server certificate. Thus, this certificate is used to verify for the authenticity of the server.

Q25. Briefly discuss about NNTP.**Answer :**

NNTP stands for "Network News Transfer Protocol". It is an application protocol that uses reliable stream like TCP for distributing, retrieving and posting news article on web. The main idea behind designing this protocol is, to store news articles on single server host and allow subscribers residing on the network of other host to read it by establishing reliable connection. NNTP uses interactive mechanism in order to make decision regarding the transmission. The exchange mechanism is as follows,

1. A host that requires/sends updated news, communicates with its neighbor with the hello of NNTP.
2. The client host uses newness command and enquires about the new articles that have been arrived in the newgroup.
3. The server then sends list of new articles.
4. The client host requests transmission of those articles from the server.
5. The server then checks for duplicate articles and sends only articles that are required to the client.

Since, NNTP uses TCP as its communication channel it is considered as secured delivery system. Moreover this protocol uses TCP port 119 in order to connect news server with the client. The advantage of using TCP port 119 is that whenever a news article gets created, it will immediately be transmitted to the news channel and updated. The process of updation continues until all the clients attached to the network gets the updated news. A client can obtain updated news message using two methods.

(a) Push Method

It is an active method that allows a server to send a new message to all the clients present on the network.

(b) Pull Method

It is a passive method, that enables a server to send only those messages that are specified by client.

Q26. State the security protocols. Discuss.

March/April-15, Q10(a)

OR**Explain security protocols.****Answer :** (March/April-12, Q10(b) | March/April-17, Q10(b))

The different security protocols include,

(i) FTP

For answer refer Unit-II, Page No. 55, Q.No. 22(a).

(ii) HTTP

For answer refer Unit-II, Page No. 55, Q.No. 22(b).

(iii) SMTP

For answer refer Unit-II, Page No. 57, Q.No. 22(c).

(iv) NNTP

For answer refer Unit-II, Page No. 59, Q.No. 25.

Q27. Explain about the types of classes of IP addresses.**Answer :**

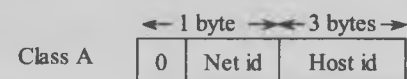
Oct./Nov.-12, Q10(b)

Network/IP Addressing

Network address helps in identifying the network across the globe. It contains network id and host id. The host id is a unique address given to each host on the network. IP protocol uses 32-bit address (4-bytes) for the network addressing. Depending on applications, the network addresses are classified into 5 types. Class A, Class B, Class C, Class D and Class E.

Class A Network

In class A, 1 byte is used for network address and 3 bytes are used for host address. The first bit is always '0' for class A network.



The range of class A addresses is,

0	00000000	00000000	00000000	00000000
---	----------	----------	----------	----------

Since all zero's are for reserved address.

∴ Starting address of class A is,

0	00000001	00000000	00000000	00000000
	1	0	0	0

Maximum class A address is,

0	11111111	11111111	11111111	11111111
	127	255	255	255

All the 8-bits are 1, therefore the decimal value is 255. To determine any byte value, subtract that zero position value from 255.

∴ For class A, the '0' bit is in 2^7 position

∴ $2^7 = 128 \Rightarrow 255 - 128 = 127$

$\Rightarrow 127.255.255.255$

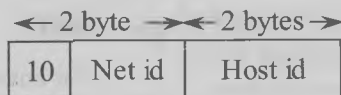
But 127 network address is reserved for loop back test.

∴ Class A maximum network address is 126.255.255.255

∴ Range of class A network addresses are 1.0.0.0.....126.255.255.255

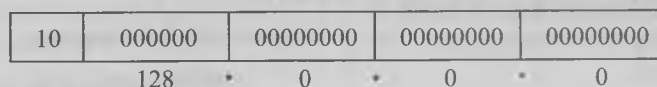
Class B Network Address

In this addressing method, 2 bytes are reserved for a network address and 2 bytes are reserved for a host address.

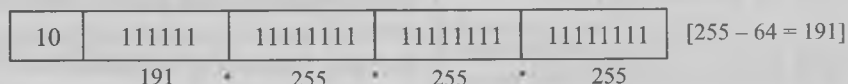


The first two bits for class B are '10'.

Range of class B network address is,



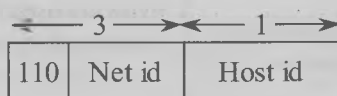
The maximum class B network address is,



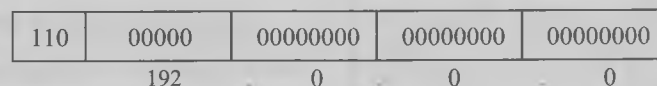
Range of class B is 128.0.0.0.....191.255.255.255.

Class C Network Address

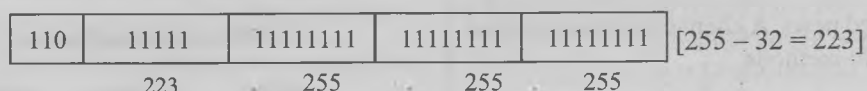
In this network address, 3 bytes are reserved for net id and 1 byte for host id. The first 3 bits are reserved as 110.



Minimum class C address is,



Maximum class C address is,

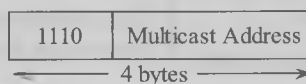


Range of class C address is 192.0.0.0..... 223.255.255.255

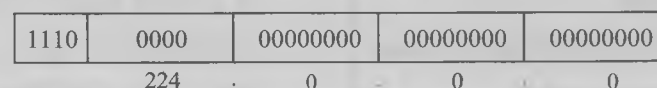
Class D Network Address

It is used for multicasting and indicating the multicast group address. It doesn't contain any net id or host id. It contains only a group id which specifies the group to which the packet belongs.

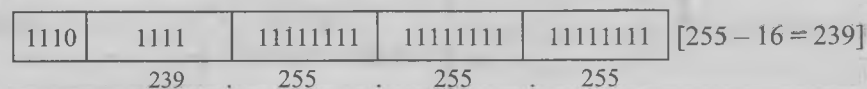
The first 4 bits are reserved as 1110.



Minimum class D addresses are,



Maximum class D addresses are,



Range of class D addresses are 224.0.0.0..... 239.255.255.255

Class E Network Address

Class E address is reserved for future use.

The first byte bits are reserved as 11110.

Range of class E network address is 240.0.0.0.... 247.0.0.0

[255 – 8 = 247].

2.4 DATA ENCRYPTION**2.4.1 Cryptography – Encryption – Decryption – Public Key – Private Key**

Q28. Define the following terms,

- (a) **Cryptography**
- (b) **Cryptanalysis**
- (c) **Cryptology**
- (d) **Role of public key and private key.**

Answer :

(a) Cryptography

Cryptography is a method of transforming the plaintext into an unreadable form. This unreadable form can only be read by the authorized users. It is derived from 'kryptos' which is a Greek word whose meaning is hidden (or) secret. It employs techniques like encryption and decryption. In encryption, the plaintext is transformed into ciphertext (or) encrypted text. Decryption is the reverse process of encryption where the encrypted text can be transformed back to plaintext. The transformations are performed by using a cryptographic key. Thus cryptography is a process of providing information security thereby protecting it from unauthorized access.

Cryptography provides security to the information as well as to other useful applications for improving authentication methods like message digests, digital signatures, non-repudiation and encrypted network communications. If it is not implemented properly then, it would lead to many security problems. The length and strength of an encryption key are also important. This is because the strength of an encryption algorithm is dependent on the key.

(b) Cryptanalysis

Cryptanalysis is a type of attack that makes certain attempts possible for obtaining the plaintext and the key used. If it is able to determine the key, the effect is disastrous and all the encrypted messages, which are already transmitted and those that are ready to be transmitted in future are damaged.

(c) Cryptology

Cryptology is the study of both cryptography and cryptanalysis. Cryptology is sometimes mistaken as cryptography or cryptanalysis. But cryptology in essence encompasses both cryptography and cryptanalysis. Cryptanalysis is the process of recovering the original text from encrypted text without the knowledge of the key. Cryptanalysis is the reverse of cryptography. The attempts made by a cryptanalyst to unhide the plaintext depend upon the level of information available to him. The worst case will be when only ciphertext is available for cryptanalysis. In such scenario, brute force attacks are used wherein every single probable key is applied. The analyst may use one or more samples of ciphertext repeatedly and unhide the plaintext. He can also replace the ciphertext with plaintext or use a random key that may help him to reveal the plaintext.

(d) Role of Public Key and Private Key

The pair of public and private keys are used for encrypting and decrypting the message respectively. Each public-key is broadcasted and the corresponding private-key is kept secret. The text, data or message which is encrypted with your public-key can be decrypted only with your private-key. The figure below shows the roles of public and private keys.

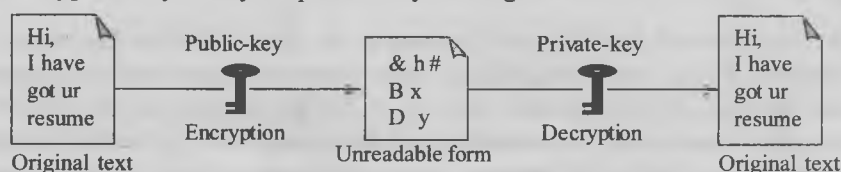


Figure: Role of Public-key and Private-key

The user generates a pair of keys i.e., a public-key and a private-key. The public-key is made public by keeping it in a public register or a file which can be accessed by all the users. The corresponding key i.e., the private-key is kept secret, therefore it is known only to its owner. The user maintains the public keys of other users to exchange messages.

When user 'A' wishes to send a message to user 'B' he needs to encrypt the message using B's public key which is known to him. When B receives the encrypted message, he decrypts it using his private-key. No other user except B can decrypt the message because only B knows its private-key. The communication is secure as long as the private-key is protected from attacker. At any time, a user can change his private-key and broadcast its corresponding public-key.

Q29. Explain encryption techniques.

March/April-14, Q10(b)

OR

Explain two security techniques of encryption.

Oct./Nov.-13, Q10(b)

OR

Briefly explain the encryption techniques.

(Oct./Nov.-11, Q10(a) | Model Paper-III, Q10(a))

OR

Explain about encryption techniques.

Answer :

Oct./Nov.-16, Q10(a)

Encryption

Encryption is a method of converting plain text into cipher text. Using this method, security of data can be achieved effectively. An encrypted file can be decrypted if the user has the capability of accessing a secret key or password. In this context, unencrypted data is referred to as plain text whereas encrypted data is referred to as cipher text.

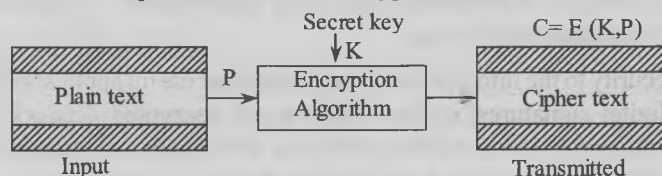


Figure: Encryption Process

Types of Encryption

The following are the two major types of encryption,

1. Symmetric encryption
2. Asymmetric encryption.

1. Symmetric Encryption

Symmetric encryption is also known as private key or secret key encryption. In this, only one secret key is required for encryption and decryption of the message. This key is shared by both sender and recipient. It is a simple process when compared to the asymmetric encryption.

2. Asymmetric Encryption

Asymmetric encryption is also known as public key encryption. In this, two keys are required for encryption and decryption of a message i.e., a public key and a private key. Private key must be kept secret for security purposes while the other key must be shared by both sender and recipient. It is a complex and time consuming process when compared to symmetric encryption.

Public Key Cryptography

Public key cryptography was invented by Diffie and Hellman in the year 1976. For this reason, it is sometimes known as Diffie-Hellman encryption. Public key cryptography is also known as asymmetric cryptography. It is a form of cryptography in which a user has a pair of cryptographic keys i.e., public key and private key. The private-key is kept secret, whereas the public key is distributed widely. A message or text data which is encrypted with the public-key can be decrypted only with the corresponding private key. For instance, when Johny wants to send a secure message to Sunny, he uses Sunny's public key to encrypt the message. Sunny then uses his private key to decrypt it.

Elements of Public Key

A public key cryptography/encryption consists of the following five elements. They are,

- (i) Textdata/Message
- (ii) Encryption algorithm
- (iii) Public key and private key
- (iv) Cipher Text/Unreadable text
- (v) Decryption algorithm.

(i) Textdata/Message

This can be any input data, such as textdata or message.

For example, Johnny is a user of computer and wants to send his message, $M = \text{"Hello"}$ securely to his friend Sunny, who is also a user of computer.

(ii) Encryption Algorithm

To encrypt the message, an encryption algorithm performs certain transformations on it.

There are various encryption algorithms but the *RSA* public key encryption algorithm is mostly used to perform certain transformations or calculations on the textdata or message.

For example, Johnny uses the public key of Sunny and encrypted his message by using *RSA* algorithm.

(iii) Public Key and Private Key

These pair of keys are used to encrypt and decrypt the message respectively. The private key is always kept secret, whereas public key is widely distributed.

For example, Johnny uses a public key of Sunny to encrypt his message, whereas Sunny uses his private key to decrypt the Johnny's message as shown in the figure.

(iv) Cipher Text/Unreadable Text

Once the encryption is done on the textdata, it is in unreadable format means it cannot be read by human beings.

For example, Johnny's message has converted into unreadable form so that nobody except Sunny can read his message, as he has a corresponding private key for that message.

(v) Decryption Algorithm

A decryption algorithm takes the unreadable text and its corresponding key to convert this text into original text. Hence, we it can be said that the decryption algorithm is the reverse of encryption algorithm.

For example, decryption algorithm takes the unreadable text of Johnny and also takes the Sunny's private key to decrypt that message and convert the unreadable text into readable form i.e., original text sent by Johnny as shown in the below figure.

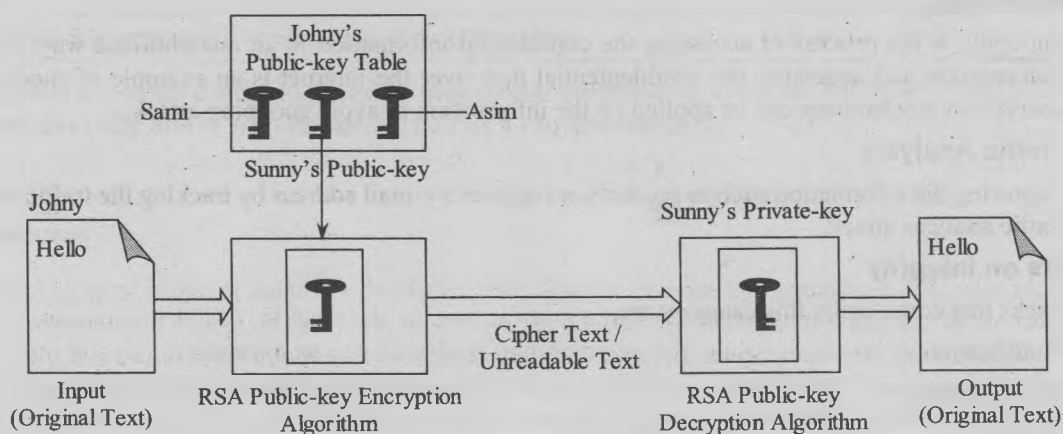


Figure: Public Key Encryption

Q30. Define cryptography and classify different cryptographic attacks.

Answer :

Model Paper-III, Q10(b)

Cryptography

For answer refer Unit-II, Page No. 61, Q.No. 29(a).

Classification of Cryptographic Attacks

Cryptographic attacks can be classified into two types. They are,

1. Cryptanalytic attacks
2. Non-cryptanalytic attacks.

1. Cryptanalytic Attack

This attack can be referred as a group of statistical and algebraic techniques. It exploits the mathematical features to capture the secret key. They focus on the distinguishes that exist in the output distribution of algorithms. The main role of this attack is to determine the cipher properties which are not found in random function. This scenario is generally referred to as "distinguishes". Typically all attacks are called as distinguishes. Now the attacker estimates or guesses the key and searches the distinguishing property. An attack can be considered as correct if the guessed key matches any of the distinguishes. If not, it is considered as incorrect and the hacking is continued.

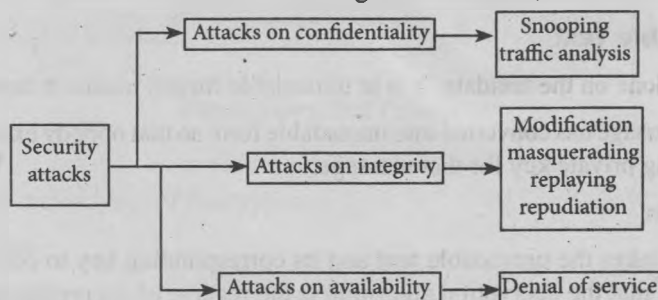
To minimize the complexity of guessing, divide and conquer method is used. This method is used in the brute force search method to generate efficient results.

2. Non-cryptographic Attacks

Non-cryptographic attacks focus on the three major goals of security. These goals include,

- (i) Confidentiality
- (ii) Integrity
- (iii) Availability.

Different attacks can be calssified based on these three goals as follows,



(i) Attacks on Confidentiality

The attacks that come under this category are snooping and traffic analysis.

(a) Snooping

Snooping is the process of accessing the confidential information in an unauthorized way. Interrupting the transmission and accessing the confidential data over the internet is an example of snooping. Different encryption mechanisms can be applied on the information to avoid snooping attack.

(b) Traffic Analysis

Capturing the information such as sender's or receiver's e-mail address by tracking the traffic is referred to as traffic analysis attack.

(ii) Attacks on Integrity

The attacks that come under this category are,

- (a) Modification
- (b) Masquerading
- (c) Replayng
- (d) Repudiation.

(a) Modification

Modification refers to the alteration of a specific portion of authorized information. It also refers to the deletion or reordering of information to generate an unauthorized effect. An example for this type of attack is changing the account number of banking transaction.

(b) Masquerading

Masquerading refers to the attack in which the attacker pretend to be some other person (authorized). Consider an example where an attacker obtains customer ID and password of an online banking user. The obtained credentials can be used by the attacker to pretend like the authorized user. Such an attack is referred to as masquerading.

(c) Replaying

Replaying refers to the process of capturing a particular information and retransmitting or resending it later for causing an unauthorized effect. An example of such an attack is replaying an already completed transaction.

(d) Repudiation

Repudiation refers to the attack in which either sender (or) receiver denies the action it performed. For example, receiver already received the message but denies.

(iii) Attacks on Availability

The attack that can be made on availability is Denial of Service (DOS).

Denial of Service

This type of attack interrupts the normal usage of various facilities provided by system (or) network. It attacks a specific target so that the messages destined to it can be destroyed. In some other situations, the attacker sends messages continuously until the system (or) network becomes unavailable. Also, the attacker can crash down the server by sending bogus messages.

All these attacks can also be categorized into passive and active attacks. Attacks on confidentiality i.e., snooping and traffic analysis falls under passive attacks. All the other attacks belong to the category of active attacks.

(i) Passive Attacks

It refers to the process of monitoring or wiretapping of ongoing transmission. Here, the goal of opponent is to capture the transmitting information but not to alter (or) harm the system. These types of attacks can be easily avoided by using encryption techniques.

(ii) Active Attacks

In this types of attacks, attacker can alter the information (or) include some fraudulent information into the network. These attacks harm the system and can easily be detected. However, they are difficult to prevent.

2.4.2 Digital Signatures – Digital Certificates

Q31. Write short notes on digital signatures and digital certificates. Discuss the role of digital signatures in network security along with its properties and requirements.

Answer :

Digital Signatures

A digital signature is one of the methods of encryption used to provide authentication. The main idea of the digital signature is to protect the message or data from modifications. Digital signature is very popular in the world of network security. Basically, it is a kind of asymmetric cryptography used to support the security properties of a handwritten signature on paper. The digital signature scheme provides two algorithms where one algorithm is for signing, which requires the user's secret or private-key, and the other algorithm is for verifying signatures which requires the user's public-key. The result of the signature process is called the "digital signature".

Digital Certificates

Digital certificates are the certificates that are used to verify one's identity when he/she is doing any business or transactions on the Internet. These certificates are issued by a trusted third party called as Certificate Authority or Certification Authority (CA). A digital certificate contains the user's name, a serial number, a copy of the certificate holder's public key (which is useful for message encryption and digital signature generation), expiration data and also the digital signatures of the CA (so as to verify the identity of CA).

Role of Digital Signatures in Network Security

Digital signatures are used to provide authentication of any electronic information. For instance, assume that, there are two users of the internet say, *A* and *B*. User *A* wants to send some confidential message to user *B* assuring that the message is unmodified and is sent by him only.

The sender *A* writes his message into an e-mail and applies a special function known as hash function on the message. This creates the checksum i.e., a value that checks the authenticity during data transmission of the information. Then, *A* uses its private-key that he has previously obtained from public-private key authority to encrypt the checksum. The encrypted message becomes the *A*'s digital signature of the message. The checksum and the message is then sent to the receiver.

At the other end, the receiver *B* receives the message and the checksum. In order to make sure that, the message is complete and unmodified from sender *A*, the receiver *B* applies the same hash function on the received message to produce checksum. It also uses *A*'s public-key to decrypt the checksum it received with message. The two checksums are then compared. If they are matched then the received message is complete and signature is valid. Otherwise, the message is modified and signature is considered invalid.

The below figure shows the role or operation of a digital signature,

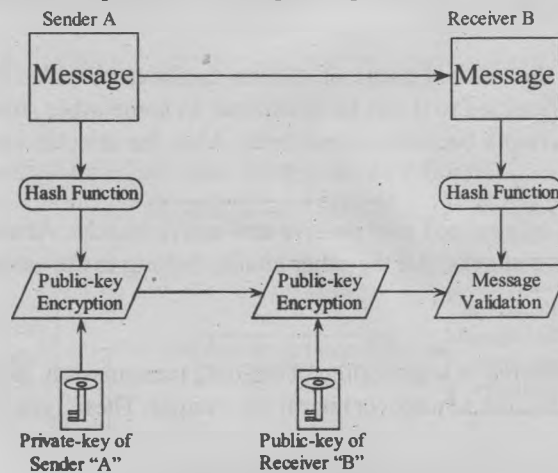


Figure: Role of Digital Signature

Properties of Digital Signature

1. It must authenticate the contents when the signature is being done.
2. It must be responsible for verifying the author as well as date and time of the signature.
3. It must be verifiable by third party.

Requirements for Digital Signature

1. A digital signature must be in the form of bit pattern that is dependent on the message being signed.
2. The process of producing the digital signature must be easy.
3. A copy of digital signature must always be preserved.
4. A digital signature must be both easily recognizable and verifiable.
5. It must include some unique information to prevent forgery and denial by the sender.
6. It must be highly impractical for hacker to forge a digital signature by any means which may include creation of a new message for the already existing digital signature. It may also include an attempt to replace the original digital signature with duplicate signature for a given message.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. E-commerce framework has _____ layers. []
(a) Four (b) Five
(c) Six (d) Seven
2. The function of _____ layer is to provide interface for e-commerce applications. []
(a) Interface and support
(b) Brokerage services and data management
(c) Secure messaging and structured document interchange services
(d) Middle ware services
3. OpenDoc contains _____ as its basic building blocks. []
(a) OLE
(b) Document parts
(c) SGML
(d) HTML
4. _____ in e-commerce refers to the process of gathering information about usage of privileges accessing of specific resources. []
(a) Confidentiality
(b) Authorization
(c) Authentication
(d) Auditing
5. _____ is the process of ensuring a person or a program that they have right to access particular resources. []
(a) Confidentiality
(b) Authentication
(c) Authorization
(d) Availability
6. _____ refers to the plans or arrangements made in the network infrastructure along with the various techniques used by network administrator. []
(a) Network security (b) Computer security
(c) Information security (d) None of the above

7. _____ refers to the ability of restricting and controlling the access to the host systems and applications through various communication links. []
- (a) Availability (b) Access control
(c) Integrity (d) Confidentiality
8. Number of layers in TCP/IP reference model is _____. []
- (a) Four (b) Five
(c) Six (d) Seven
9. _____ is a simple ASCII protocol. []
- (a) FTP (b) HTTP
(c) SMTP (d) None of the above
10. _____ is an application protocol that uses reliable stream like TCP for distributing, retrieving and posting news articles on web. []
- (a) S-HTTP (b) NTTP
(c) Network Addressing (d) None of the above

II. Fill in the Blanks

1. _____ is method of converting plain text into cipher text.
2. _____ is an information handling layer that governs and manages huge amounts of data on the networks.
3. SGML stands for _____.
4. HTML stands for _____.
5. _____ is a technology that integrates several applications and multimedia data types within an active document framework.
6. _____ is considered as the backbone of e-commerce.
7. _____ refers to the process of protecting the data being transmitted from all types of passive-attacks.
8. _____ refers to the branch of computer science that describes the application of 'secure' behaviour on the operation of computers.
9. _____ violates the security that arises upon the occurrence of an event, action or a circumstance.
10. _____ is a service that enhances the security of a data processing system and the information flow within an organization.

KEY**I. Multiple Choice**

1. (c)
2. (a)
3. (b)
4. (d)
5. (c)
6. (a)
7. (b)
8. (a)
9. (c)
10. (b)

II. Fill in the Blanks

1. Encryption
2. Brokerage Services and Data Management Layer
3. Standard Generalized Markup Language
4. HyperText Markup Language
5. OLE
6. Information Technology
7. Confidentiality
8. Computer Security
9. Threat
10. Security Service

III. Very Short Questions and Answers**Q1. What is a firewall?****Answer :**

A firewall can be viewed as an information security program located at a network gateway server. It protects the confidential information present in the network against attacks or by other insecure networks.

Q2. Define security service.**Answer :**

A security service is a service that enhances the security of a data processing system and the information flow within an organization. They are meant to tackle security attacks by employing one or more security mechanisms.

Q3. Write a note on symmetric encryption.**Answer :**

Symmetric encryption is also known as private key or secret key encryption. In this, only one secret key is required for encryption and decryption of the message. This key shared is by both sender and recipient.

Q4. What is cryptanalysis?**Answer :**

Cryptanalysis is a type of attack that makes certain attempts possible for obtaining the plaintext and the key used. If it is able to determine the key, the effect is disastrous and all the encrypted messages, which are already transmitted and those that are ready to be transmitted in future are damaged.

Q5. What do you mean by snooping?**Answer :**

Snooping is the process of accessing the confidential information in an unauthorized way. Interrupting the transmission and accessing the confidential data over the internet is an example of snooping. Different encryption mechanisms can be applied on the information to avoid snooping attack.

UNIT 3

CONSUMER ORIENTED E-COMMERCE APPLICATIONS



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Applications of Consumer Oriented E-commerce.
- ❖ Mercantile Process Model from Consumer's perspective.
- ❖ Mercantile Process Model from Merchant's perspective.
- ❖ Definition of Electronic Payment System (EPS)
- ❖ Different types of Electronic Payment Systems.
- ❖ Risks and Advantages involved in Electronic Payments.

INTRODUCTION

Consumer Oriented E-commerce applications have been widely accepted around the world because of its easy and simple applications like electronic shopping, online stores etc. Online shopping is similar to general shopping. The only difference is that instead of going to a shop and selecting the item, the customer can sit at home and carry out his/her shopping online. However, the problem with this mode of shopping is that detailed information of the product is not provided. There are four types of Consumer Oriented applications that are widely used,

- ❖ Personal finance/home banking
- ❖ Home Shopping
- ❖ Home Entertainment
- ❖ Micro transactions of information.

Electronic Payment System refers to processing of transactions in a digitized environment i.e., it does not require human intervention. It is also referred as Electronic Funds Transfer (EFT). Basically, there are different types of electronic payment systems such as credit cards, smart cards etc. Despite of being advantageous, these sort of payment systems mostly suffer from security issues.

PART-A**SHORT QUESTIONS WITH SOLUTIONS****Q1. What is E-cash?**

Model Paper-III, Q3

OR**E-cash****Answer :**

(March/April-17, Q3 | Oct.-14, Q3 | March/April-14, Q4)

Electronic cash is a form of electronic payment system which provides high level of security and reduces the overhead of paper cash. Because of its adaptable and flexible nature, it opened a way for new markets and applications. In spite of that, there are several reasons due to which paper currency is still superior over e-cash.

- (i) Lack of belief or confidence in banking system.
- (ii) Inadequate clearing and agreement of non-cash transactions.
- (iii) Negative rate of real interest paid on all the bank deposits.

Due to its superior, dominant nature, business practises can be changed in order to improve the process of purchasing. In order to replace cash, e-cash should possess some features of paper cash.

Q2. Write about E-checks.

Model Paper-II, Q8

OR**E-checks****Answer :**

Oct./Nov.-12, Q3

Electronic check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper cash. The e-cash system is generally an electronic implementation of paper check system. These checks make use of digital signature for signing and endorsing and use digital certificates to authenticate the buyer, the buyer's financial institution and the buyer's account. Digital signature authentication is provided by using public key cryptography.

Online services provided by electronic checks allow,

- 1. The seller to verify if the buyer has sufficient funds in his/her account.
- 2. Improved security at each step of transaction processing.

Q3. What is a debit card?**OR****Debit Cards****Answer :**

March/April-15, Q3

A debit card is a card that is used instead of cash in shopping. Debit cards can be used for e-commerce transactions in the same way as a credit card. The only difference in the credit card is the way to pay later, where as a debit card is a way to pay then and there itself. Debit cards are also known as cash cards. When ever the buyer uses debit card for shopping, his account will be instantly debited (i.e., the amount is immediately deducted from his savings account). The debit cards can be used anywhere. It is mostly accepted by grocery stores, retail outlets, gasoline stations, restaurants etc.

Q4. Define EPS.

Model Paper-I, Q3

OR**EPS****Answer :**

March/April-13, Q3

Electronic Payment System (EPS) is a building block of E-commerce which refers to the online exchange of money. This exchange is carried out over different platforms such as E-cash, E-check, credit cards etc. The widespread adoption of these methods is due to the fact that it reduces cost and time of a transaction.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Electronic payment typically refers to paying the amount for purchased goods electronically. It is also referred as Electronic Funds Transfer (EFT). This sort of process involves, transferring of funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices etc.

Q5. Write a short note on home banking.

Model Paper-III, Q8

OR

Home Banking

Answer :

March/April-12, Q5

E-banking/online banking made the life of individuals and companies easy. Today customers are no more required to rush to banks for making deposits, withdrawals and payment of bills. All these can be done online; customers can withdraw money by using Automated Teller Machine (ATM). Both individual and companies can save their money and time through E-banking. E-banking is one among the very successful online businesses.

With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the username and password. Once log in is done successfully, the user is asked to enter the account number. After entering the account number, account balance will be displayed in the message box.

Q6. List out the risk involved in E-payments.

(Oct./Nov.-11, Q3 | Model Paper-I, Q8)

OR

Risks in E-payment

(March/April-12, Q3 | March-11, Q3)

OR

What are the risks of E-payment system?

Answer :

Oct./Nov.-16, Q4

The risks that are associated with electronic payment system are,

1. Risks associated with fraud or mistakes
2. Risks associated with privacy
3. Risks associated with credit cards which can be,
 - (a) With guarantee
 - (b) Without guarantee.

Q7. What are the payment systems?

Model Paper-II, Q3

OR

Types of Payment Systems

Answer :

March/April-14, Q8

Electronic payment systems can be categorized into three types,

1. Banking and Financial Payment

The banking and financial payment system is again classified into three types. They are,

- (i) Large scale payment-
- (ii) Small scale payment
- (iii) Home banking.

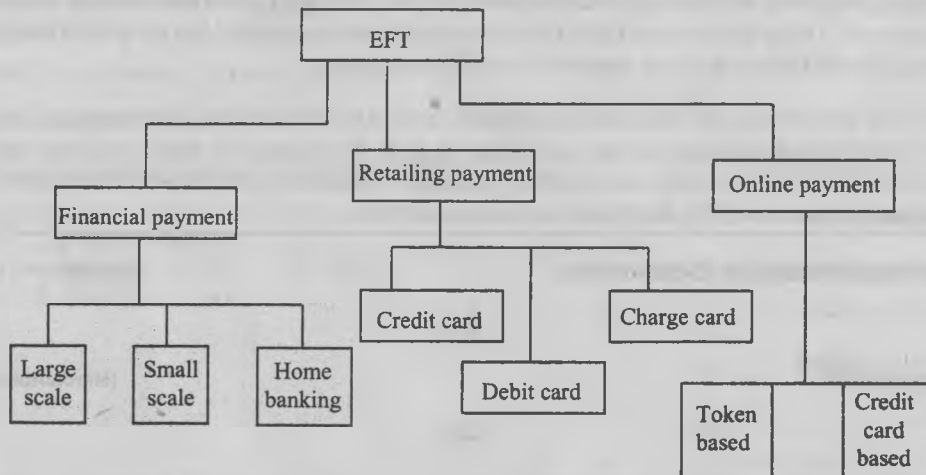
2. Retailing Payment

Retailing is classified into three types,

- (i) Credit payment
- (ii) Debit payment
- (iii) Charge card payment.

3. Online E-commerce Payment

- (i) Token based payment system
- (ii) Credit card based payment system.



Q8. Write about credit card.

OR

Credit Card

Answer :

(March/April-16, Q7 | Sep/Oct.-15, Q7)

Credit card is a card that is used instead of cash in shopping. It can be used for processing transaction. There are smart cards with which purchase of goods and services is done first, then the customer pays for it later.

Credit card based payments can be processed by using the following three methods,

1. Using plain unencrypted credit card features for payment
2. Using encrypted credit card features for payment
3. Using third-party authorization for credit card payment.

Q9. What are the advantages of E-cash?

OR

Advantages of E-cash

Answer :

March/April-16, Q3

The advantages of e-cash are as follows,

1. E-cash provides shopping convenience to the customers, hence they are free to choose from a variety of products available globally.

2. E-cash provides a high transaction security compared to other credit card transactions because of its blind signatures.
3. It enables the merchants to think beyond the local markets. The merchants can now attract global customers because they can send and receive money throughout the world with just a mouse click on their desktop.
4. Merchants can even restrict the E-cash on purchase of certain products. For example, a TV merchant can limit his E-cash such that the E-cash cannot be used to purchase any other item except television.

Q10. List the benefits of smart card.

OR

Benefits of Smart Cards

Answer :

Sep./Oct.-15, Q3

There are numerous benefits of using smart cards. Some of them are mentioned below.

1. Highly Secure

It uses encryption and authentication technology for ensuring security.

2. Safely Portable

It is lightweight and can be easily carried. Hence, a person can carry smart card instead of carrying money with him, and to access its stored amount, he just have to know the pin number.

3. Double as an ID Card

It provides complete identification, and therefore it can be used for identifying an individual. For example, in case of home-banking, it can be used as a secure token for authenticating the person over an internet between the systems of the person and the bank.

4. Prohibit Fraud

It can be used by government to ensure that the benefits and social welfare are received by the right person.

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****3.1 INTRODUCTION**

Q11. Discuss in detail about consumer-oriented E-commerce application and its role in E-commerce.

March/April-15, Q11(b)

OR

Explain about consumer-oriented E-commerce applications.

(Model Paper-II, Q11(b) | Oct.-14, Q11(b))

OR

Discuss customer-oriented E-commerce applications.

March/April-14, Q11(b)

Answer :

Consumer-Oriented Electronic Commerce Applications

There are mainly four types of consumer-oriented applications that are widely used,

1. Personal finance/home banking
2. Home shopping
3. Home entertainment
4. Micro transactions of information.

1. Personal Finance/Home Banking

This is the first consumer-oriented application in e-commerce. With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the username and password. Once log in is done successfully, the user is asked to enter the account number. After entering the account number, account balance will be displayed in the message box.

Services that are provided by home banking application can be classified into three types,

- (a) Basic services
- (b) Intermediate services
- (c) Advanced services.

(a) Basic Services

The basic services of home banking include,

- (i) Payment of bills
- (ii) Checking the account status
- (iii) ATM services for depositing and withdrawing cash.

(b) Intermediate Services

This is the second type of service of home banking application. Like basic services, intermediate services also provide services like payment of bills, transfer of money etc. Only difference here is that basic services are used by those customers who are not having enough knowledge about computers. In other words, customers have only basic knowledge of computers. Here, such customers use simple packages or software for accessing the basic services. Whereas, intermediate services are used by those customers who have more knowledge than the customers of basic services. Therefore, these customers require more sophisticated software for accessing the intermediate services.

One of the software used by intermediate service customers is called Quick and Dirty Personal Money Management (QDPMM). This software is used for payment of bills, money transfer etc. Moreover it allows the data to move from/to the bank in standard format. Initially, QDPMM sends a request to the bank for displaying the image of a cheque. Within few minutes, the image will be displayed on the screen.

Another type of software used by customers of intermediate services is called "check-free" software. Through this software, payment of cheques is done online. In order to download this software, high speed modem is required. Suppose to issue the cheque to someone, click on the software and then a picture of cheque will be displayed on the screen. Write all the details which are generally required to be filled in a cheque (like name of the person to whom the cheque is to be paid, amount to be paid to the person, on what date amount should be paid to the person). After writing all the details, press enter. The amount will be transmitted in either of the following two ways,

- (i) A mail of the cheque will be sent to the person, or
- (ii) The system on which "check-free" software is installed transfers the cheque information to a special type of board called Federal Reserve Board through the modem.

Federal Reserve Board in turn transfers the amount to the other person's bank account.

The diagrammatic representation of the cheque writing/clearing process is given below,

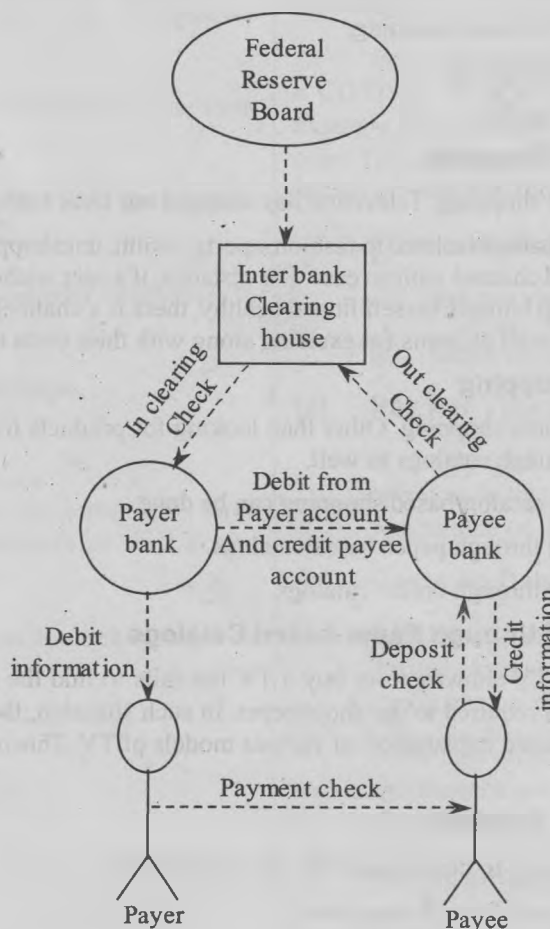


Figure: Check Clearing Process

(c) Advanced Services

This is the third type of service of home banking application. Due to many technological advancements, banks will not only provide banking transaction services, but also provide online shopping services to the customers. The most striking feature is that customers living anywhere in the world can access these services.

The diagrammatic representation of these advanced services is shown in the following figure.

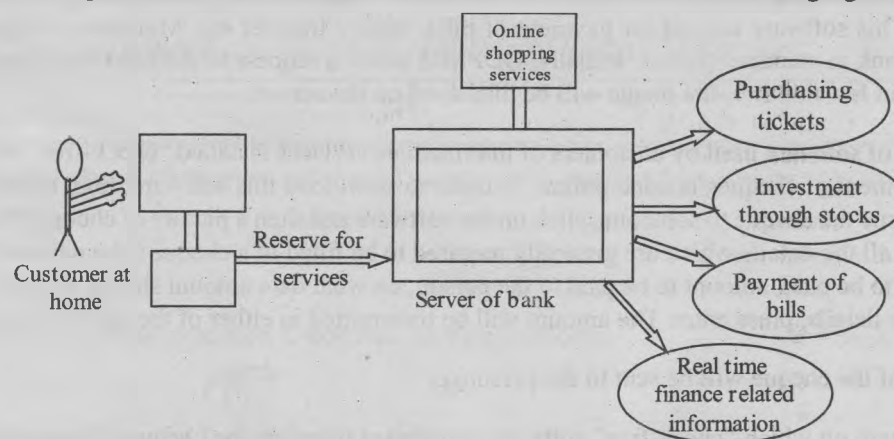


Figure: Advanced Services

2. Home Shopping

This is the second consumer-oriented application in E-commerce. With the help of this application, a user can perform shopping on-line from home. Example of home shopping are online stores and electronic shopping malls.

There are mainly two forms of home shopping,

- (a) Television based home shopping
- (b) Catalog based home shopping.

(a) Television Based Home Shopping

This is the first form of home shopping. Television has changed our lives both positively and negatively.

Generally, there are various channels related to fashion, sports, health, teleshopping etc. which are shown on TV. The user can view his/her required channel with an ease. For instance, if a user wishes to buy various home appliances or exercising equipments to keep himself/herself fit and healthy, there is a channel called "teleshopping" which shows different home appliances as well as items for exercising along with their costs and warranty.

(b) Catalog Based Home Shopping

This is the second form of home shopping. Other than looking for products for shopping on TV, the user can look for products for shopping through catalogs as well.

There are two ways in which catalog-based shopping can be done,

- (i) Catalog based shopping through paper-based catalogs.
- (ii) Catalog based shopping through online catalogs.

(i) Catalog Based Shopping through Paper-based Catalogs

Suppose a customer visits a TV showroom to buy a TV but fails to find the desired TV, as he/she is not able to explain the type of TV that is required to the shopkeeper. In such situation, the shopkeeper provides the customer with a catalog which has detailed explanation of various models of TV. This may lead to the possibility of finding the desired TV.

Benefits of Paper-based Catalogs

- ❖ This type of catalog is easy to develop and are less expensive.
- ❖ It doesn't require computer for accessing them.
- ❖ It is relatively flexible than online catalogs.

Drawbacks of Paper-based Catalogs

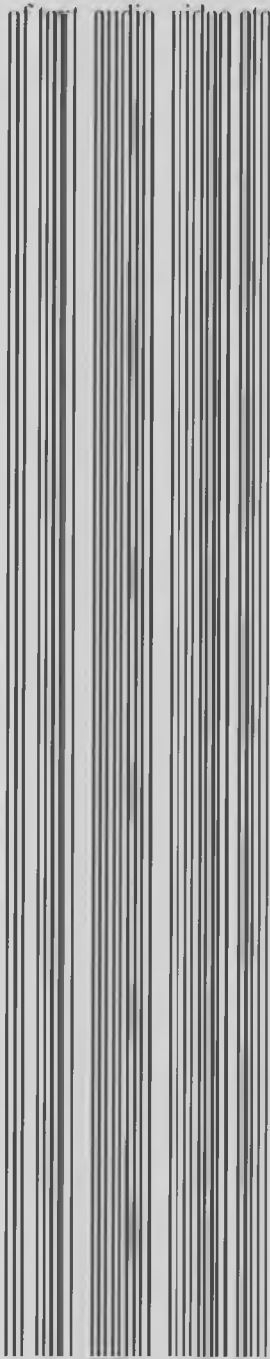
- ❖ It is not possible to perform any sort of change in these catalogs.
- ❖ It displays the product information only in the form of text or photograph and doesn't include any form of video.
- ❖ It limits the number of products to be displayed.

(ii) Catalog Based Shopping through Online Catalogs

The procedure for catalog-based shopping through on-line catalogs is almost similar to paper-based catalogs. Only difference is that these catalogs are provided online. The online catalog that is mostly used is CD-ROM catalogs. These catalog contains detailed information of the product provided by the website of that particular product which can be viewed just by inserting the CD.

Benefits of Online Catalogs

- ❖ It is possible to perform changes in online catalogs.
- ❖ It helps the customer to easily search for the desired product.
- ❖ It provides current and relevant product information.
- ❖ It displays the product information in the form

**3. Home Entertainment**

This type of consumer-oriented application in E-commerce has become more popular. A classic example of home entertainment application is home video service. Home video service is a type of service where latest movie releases are converted or recorded in the form of DVD/VCD and are sold. Factors influencing the popularity of home video are as follows,

- ❖ In most cases, people don't get enough time to go to theatres to watch movies.
- ❖ Cost of watching a movie in theatres can be expensive. The price of the ticket varies in every theatre. In some theatres, the ticket can cost around ₹50. In some theatres, the ticket price can be around ₹100.

Now, in addition to provide movies in CD/VCD format, even the latest television shows are also recorded on CD as well as in DVD format and sold.

Instead of going to a particular movie store and buying a CD/DVD, customer can order it through Internet. For example, there is a site called www.moserbear.homevideo.

(ii) Catalog Based Shopping through Online Catalogs

The procedure for catalog-based shopping through on-line catalogs is almost similar to paper-based catalogs. Only difference is that these catalogs are provided online. The online catalog that is mostly used is CD-ROM catalogs. These catalog contains detailed information of the product provided by the website of that particular product which can be viewed just by inserting the CD.

Benefits of Online Catalogs

- ❖ It is possible to perform changes in online catalogs.
- ❖ It helps the customer to easily search for the desired product.
- ❖ It provides current and relevant product information.
- ❖ It displays the product information in the form of text, audio, video etc.
- ❖ It enables the customer to perform comparative shopping.
- ❖ It doesn't restrict on the number of products to be displayed.

Drawbacks of Online Catalogs

- ❖ It is costly to build.
- ❖ It becomes necessary for the customer to have the knowledge of computers as well as the Internet.

The figure for different types of home shopping is as follows,



Figure: Types of Home Shopping

3. Home Entertainment

This type of consumer-oriented application in E-commerce has become more popular. A classic example of home entertainment application is home video service. Home video service is a type of service where latest movie releases are converted or recorded in the form of DVD/VCD and are sold. Factors influencing the popularity of home video are as follows,

- ❖ In most cases, people don't get enough time to go to theatres to watch movies.
- ❖ Cost of watching a movie in theatres can be expensive. The price of the ticket varies in every theatre. In some theatres, the ticket can cost around ₹50. In some theatres, the ticket price can be around ₹100.

Now, in addition to provide movies in CD/VCD format, even the latest television shows are also recorded on CD as well as in DVD format and sold.

Instead of going to a particular movie store and buying a CD/DVD, customer can order it through Internet. For example, there is a site called www.moserbear.homevideo.com. Through this site, a user can order different types of Indian movies like Telugu, Hindi, Gujrati, Bengali etc.

Other entertainment services are as follows,

- (a) Pay per view service
- (a) Game on demand service.

(a) Pay Per View Service

It is a special type of service provided by cable operators. In this service, in order to watch a particular programme on TV, a user has to pay for it.

(b) Game on Demand Service

With the help of this service, a user can order and play desired games, which may include sports games, car racing games, mind games or action games.

Other than ordering and watching movies, a user can also hear different kinds of music like Hindi, Gujrati, Spanish etc. by downloading it through Internet.

4. Microtransactions of Information

Using this type of consumer-oriented application in E-commerce, customers can download different types of softwares or packages they want, through internet.

There are two main categories to download a software,

- (a) Shareware software
- (b) Freeware software.

(a) Shareware Software

There are some websites which charges the user for usage of a particular software. This category of software is called shareware software.

(b) Freeware Software

There are some websites which don't charge the user for usage of a particular software. This type of software is called freeware software.

The biggest advantage of this category of software is that it is cost free. The problem that might occur in shareware software category is the fraudulent use of your credit card. In freeware category, no such problem exists.

Following is the diagrammatic representation of micro transactions of information application.

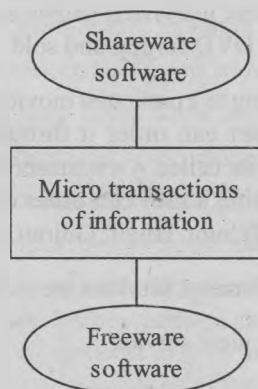


Figure: Microtransactions of Information

Q12. Discuss different types of electronic market places.

Answer :

There are five different types of electronic market places which are as follows,

- (a) Private company electronic market place
- (b) Consortia sponsored electronic market place
- (c) Independent industry electronic market place
- (d) Customer portals electronic market place
- (e) Private stores on supplier's site electronic market place.

(a) Private Company Electronic Market Place

A market place which consists of more number of suppliers and only one customer.

Example

Harley-Davidson supply net electronic market place.

(b) Consortia Sponsored Electronic Market Place

An electronic market place having more number of suppliers and less number of customers.

Example

Covisint electronic market place and exostar electronic market place.

(c) Independent Industry Electronic Market Place

A market place where there are equal number of suppliers and equal number of customers.

Example

Chem connect electronic market place.

(d) Customer Portals Electronic Market Place

This market place is just the opposite of consortia sponsored electronic market place. Instead of more number of suppliers and less number of customers, there are more number of customers and less number of suppliers.

Example

Grainger electronic market place.

(e) Private Stores on Supplier's Site Electronic Market Place

This market place is complete contrast to the private company electronic market place. There is only one supplier and more number of customers as compared to only one customer and more number of suppliers of private company electronic market place.

Example

Cisco electronic market place and Dell electronic market place.

The diagrammatic representation of the five electronic market places in e-commerce is shown below,

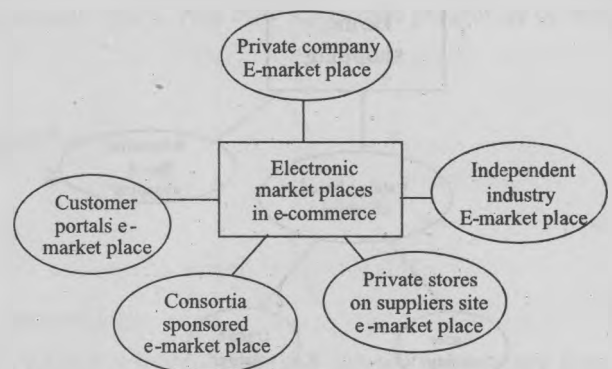


Figure: Five Electronic Market Places

3.2 MERCANTILE PROCESS MODEL: CONSUMER'S PERSPECTIVE AND MERCHANT'S PERSPECTIVE

Q13. What are the mercantile process models from consumer's perspective?

March/April-12, Q11(a)

OR

Discuss about mercantile process model from consumer's perspective.

Answer :

(Model Paper-I, Q11(a) | Oct./Nov.-16, Q11(b))

Mercantile Process Models from Consumer's Perspective

Mercantile process models enables the consumers to perform online shopping with same features as that of manual shopping. This model consists of seven different functions and each of these functions are in turn placed in three different phases,

Phase-I: Pre-purchase Preparation Phase

This is the first phase of the process model which includes,

- (i) Searching and finding those products on which consumers are dependent.
- (ii) Comparing the qualities of the above products with the one that is rarely used.
- (iii) Discussing on the price and delivery of the products.

Phase-II: Purchase Consummation

This is the second phase of the process model. Once the customer has decided the product to purchase, there must be some sort of transaction between the customer and seller regarding the product delivery and payment. This type of transaction is called mercantile transaction. Various steps involved in mercantile transaction process are,

Step 1

Customer informs the vendor/seller that he wants to buy a product. This intention can be done through Internet, telephone etc.

Step 2

Vendor tells the customer about the cost of the product.

Step 3

Customer might bargain with the vendor regarding the cost or settle with the cost quoted by the vendor.

Step 4

Once both the parties have agreed upon the cost of the product, customer pays the amount to the vendor in an encrypted format containing a digital signature.

Step 5

Seller then checks the authenticity of the customer by sending the signed application to his respective bank.

Step 6

On receiving the form of payment the bank first decrypts it. Then bank of the vendor, calls the bank of the customer to know whether any cash is available in the customer's bank account.

Step 7

If the customer's bank replied in a positive way, then the vendor's bank sends the message saying payment done by the customer is valid.

Step 8

On receiving this message, vendor delivers the product to the customer along with the product delivery receipt.

Step 9

Customer on getting the product, signs and sends the receipt back to the vendor.

Step 10

Certain audit and customer service actions are then performed regarding overbilling.

A simple diagram of the above mercantile transaction process is shown below,

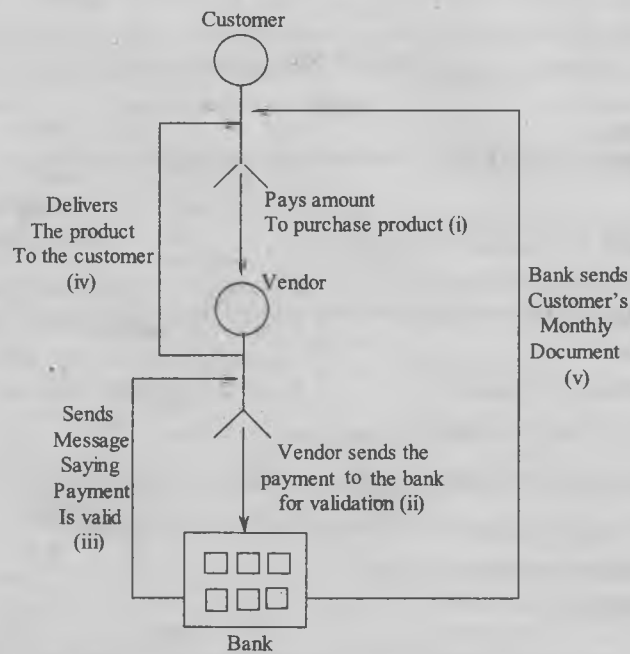


Figure: Simplified On-line Mercantile Mode/Transaction

Phase-III: Post-purchase Interaction Phase

This is the third phase of the process model. This phase describes how to deal with various issues/disputes that takes place between the customer and a company. For Example, disputes regarding the quality of the product.

However, there are certain issues that are not completely solved. The issues are as follows,

- (a) Inventory issues
- (b) Database access and compatibility issues
- (c) Customer service issues.

(a) Inventory Issues

One of the issues that needs to be dealt is inventory issues. Suppose, a customer needs a particular product and that product is not available in the company. In such situations, the company should immediately inform the customer about the unavailability of the product rather than sending a notice after several days thinking that the customer won't mind.

Companies should not take their customers for granted. On the contrary, if the particular product the customer needs is available, then the company must instantly deliver that product to the customer. By doing this, good relationship with the customer can be maintained.

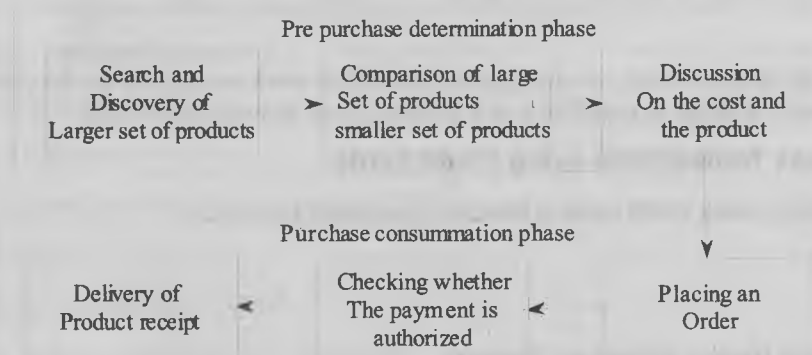
(b) Database Access and Compatibility Issues

Another issue that needs to be dealt is database access and compatibility issues. Only if the customer is able to have information or access to those sellers who more often or not use the same software for marketing their products and that too on Information Superhighway (I-way), only then the customer can have access to the kind of service that is required.

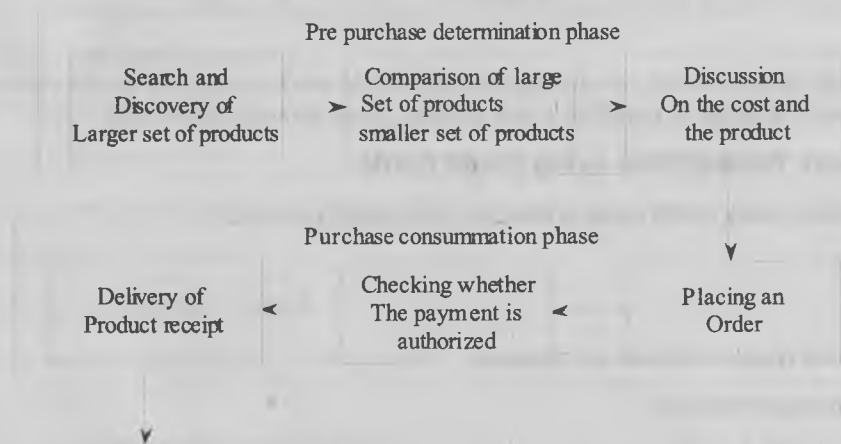
(c) Customer Service Issues

Other than the above issues, there is another issue that needs to be resolved which is customer service issue. Suppose, a customer has bought a particular product from a company and is facing certain problems regarding it. Then the customer contacts the customer service section of the company for product enquiry. In such cases, the customer service operator must respond immediately to the customer rather than making the customer wait.

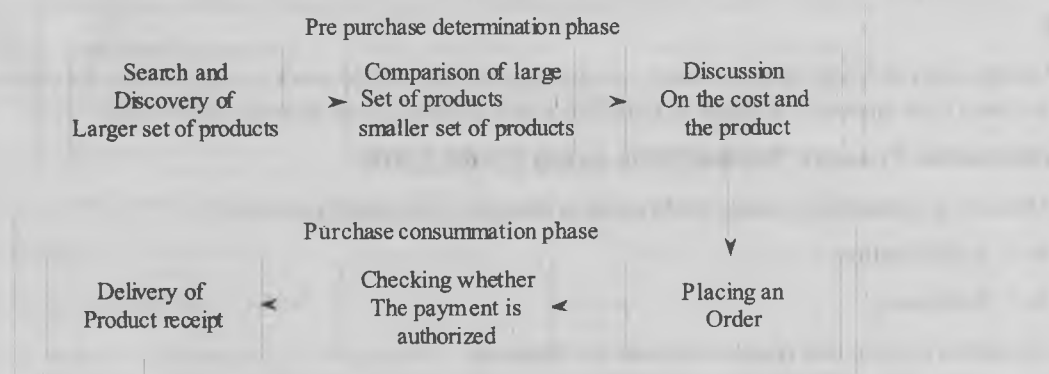
The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,



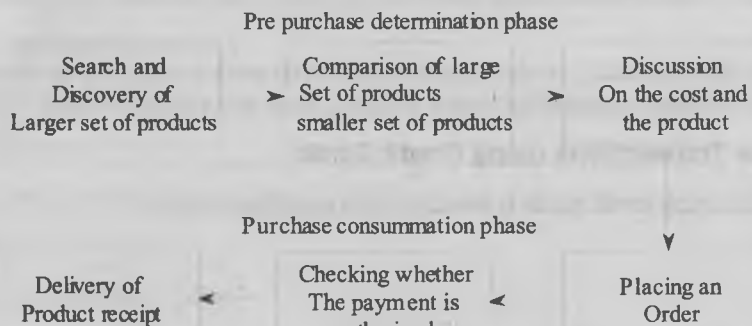
The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,



The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,



The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,



Q25. Briefly discuss about NNTP.**Answer :**

NNTP stands for "Network News Transfer Protocol". It is an application protocol that uses reliable stream like TCP for distributing, retrieving and posting news article on web. The main idea behind designing this protocol is, to store news articles on single server host and allow subscribers residing on the network of other host to read it by establishing reliable connection. NNTP uses interactive mechanism in order to make decision regarding the transmission. The exchange mechanism is as follows,

1. A host that requires/sends updated news, communicates with its neighbor with the hello of NNTP.
2. The client host uses newness command and enquires about the new articles that have been arrived in the newgroup.
3. The server then sends list of new articles.
4. The client host requests transmission of those articles from the server.
5. The server then checks for duplicate articles and sends only articles that are required to the client.

Since, NNTP uses TCP as its communication channel it is considered as secured delivery system. Moreover this protocol uses TCP port 119 in order to connect news server with the client. The advantage of using TCP port 119 is that whenever a news article gets created, it will immediately be transmitted to the news channel and updated. The process of updation continues until all the clients attached to the network gets the updated news. A client can obtain updated news message using two methods.

(a) Push Method

It is an active method that allows a server to send a new message to all the clients present on the network.

(b) Pull Method

It is a passive method, that enables a server to send only those messages that are specified by client.

Q26. State the security protocols. Discuss.

March/April-15, Q10(a)

OR**Explain security protocols.****Answer :** (March/April-12, Q10(b) | March/April-17, Q10(b))

The different security protocols include,

(i) FTP

For answer refer Unit-II, Page No. 55, Q.No. 22(a).

(ii) HTTP

For answer refer Unit-II, Page No. 55, Q.No. 22(b).

(iii) SMTP

For answer refer Unit-II, Page No. 57, Q.No. 22(c).

(iv) NNTP

For answer refer Unit-II, Page No. 59, Q.No. 25.

Q27. Explain about the types of classes of IP addresses.**Answer :**

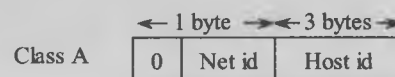
Oct./Nov.-12, Q10(b)

Network/IP Addressing

Network address helps in identifying the network across the globe. It contains network id and host id. The host id is a unique address given to each host on the network. IP protocol uses 32-bit address (4-bytes) for the network addressing. Depending on applications, the network addresses are classified into 5 types. Class A, Class B, Class C, Class D and Class E.

Class A Network

In class A, 1 byte is used for network address and 3 bytes are used for host address. The first bit is always '0' for class A network.



The range of class A addresses is,

0	0000000	00000000	00000000	00000000
---	---------	----------	----------	----------

Since all zero's are for reserved address.

∴ Starting address of class A is,

0	00000001	00000000	00000000	00000000
	1	0	0	0

Maximum class A address is,

0	1111111	11111111	11111111	11111111
	127	255	255	255

All the 8-bits are 1, therefore the decimal value is 255. To determine any byte value, subtract that zero position value from 255.

∴ For class A, the '0' bit is in 2^7 position

∴ $2^7 = 128 \Rightarrow 255 - 128 = 127$

$\Rightarrow 127.255.255.255$

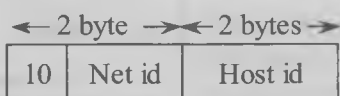
But 127 network address is reserved for loop back test.

∴ Class A maximum network address is 126.255.255.255

∴ Range of class A network addresses are 1.0.0.0.....126.255.255.255

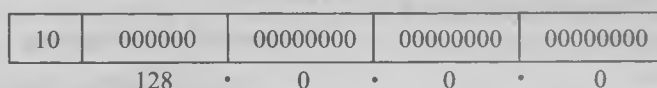
Class B Network Address

In this addressing method, 2 bytes are reserved for a network address and 2 bytes are reserved for a host address.

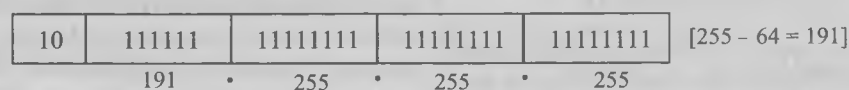


The first two bits for class B are '10'.

Range of class B network address is,



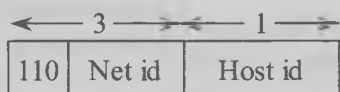
The maximum class B network address is,



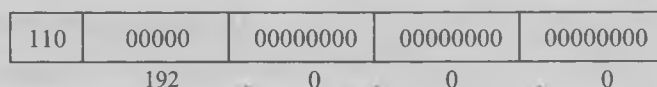
Range of class B is 128.0.0.0.....191.255.255.255.

Class C Network Address

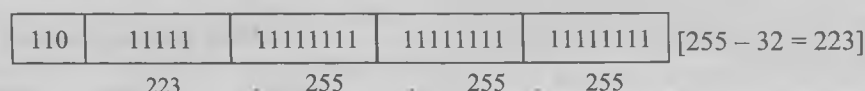
In this network address, 3 bytes are reserved for net id and 1 byte for host id. The first 3 bits are reserved as 110.



Minimum class C address is,



Maximum class C address is,

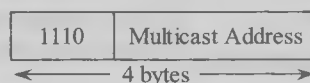


Range of class C address is 192.0.0.0..... 223.255.255.255

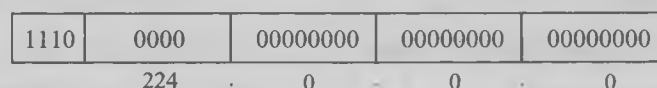
Class D Network Address

It is used for multicasting and indicating the multicast group address. It doesn't contain any net id or host id. It contains only a group id which specifies the group to which the packet belongs.

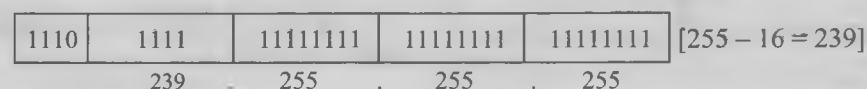
The first 4 bits are reserved as 1110.



Minimum class D addresses are,



Maximum class D addresses are,



Range of class D addresses are 224.0.0.0..... 239.255.255.255

Class E Network Address

Class E address is reserved for future use.

The first byte bits are reserved as 11110.

Range of class E network address is 240.0.0.0.... 247.0.0.0

[255 - 8 = 247].

2.4 DATA ENCRYPTION**2.4.1 Cryptography – Encryption – Decryption – Public Key – Private Key**

Q28. Define the following terms,

- (a) Cryptography
- (b) Cryptanalysis
- (c) Cryptology
- (d) Role of public key and private key.

Class E Network Address

Class E address is reserved for future use.

The first byte bits are reserved as 11110.

Range of class E network address is 240.0.0.0.... 247.0.0.0

[255 - 8 = 247].

2.4 DATA ENCRYPTION**2.4.1 Cryptography – Encryption – Decryption – Public Key – Private Key**

Q28. Define the following terms,

- (a) Cryptography
- (b) Cryptanalysis
- (c) Cryptology
- (d) Role of public key and private key.

Answer :

(a) Cryptography

Cryptography is a method of transforming the plaintext into an unreadable form. This unreadable form can only be read by the authorized users. It is derived from 'kryptos' which is a Greek word whose meaning is hidden (or) secret. It employs techniques like encryption and decryption. In encryption, the plaintext is transformed into ciphertext (or) encrypted text. Decryption is the reverse process of encryption where the encrypted text can be transformed back to plaintext. The transformations are performed by using a cryptographic key. Thus cryptography is a process of providing information security thereby protecting it from unauthorized access.

Cryptography provides security to the information as well as to other useful applications for improving authentication methods like message digests, digital signatures, non-repudiation and encrypted network communications. If it is not implemented properly then, it would lead to many security problems. The length and strength of an encryption key are also important. This is because the strength of an encryption algorithm is dependent on the key.

(b) Cryptanalysis

Cryptanalysis is a type of attack that makes certain attempts possible for obtaining the plaintext and the key used. If it is able to determine the key, the effect is disastrous and all the encrypted messages, which are already transmitted and those that are ready to be transmitted in future are damaged.

(c) Cryptology

Cryptology is the study of both cryptography and cryptanalysis. Cryptology is sometimes mistaken as cryptography or cryptanalysis. But cryptology in essence encompasses both cryptography and cryptanalysis. Cryptanalysis is the process of recovering the original text from encrypted text without the knowledge of the key. Cryptanalysis is the reverse of cryptography. The attempts made by a cryptanalyst to unhide the plaintext depend upon the level of information available to him. The worst case will be when only ciphertext is available for cryptanalysis. In such scenario, brute force attacks are used wherein every single probable key is applied. The analyst may use one or more samples of ciphertext repeatedly and unhide the plaintext. He can also replace the ciphertext with plaintext or use a random key that may help him to reveal the plaintext.

(d) Role of Public Key and Private Key

The pair of public and private keys are used for encrypting and decrypting the message respectively. Each public-key is broadcasted and the corresponding private-key is kept secret. The text, data or message which is encrypted with your public-key can be decrypted only with your private-key. The figure below shows the roles of public and private keys.

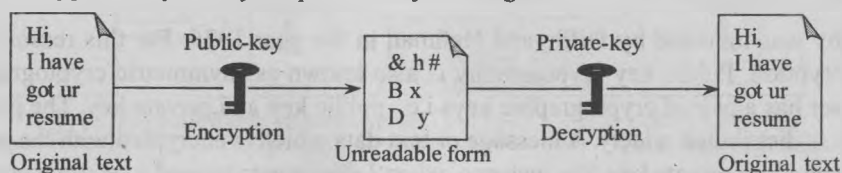


Figure: Role of Public-key and Private-key

The user generates a pair of keys i.e., a public-key and a private-key. The public-key is made public by keeping it in a public register or a file which can be accessed by all the users. The corresponding key i.e., the private-key is kept secret, therefore it is known only to its owner. The user maintains the public keys of other users to exchange messages.

When user 'A' wishes to send a message to user 'B' he needs to encrypt the message using B's public key which is known to him. When B receives the encrypted message, he decrypts it using his private-key. No other user except B can decrypt the message because only B knows its private-key. The communication is secure as long as the private-key is protected from attacker. At any time, a user can change his private-key and broadcast its corresponding public-key.

Q29. Explain encryption techniques.

March/April-14, Q10(b)

OR

Explain two security techniques of encryption.

Oct./Nov.-13, Q10(b)

OR

Briefly explain the encryption techniques.

(Oct./Nov.-11, Q10(a) | Model Paper-III, Q10(a))

OR

Explain about encryption techniques.

Answer :

Oct./Nov.-16, Q10(a)

Encryption

Encryption is a method of converting plain text into cipher text. Using this method, security of data can be achieved effectively. An encrypted file can be decrypted if the user has the capability of accessing a secret key or password. In this context, unencrypted data is referred to as plain text whereas encrypted data is referred to as cipher text.

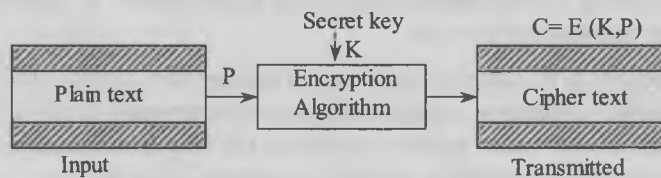


Figure: Encryption Process

Types of Encryption

The following are the two major types of encryption,

1. Symmetric encryption
2. Asymmetric encryption.

1. Symmetric Encryption

Symmetric encryption is also known as private key or secret key encryption. In this, only one secret key is required for encryption and decryption of the message. This key is shared by both sender and recipient. It is a simple process when compared to the asymmetric encryption.

2. Asymmetric Encryption

Asymmetric encryption is also known as public key encryption. In this, two keys are required for encryption and decryption of a message i.e., a public key and a private key. Private key must be kept secret for security purposes while the other key must be shared by both sender and recipient. It is a complex and time consuming process when compared to symmetric encryption.

Public Key Cryptography

Public key cryptography was invented by Diffie and Hellman in the year 1976. For this reason, it is sometimes known as Diffie-Hellman encryption. Public key cryptography is also known as asymmetric cryptography. It is a form of cryptography in which a user has a pair of cryptographic keys i.e., public key and private key. The private-key is kept secret, whereas the public key is distributed widely. A message or text data which is encrypted with the public-key can be decrypted only with the corresponding private key. For instance, when Johny wants to send a secure message to Sunny, he uses Sunny's public key to encrypt the message. Sunny then uses his private key to decrypt it.

Elements of Public Key

A public key cryptography/encryption consists of the following five elements. They are,

- (i) Textdata/Message
- (ii) Encryption algorithm
- (iii) Public key and private key
- (iv) Cipher Text/Unreadable text
- (v) Decryption algorithm.

(i) Textdata/Message

This can be any input data, such as textdata or message.

For example, Johnny is a user of computer and wants to send his message, $M = \text{"Hello"}$ securely to his friend Sunny, who is also a user of computer.

(ii) Encryption Algorithm

To encrypt the message, an encryption algorithm performs certain transformations on it.

There are various encryption algorithms but the *RSA* public key encryption algorithm is mostly used to perform certain transformations or calculations on the textdata or message.

For example, Johnny uses the public key of Sunny and encrypted his message by using *RSA* algorithm.

(iii) Public Key and Private Key

These pair of keys are used to encrypt and decrypt the message respectively. The private key is always kept secret, whereas public key is widely distributed.

For example, Johnny uses a public key of Sunny to encrypt his message, whereas Sunny uses his private key to decrypt the Johnny's message as shown in the figure.

(iv) Cipher Text/Unreadable Text

Once the encryption is done on the textdata, it is in unreadable format means it cannot be read by human beings.

For example, Johnny's message has converted into unreadable form so that nobody except Sunny can read his message, as he has a corresponding private key for that message.

(v) Decryption Algorithm

A decryption algorithm takes the unreadable text and its corresponding key to convert this text into original text. Hence, we can say that the decryption algorithm is the reverse of encryption algorithm.

For example, decryption algorithm takes the unreadable text of Johnny and also takes the Sunny's private key to decrypt that message and convert the unreadable text into readable form i.e., original text sent by Johnny as shown in the below figure.

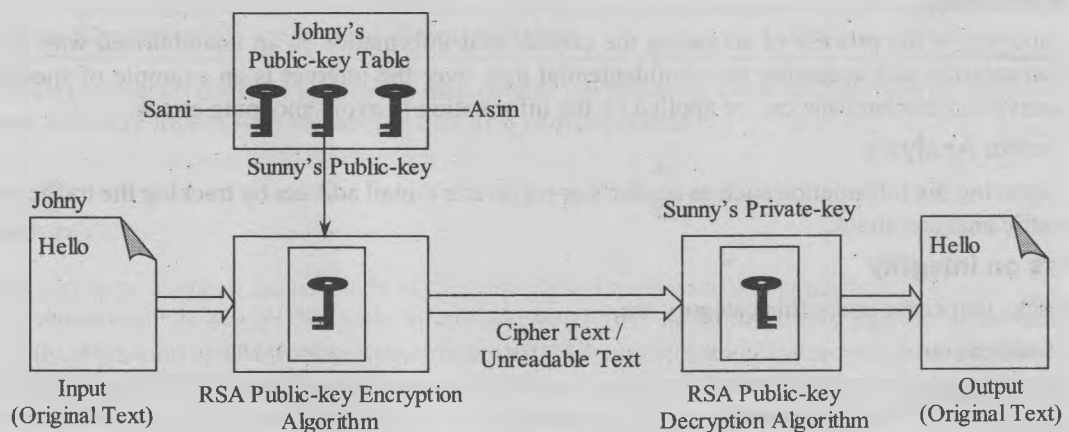


Figure: Public Key Encryption

Q30. Define cryptography and classify different cryptographic attacks.**Answer :**

Model Paper-III, Q10(b)

Cryptography

For answer refer Unit-II, Page No. 61, Q.No. 28(a).

Classification of Cryptographic Attacks

Cryptographic attacks can be classified into two types. They are,

1. Cryptanalytic attacks
2. Non-cryptanalytic attacks.

1. Cryptanalytic Attack

This attack can be referred as a group of statistical and algebraic techniques. It exploits the mathematical features to capture the secret key. They focus on the distinguishes that exist in the output distribution of algorithms. The main role of this attack is to determine the cipher properties which are not found in random function. This scenario is generally referred to as "distinguishes". Typically all attacks are called as distinguishes. Now the attacker estimates or guesses the key and searches the distinguishing property. An attack can be considered as correct if the guessed key matches any of the distinguishes. If not, it is considered as incorrect and the hacking is continued.

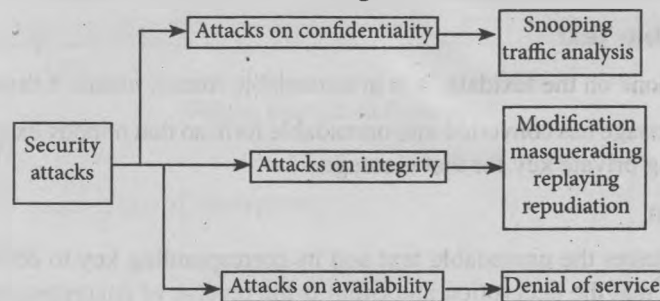
To minimize the complexity of guessing, divide and conquer method is used. This method is used in the brute force search method to generate efficient results.

2. Non-cryptographic Attacks

Non-cryptographic attacks focus on the three major goals of security. These goals include,

- (i) Confidentiality
- (ii) Integrity
- (iii) Availability.

Different attacks can be classified based on these three goals as follows,

**(i) Attacks on Confidentiality**

The attacks that come under this category are snooping and traffic analysis.

(a) Snooping

Snooping is the process of accessing the confidential information in an unauthorized way. Interrupting the transmission and accessing the confidential data over the internet is an example of snooping. Different encryption mechanisms can be applied on the information to avoid snooping attack.

(b) Traffic Analysis

Capturing the information such as sender's or receiver's e-mail address by tracking the traffic is referred to as traffic analysis attack.

(ii) Attacks on Integrity

The attacks that come under this category are,

- (a) Modification
- (b) Masquerading
- (c) Replaying
- (d) Repudiation.

(a) Modification

Modification refers to the alteration of a specific portion of authorized information. It also refers to the deletion or reordering of information to generate an unauthorized effect. An example for this type of attack is changing the account number of banking transaction.

(b) Masquerading

Masquerading refers to the attack in which the attacker pretend to be some other person (authorized). Consider an example where an attacker obtains customer ID and password of an online banking user. The obtained credentials can be used by the attacker to pretend like the authorized user. Such an attack is referred to as masquerading.

(c) Replaying

Replaying refers to the attack in which the attacker intercepts a valid communication and retransmits it later for unauthorized purposes. This type of attack is often used to gain unauthorized access to a system or to perform unauthorized transactions. For example, an attacker might intercept a valid login request and retransmit it to the system, causing the system to authenticate the attacker as the legitimate user. Another example is an attacker intercepting a valid payment transaction and retransmitting it to the payment gateway, causing the payment to be processed twice.

(a) Modification

Modification refers to the alteration of a specific portion of authorized information. It also refers to the deletion or reordering of information to generate an unauthorized effect. An example for this type of attack is changing the account number of banking transaction.

(b) Masquerading

Masquerading refers to the attack in which the attacker pretend to be some other person (authorized). Consider an example where an attacker obtains customer ID and password of an online banking user. The obtained credentials can be used by the attacker to pretend like the authorized user. Such an attack is referred to as masquerading.

(c) Replaying

Replaying refers to the process of capturing a particular information and retransmitting or resending it later for

(a) Modification

Modification refers to the alteration of a specific portion of authorized information. It also refers to the deletion or reordering of information to generate an unauthorized effect. An example for this type of attack is changing the account number of banking transaction.

(b) Masquerading

Masquerading refers to the attack in which the attacker pretend to be some other person (authorized). Consider an example where an attacker obtains customer ID and password of an online banking user. The obtained credentials can be used by the attacker to pretend like the authorized user. Such an attack is referred to as masquerading.

(c) Replaying

Replaying refers to the process of capturing a particular information and retransmitting or resending it later for

(a) Modification

Modification refers to the alteration of a specific portion of authorized information. It also refers to the deletion or reordering of information to generate an unauthorized effect. An example for this type of attack is changing the account number of banking transaction.

(b) Masquerading

Masquerading refers to the attack in which the attacker pretend to be some other person (authorized). Consider an example where an attacker obtains customer ID and password of an online banking user. The obtained credentials can be used by the attacker to pretend like the authorized user. Such an attack is referred to as masquerading.

(c) Replaying

Replaying refers to the process of capturing a particular information and retransmitting or resending it later for causing an unauthorized effect. An example of such an attack is replaying an already completed transaction.

(d) Repudiation

Repudiation refers to the attack in which either sender (or) receiver denies the action it performed. For example, receiver already received the message but denies.

(iii) Attacks on Availability

The attack that can be made on availability is Denial of Service (DOS).

Denial of Service

This type of attack interrupts the normal usage of various facilities provided by system (or) network. It attacks a specific target so that the messages destined to it can be destroyed. In some other situations, the attacker sends messages continuously until the system (or) network becomes unavailable. Also, the attacker can crash down the server by sending bogus messages.

All these attacks can also be categorized into passive and active attacks. Attacks on confidentiality i.e., snooping and traffic analysis falls under passive attacks. All the other attacks belong to the category of active attacks.

(i) Passive Attacks

It refers to the process of monitoring or wiretapping of ongoing transmission. Here, the goal of opponent is to capture the transmitting information but not to alter (or) harm the system. These types of attacks can be easily avoided by using encryption techniques.

(ii) Active Attacks

In this types of attacks, attacker can alter the information (or) include some fraudulent information into the network. These attacks harm the system and can easily be detected. However, they are difficult to prevent.

2.4.2 Digital Signatures – Digital Certificates

Q31. Write short notes on digital signatures and digital certificates. Discuss the role of digital signatures in network security along with its properties and requirements.

Answer :

Digital Signatures

A digital signature is one of the methods of encryption used to provide authentication. The main idea of the digital signature is to protect the message or data from modifications. Digital signature is very popular in the world of network security. Basically, it is a kind of asymmetric cryptography used to support the security properties of a handwritten signature on paper. The digital signature scheme provides two algorithms where one algorithm is for signing, which requires the user's secret or private-key, and the other algorithm is for verifying signatures which requires the user's public-key. The result of the signature process is called the "digital signature".

Digital Certificates

Digital certificates are the certificates that are used to verify one's identity when he/she is doing any business or transactions on the Internet. These certificates are issued by a trusted third party called as Certificate Authority or Certification Authority (CA). A digital certificate contains the user's name, a serial number, a copy of the certificate holder's public key (which is useful for message encryption and digital signature generation), expiration data and also the digital signatures of the CA (so as to verify the identity of CA).

Role of Digital Signatures in Network Security

Digital signatures are used to provide authentication of any electronic information. For instance, assume that, there are two users of the internet say, *A* and *B*. User *A* wants to send some confidential message to user *B* assuring that the message is unmodified and is sent by him only.

The sender *A* writes his message into an e-mail and applies a special function known as hash function on the message. This creates the checksum i.e., a value that checks the authenticity during data transmission of the information. Then, *A* uses its private-key that he has previously obtained from public-private key authority to encrypt the checksum. The encrypted message becomes the *A*'s digital signature of the message. The checksum and the message is then sent to the receiver.

At the other end, the receiver *B* receives the message and the checksum. In order to make sure that, the message is complete and unmodified from sender *A*, the receiver *B* applies the same hash function on the received message to produce checksum. It also uses *A*'s public-key to decrypt the checksum it received with message. The two checksums are then compared. If they are matched then the received message is complete and signature is valid. Otherwise, the message is modified and signature is considered invalid.

The below figure shows the role or operation of a digital signature,

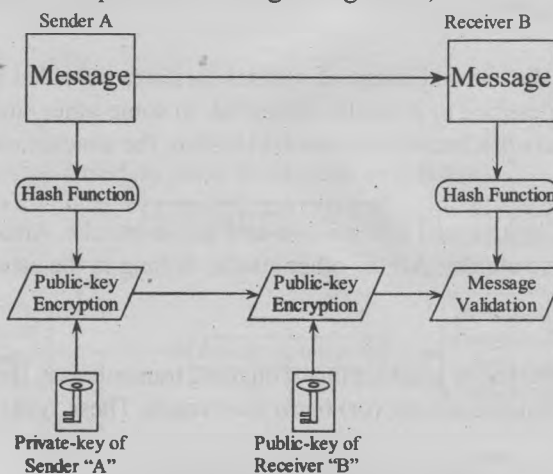


Figure: Role of Digital Signature

Properties of Digital Signature

1. It must authenticate the contents when the signature is being done.
2. It must be responsible for verifying the author as well as date and time of the signature.
3. It must be verifiable by third party.

Requirements for Digital Signature

1. A digital signature must be in the form of bit pattern that is dependent on the message being signed.
2. The process of producing the digital signature must be easy.
3. A copy of digital signature must always be preserved.
4. A digital signature must be both easily recognizable and verifiable.
5. It must include some unique information to prevent forgery and denial by the sender.
6. It must be highly impractical for hacker to forge a digital signature by any means which may include creation of a new message for the already existing digital signature. It may also include an attempt to replace the original digital signature with duplicate signature for a given message.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. E-commerce framework has _____ layers. []
 - (a) Four
 - (b) Five
 - (c) Six
 - (d) Seven
2. The function of _____ layer is to provide interface for e-commerce applications. []
 - (a) Interface and support
 - (b) Brokerage services and data management
 - (c) Secure messaging and structured document interchange services
 - (d) Middle ware services
3. OpenDoc contains _____ as its basic building blocks. []
 - (a) OLE
 - (b) Document parts
 - (c) SGML
 - (d) HTML
4. _____ in e-commerce refers to the process of gathering information about usage of privileges accessing of specific resources. []
 - (a) Confidentiality
 - (b) Authorization
 - (c) Authentication
 - (d) Auditing
5. _____ is the process of ensuring a person or a program that they have right to access particular resources. []
 - (a) Confidentiality
 - (b) Authentication
 - (c) Authorization
 - (d) Availability
6. _____ refers to the plans or arrangements made in the network infrastructure along with the various techniques used by network administrator. []
 - (a) Network security
 - (b) Computer security
 - (c) Information security
 - (d) None of the above

7. _____ refers to the ability of restricting and controlling the access to the host systems and applications through various communication links. []
- (a) Availability (b) Access control
(c) Integrity (d) Confidentiality
8. Number of layers in TCP/IP reference model is _____. []
- (a) Four (b) Five
(c) Six (d) Seven
9. _____ is a simple ASCII protocol. []
- (a) FTP (b) HTTP
(c) SMTP (d) None of the above
10. _____ is an application protocol that uses reliable stream like TCP for distributing, retrieving and posting news articles on web. []
- (a) S-HTTP (b) NTTP
(c) Network Addressing (d) None of the above

II. Fill in the Blanks

1. _____ is method of converting plain text into cipher text.
2. _____ is an information handling layer that governs and manages huge amounts of data on the networks.
3. SGML stands for _____.
4. HTML stands for _____.
5. _____ is a technology that integrates several applications and multimedia data types within an active document framework.
6. _____ is considered as the backbone of e-commerce.
7. _____ refers to the process of protecting the data being transmitted from all types of passive-attacks.
8. _____ refers to the branch of computer science that describes the application of 'secure' behaviour on the operation of computers.
9. _____ violates the security that arises upon the occurrence of an event, action or a circumstance.
10. _____ is a service that enhances the security of a data processing system and the information flow within an organization.

KEY**I. Multiple Choice**

1. (c)
2. (a)
3. (b)
4. (d)
5. (c)
6. (a)
7. (b)
8. (a)
9. (c)
10. (b)

II. Fill in the Blanks

1. Encryption
2. Brokerage Services and Data Management Layer
3. Standard Generalized Markup Language
4. HyperText Markup Language
5. OLE
6. Information Technology
7. Confidentiality
8. Computer Security
9. Threat
10. Security Service

III. Very Short Questions and Answers**Q1. What is a firewall?****Answer :**

A firewall can be viewed as an information security program located at a network gateway server. It protects the confidential information present in the network against attacks or by other insecure networks.

Q2. Define security service.**Answer :**

A security service is a service that enhances the security of a data processing system and the information flow within an organization. They are meant to tackle security attacks by employing one or more security mechanisms.

Q3. Write a note on symmetric encryption.**Answer :**

Symmetric encryption is also known as private key or secret key encryption. In this, only one secret key is required for encryption and decryption of the message. This key shared is by both sender and recipient.

Q4. What is cryptanalysis?**Answer :**

Cryptanalysis is a type of attack that makes certain attempts possible for obtaining the plaintext and the key used. If it is able to determine the key, the effect is disastrous and all the encrypted messages, which are already transmitted and those that are ready to be transmitted in future are damaged.

Q5. What do you mean by snooping?**Answer :**

Snooping is the process of accessing the confidential information in an unauthorized way. Interrupting the transmission and accessing the confidential data over the internet is an example of snooping. Different encryption mechanisms can be applied on the information to avoid snooping attack.

UNIT 3

CONSUMER ORIENTED E-COMMERCE APPLICATIONS



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Applications of Consumer Oriented E-commerce.
- ❖ Mercantile Process Model from Consumer's perspective.
- ❖ Mercantile Process Model from Merchant's perspective.
- ❖ Definition of Electronic Payment System (EPS)
- ❖ Different types of Electronic Payment Systems.
- ❖ Risks and Advantages involved in Electronic Payments.

INTRODUCTION

Consumer Oriented E-commerce applications have been widely accepted around the world because of its easy and simple applications like electronic shopping, online stores etc. Online shopping is similar to general shopping. The only difference is that instead of going to a shop and selecting the item, the customer can sit at home and carry out his/her shopping online. However, the problem with this mode of shopping is that detailed information of the product is not provided. There are four types of Consumer Oriented applications that are widely used,

- ❖ Personal finance/home banking
- ❖ Home Shopping
- ❖ Home Entertainment
- ❖ Micro transactions of information.

Electronic Payment System refers to processing of transactions in a digitized environment i.e., it does not require human intervention. It is also referred as Electronic Funds Transfer (EFT). Basically, there are different types of electronic payment systems such as credit cards, smart cards etc. Despite of being advantageous, these sort of payment systems mostly suffer from security issues.

PART-A**SHORT QUESTIONS WITH SOLUTIONS****Q1. What is E-cash?**

Model Paper-III, Q3

OR**E-cash****Answer :**

(March/April-17, Q3 | Oct.-14, Q3 | March/April-14, Q4)

Electronic cash is a form of electronic payment system which provides high level of security and reduces the overhead of paper cash. Because of its adaptable and flexible nature, it opened a way for new markets and applications. In spite of that, there are several reasons due to which paper currency is still superior over e-cash.

- (i) Lack of belief or confidence in banking system.
- (ii) Inadequate clearing and agreement of non-cash transactions.
- (iii) Negative rate of real interest paid on all the bank deposits.

Due to its superior, dominant nature, business practises can be changed in order to improve the process of purchasing. In order to replace cash, e-cash should possess some features of paper cash.

Q2. Write about E-checks.

Model Paper-II, Q8

OR**E-checks****Answer :**

Oct./Nov.-12, Q3

Electronic check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper cash. The e-cash system is generally an electronic implementation of paper check system. These checks make use of digital signature for signing and endorsing and use digital certificates to authenticate the buyer, the buyer's financial institution and the buyer's account. Digital signature authentication is provided by using public key cryptography.

Online services provided by electronic checks allow,

1. The seller to verify if the buyer has sufficient funds in his/her account.
2. Improved security at each step of transaction processing.

Q3. What is a debit card?**OR****Debit Cards****Answer :**

March/April-15, Q3

A debit card is a card that is used instead of cash in shopping. Debit cards can be used for e-commerce transactions in the same way as a credit card. The only difference in the credit card is the way to pay later, whereas a debit card is a way to pay then and there itself. Debit cards are also known as cash cards. When ever the buyer uses debit card for shopping, his account will be instantly debited (i.e., the amount is immediately deducted from his savings account). The debit cards can be used anywhere. It is mostly accepted by grocery stores, retail outlets, gasoline stations, restaurants etc.

Q4. Define EPS.

Model Paper-I, Q3

OR**EPS****Answer :**

March/April-13, Q3

Electronic Payment System (EPS) is a building block of E-commerce which refers to the online exchange of money. This exchange is carried out over different platforms such as E-cash, E-check, credit cards etc. The widespread adoption of these methods is due to the fact that it reduces cost and time of a transaction.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Electronic payment typically refers to paying the amount for purchased goods electronically. It is also referred as Electronic Funds Transfer (EFT). This sort of process involves, transferring of funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices etc.

Q5. Write a short note on home banking.

Model Paper-III, Q8

OR

Home Banking

Answer :

March/April-12, Q5

E-banking/online banking made the life of individuals and companies easy. Today customers are no more required to rush to banks for making deposits, withdrawals and payment of bills. All these can be done online; customers can withdraw money by using Automated Teller Machine (ATM). Both individual and companies can save their money and time through E-banking. E-banking is one among the very successful online businesses.

With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the

Electronic payment typically refers to paying the amount for purchased goods electronically. It is also referred as Electronic Funds Transfer (EFT). This sort of process involves, transferring of funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices etc.

Q5. Write a short note on home banking.

Model Paper-III, Q8

OR

Home Banking

Answer :

March/April-12, Q5

E-banking/online banking made the life of individuals and companies easy. Today customers are no more required to rush to banks for making deposits, withdrawals and payment of bills. All these can be done online; customers can withdraw money by using Automated Teller Machine (ATM). Both individual and companies can save their money and time through E-banking. E-banking is one among the very successful online businesses.

With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the username and password. Once log in is done successfully, the user is asked to enter the account number. After entering the account number, account balance will be displayed in the message box.

Electronic payment typically refers to paying the amount for purchased goods electronically. It is also referred as Electronic Funds Transfer (EFT). This sort of process involves, transferring of funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices etc.

Q5. Write a short note on home banking.

Model Paper-III, Q8

OR

Home Banking

Answer :

March/April-12, Q5

E-banking/online banking made the life of individuals and companies easy. Today customers are no more required to rush to banks for making deposits, withdrawals and payment of bills. All these can be done online; customers can withdraw money by using Automated Teller Machine (ATM). Both individual and companies can save their money and time through E-banking. E-banking is one among the very successful online businesses.

With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the username and password. Once log in is done successfully, the user is asked to enter the account number. After entering the account number, account balance will be displayed in the message box.

Q6. List out the risk involved in E-payments.

(Oct./Nov.-11, Q3 | Model Paper-I, Q8)

OR

Risks in E-payment

(March/April-12, Q3 | March-11, Q3)

OR

What are the risks of E-payment system?

Answer :

Oct./Nov.-16, Q4

The risks that are associated with electronic payment system are,

1. Risks associated with fraud or mistakes
2. Risks associated with privacy
3. Risks associated with credit cards which can be,
 - (a) With guarantee
 - (b) Without guarantee.

Q7. What are the payment systems?

Model Paper-II, Q3

OR

Types of Payment Systems

Answer :

March/April-14, Q8

Electronic payment systems can be categorized into three types,

1. Banking and Financial Payment

The banking and financial payment system is again classified into three types. They are,

- (i) Large scale payment-
- (ii) Small scale payment
- (iii) Home banking.

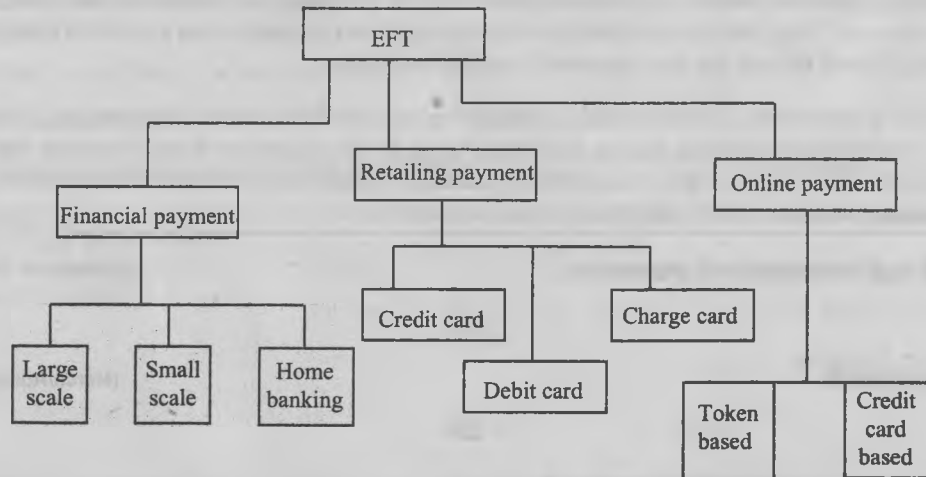
2. Retailing Payment

Retailing is classified into three types,

- (i) Credit payment
- (ii) Debit payment
- (iii) Charge card payment.

3. Online E-commerce Payment

- (i) Token based payment system
- (ii) Credit card based payment system.



Q8. Write about credit card.

OR

Credit Card

Answer :

(March/April-16, Q7 | Sep/Oct.-15, Q7)

Credit card is a card that is used instead of cash in shopping. It can be used for processing transaction. There are smart cards with which purchase of goods and services is done first, then the customer pays for it later.

Credit card based payments can be processed by using the following three methods,

1. Using plain unencrypted credit card features for payment
2. Using encrypted credit card features for payment
3. Using third-party authorization for credit card payment.

Q9. What are the advantages of E-cash?

OR

Advantages of E-cash

Answer :

March/April-16, Q3

The advantages of e-cash are as follows,

1. E-cash provides shopping convenience to the customers, hence they are free to choose from a variety of products available globally.

2. E-cash provides a high transaction security compared to other credit card transactions because of its blind signatures.
 3. It enables the merchants to think beyond the local markets. The merchants can now attract global customers because they can send and receive money throughout the world with just a mouse click on their desktop.
 4. Merchants can even restrict the E-cash on purchase of certain products. For example, a TV merchant can limit his E-cash such that the E-cash cannot be used to purchase any other item except television.
-

Q10. List the benefits of smart card.

OR

Benefits of Smart Cards

Answer :

Sep./Oct.-15, Q3

There are numerous benefits of using smart cards. Some of them are mentioned below.

1. Highly Secure

It uses encryption and authentication technology for ensuring security.

2. Safely Portable

It is lightweight and can be easily carried. Hence, a person can carry smart card instead of carrying money with him, and to access its stored amount, he just have to know the pin number.

3. Double as an ID Card

It provides complete identification, and therefore it can be used for identifying an individual. For example, incase of home-banking, it can be used as a secure token for authenticating the person over an internet between the systems of the person and the bank.

4. Prohibit Fraud

It can be used by government to ensure that the benefits and social welfare are received by the right person.

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****3.1 INTRODUCTION**

Q11. Discuss in detail about consumer-oriented E-commerce application and its role in E-commerce.

March/April-15, Q11(b)

OR

Explain about consumer-oriented E-commerce applications.

(Model Paper-II, Q11(b) | Oct.-14, Q11(b))

OR

Discuss customer-oriented E-commerce applications.

March/April-14, Q11(b)

Answer :

Consumer-Oriented Electronic Commerce Applications

There are mainly four types of consumer-oriented applications that are widely used,

1. Personal finance/home banking
2. Home shopping
3. Home entertainment
4. Micro transactions of information.

1. Personal Finance/Home Banking

This is the first consumer-oriented application in e-commerce. With the help of e-commerce, various banking transactions can be done online. For instance, if a user wants to know the current status of his/her bank account, he/she just needs to go to the respective bank's website and login through the username and password. Once log in is done successfully, the user is asked to enter the account number. After entering the account number, account balance will be displayed in the message box.

Services that are provided by home banking application can be classified into three types,

- (a) Basic services
- (b) Intermediate services
- (c) Advanced services.

(a) Basic Services

The basic services of home banking include,

- (i) Payment of bills
- (ii) Checking the account status
- (iii) ATM services for depositing and withdrawing cash.

(b) Intermediate Services

This is the second type of service of home banking application. Like basic services, intermediate services also provide services like payment of bills, transfer of money etc. Only difference here is that basic services are used by those customers who are not having enough knowledge about computers. In other words, customers have only basic knowledge of computers. Here, such customers use simple packages or software for accessing the basic services. Whereas, intermediate services are used by those customers who have more knowledge than the customers of basic services. Therefore, these customers require more sophisticated software for accessing the intermediate services.

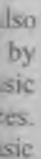
MERCE

Q11(b)

- 211(b))

Q11(b)

king
just
fully,
the



also
by
sic
tes.
sic

also
by
sic
tes.
sic

also
by
sic
tes.
sic

The diagrammatic representation of these advanced services is shown in the following figure.

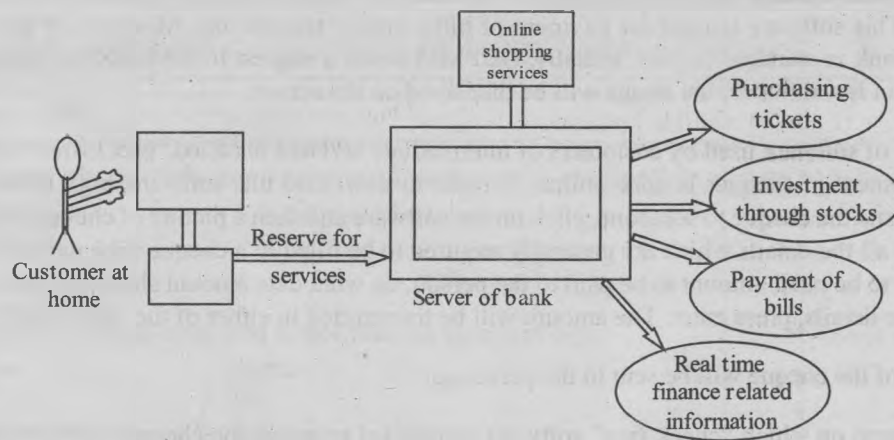


Figure: Advanced Services

2. Home Shopping

This is the second consumer-oriented application in E-commerce. With the help of this application, a user can perform shopping on-line from home. Example of home shopping are online stores and electronic shopping malls.

There are mainly two forms of home shopping,

- (a) Television based home shopping
- (b) Catalog based home shopping.

(a) Television Based Home Shopping

This is the first form of home shopping. Television has changed our lives both positively and negatively.

Generally, there are various channels related to fashion, sports, health, teleshopping etc. which are shown on TV. The user can view his/her required channel with an ease. For instance, if a user wishes to buy various home appliances or exercising equipments to keep himself/herself fit and healthy, there is a channel called "teleshopping" which shows different home appliances as well as items for exercising along with their costs and warranty.

(b) Catalog Based Home Shopping

This is the second form of home shopping. Other than looking for products for shopping on TV, the user can look for products for shopping through catalogs as well.

There are two ways in which catalog-based shopping can be done,

- (i) Catalog based shopping through paper-based catalogs.
- (ii) Catalog based shopping through online catalogs.

(i) Catalog Based Shopping through Paper-based Catalogs

Suppose a customer visits a TV showroom to buy a TV but fails to find the desired TV, as he/she is not able to explain the type of TV that is required to the shopkeeper. In such situation, the shopkeeper provides the customer with a catalog which has detailed explanation of various models of TV. This may lead to the possibility of finding the desired TV.

Benefits of Paper-based Catalogs

- ❖ This type of catalog is easy to develop and are less expensive.
- ❖ It doesn't require computer for accessing them.
- ❖ It is relatively flexible than online catalogs.

Drawbacks of Paper-based Catalogs

- ❖ It is not possible to perform any sort of change in these catalogs.
- ❖ It displays the product information only in the form of text or photograph and doesn't include any form of video.
- ❖ It limits the number of products to be displayed.

(ii) Catalog Based Shopping through Online Catalogs

The procedure for catalog-based shopping through on-line catalogs is almost similar to paper-based catalogs. Only difference is that these catalogs are provided online. The online catalog that is mostly used is CD-ROM catalogs. These catalog contains detailed information of the product provided by the website of that particular product which can be viewed just by inserting the CD.

Benefits of Online Catalogs

- ❖ It is possible to perform changes in online catalogs.

3. Home Entertainment

This type of consumer-oriented application in E-commerce has become more popular. A classic example of home entertainment application is home video service. Home video service is a type of service where latest movie releases are converted or recorded in the form of DVD/VCD and are sold. Factors influencing the popularity of home video are as follows,

- ❖ In most cases, people don't get enough time to go to theatres to watch movies.
- ❖ Cost of watching a movie in theatres can be expensive. The price of the ticket varies in every theatre. In some theatres, the ticket can cost around ₹50. In some theatres, the ticket price can be around ₹100.

(ii) Catalog Based Shopping through Online Catalogs

The procedure for catalog-based shopping through on-line catalogs is almost similar to paper-based catalogs. Only difference is that these catalogs are provided online. The online catalog that is mostly used is CD-ROM catalogs. These catalog contains detailed information of the product provided by the website of that particular product which can be viewed just by inserting the CD.

Benefits of Online Catalogs

- ❖ It is possible to perform changes in online catalogs.
- ❖ It helps the customer to easily search for the desired product.
- ❖ It provides current and relevant product information.
- ❖ It displays the product information in the form of text, audio, video etc.
- ❖ It enables the customer to perform comparative shopping.
- ❖ It doesn't restrict on the number of products to be displayed.

Drawbacks of Online Catalogs

- ❖ It is costly to build.
- ❖ It becomes necessary for the customer to have the knowledge of computers as well as the Internet.

The figure for different types of home shopping is as follows,



Figure: Types of Home Shopping

3. Home Entertainment

This type of consumer-oriented application in E-commerce has become more popular. A classic example of home entertainment application is home video service. Home video service is a type of service where latest movie releases are converted or recorded in the form of DVD/VCD and are sold. Factors influencing the popularity of home video are as follows,

- ❖ In most cases, people don't get enough time to go to theatres to watch movies.
- ❖ Cost of watching a movie in theatres can be expensive. The price of the ticket varies in every theatre. In some theatres, the ticket can cost around ₹50. In some theatres, the ticket price can be around ₹100.

Now, in addition to provide movies in CD/VCD format, even the latest television shows are also recorded on CD as well as in DVD format and sold.

Instead of going to a particular movie store and buying a CD/DVD, customer can order it through Internet. For example, there is a site called www.moserbear.homevideo.com. Through this site, a user can order different types of Indian movies like Telugu, Hindi, Gujrati, Bengali etc.

Other entertainment services are as follows,

- (a) Pay per view service
- (a) Game on demand service.

(a) Pay Per View Service

It is a special type of service provided by cable operators. In this service, in order to watch a particular programme on TV, a user has to pay for it.

(b) Game on Demand Service

With the help of this service, a user can order and play desired games, which may include sports games, car racing games, mind games or action games.

Other than ordering and watching movies, a user can also hear different kinds of music like Hindi, Gujrati, Spanish etc. by downloading it through Internet.

4. Microtransactions of Information

Using this type of consumer-oriented application in E-commerce, customers can download different types of softwares or packages they want, through internet.

There are two main categories to download a software,

- (a) Shareware software
- (b) Freeware software.

(a) Shareware Software

There are some websites which charges the user for usage of a particular software. This category of software is called shareware software.

(b) Freeware Software

There are some websites which don't charge the user for usage of a particular software. This type of software is called freeware software.

The biggest advantage of this category of software is that it is cost free. The problem that might occur in shareware software category is the fraudulent use of your credit card. In freeware category, no such problem exists.

Following is the diagrammatic representation of micro transactions of information application.

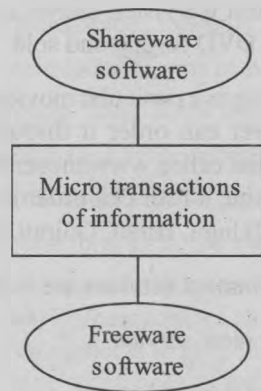


Figure: Microtransactions of Information

Q12. Discuss different types of electronic market places.

Answer :

There are five different types of electronic market places which are as follows,

- (a) Private company electronic market place
- (b) Consortia sponsored electronic market place
- (c) Independent industry electronic market place
- (d) Customer portals electronic market place
- (e) Private stores on supplier's site electronic market place.

(a) Private Company Electronic Market Place

A market place which consists of more number of suppliers and only one customer.

Example

Harley-Davidson supply net electronic market place.

(b) Consortia Sponsored Electronic Market Place

An electronic market place having more number of suppliers and less number of customers.

Example

Covisint electronic market place and exostar electronic market place.

(c) Independent Industry Electronic Market Place

A market place where there are equal number of suppliers and equal number of customers.

Example

Chem connect electronic market place.

(d) Customer Portals Electronic Market Place

This market place is just the opposite of consortia sponsored electronic market place. Instead of more number of suppliers and less number of customers, there are more number of customers and less number of suppliers.

Example

Grainger electronic market place.

(e) Private Stores on Supplier's Site Electronic Market Place

This market place is complete contrast to the private company electronic market place. There is only one supplier and more number of customers as compared to only one customer and more number of suppliers of private company electronic market place.

Example

Cisco electronic market place and Dell electronic market place.

The diagrammatic representation of the five electronic market places in e-commerce is shown below,

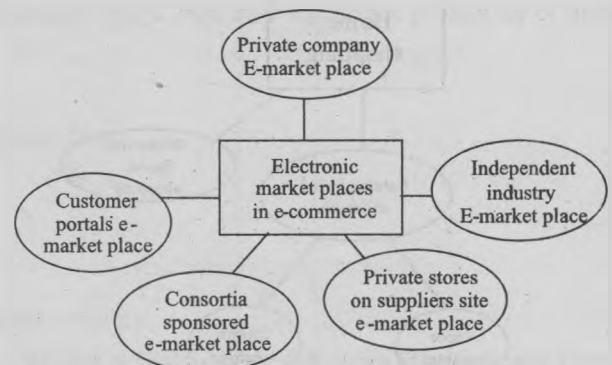


Figure: Five Electronic Market Places

3.2 MERCANTILE PROCESS MODEL: CONSUMER'S PERSPECTIVE AND MERCHANT'S PERSPECTIVE

Q13. What are the mercantile process models from consumer's perspective?

March/April-12, Q11(a)

OR

Discuss about mercantile process model from consumer's perspective.

Answer :

(Model Paper-I, Q11(a) | Oct./Nov.-16, Q11(b))

Mercantile Process Models from Consumer's Perspective

Mercantile process models enables the consumers to perform online shopping with same features as that of manual shopping. This model consists of seven different functions and each of these functions are in turn placed in three different phases,

Phase-I: Pre-purchase Preparation Phase

This is the first phase of the process model which includes,

- (i) Searching and finding those products on which consumers are dependent.
- (ii) Comparing the qualities of the above products with the one that is rarely used.
- (iii) Discussing on the price and delivery of the products.

Phase-II: Purchase Consummation

This is the second phase of the process model. Once the customer has decided the product to purchase, there must be some sort of transaction between the customer and seller regarding the product delivery and payment. This type of transaction is called mercantile transaction. Various steps involved in mercantile transaction process are,

Step 1

Customer informs the vendor/seller that he wants to buy a product. This intention can be done through Internet, telephone etc.

Step 2

Vendor tells the customer about the cost of the product.

Step 3

Customer might bargain with the vendor regarding the cost or settle with the cost quoted by the vendor.

Step 4

Once both the parties have agreed upon the cost of the product, customer pays the amount to the vendor in an encrypted format containing a digital signature.

Step 5

Seller then checks the authenticity of the customer by sending the signed application to his respective bank.

Step 6

On receiving the form of payment the bank first decrypts it. Then bank of the vendor, calls the bank of the customer to know whether any cash is available in the customer's bank account.

Step 7

If the customer's bank replied in a positive way, then the vendor's bank sends the message saying payment done by the customer is valid.

Step 8

On receiving this message, vendor delivers the product to the customer along with the product delivery receipt.

Step 9

Customer on getting the product, signs and sends the receipt back to the vendor.

Step 10

Certain audit and customer service actions are then performed regarding overbilling.

A simple diagram of the above mercantile transaction process is shown below,

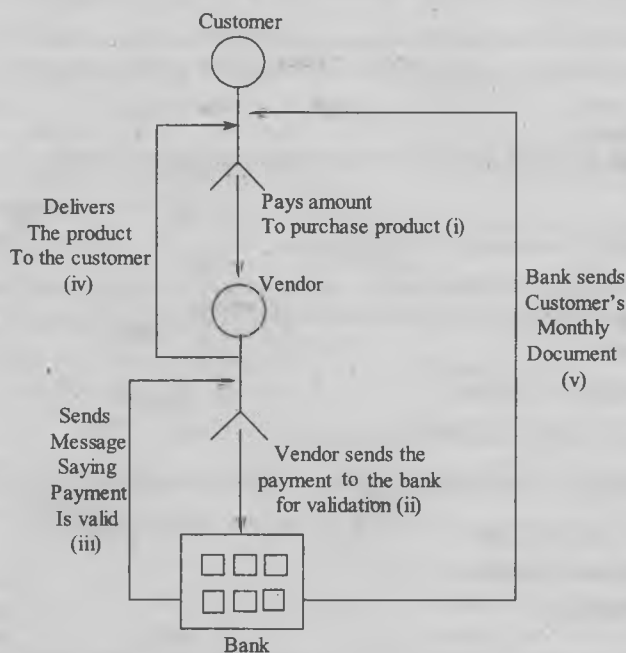


Figure: Simplified On-line Mercantile Mode/Transaction

Phase-III: Post-purchase Interaction Phase

This is the third phase of the process model. This phase describes how to deal with various issues/disputes that takes place between the customer and a company. For Example, disputes regarding the quality of the product.

However, there are certain issues that are not completely solved. The issues are as follows,

- (a) Inventory issues
- (b) Database access and compatibility issues
- (c) Customer service issues.

(a) Inventory Issues

One of the issues that needs to be dealt is inventory issues. Suppose, a customer needs a particular product and that product is not available in the company. In such situations, the company should immediately inform the customer about the unavailability of the product rather than sending a notice after several days thinking that the customer won't mind.

Companies should not take their customers for granted. On the contrary, if the particular product the customer needs is available, then the company must instantly deliver that product to the customer. By doing this, good relationship with the customer can be maintained.

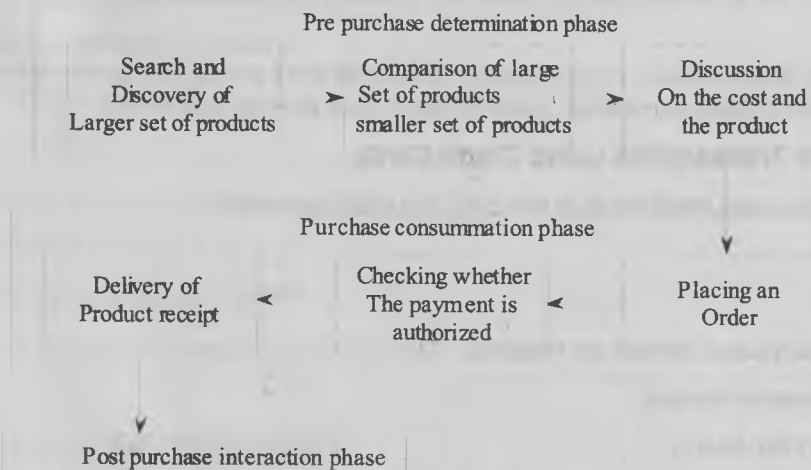
(b) Database Access and Compatibility Issues

Another issue that needs to be dealt is database access and compatibility issues. Only if the customer is able to have information or access to those sellers who more often or not use the same software for marketing their products and that too on Information Superhighway (I-way), only then the customer can have access to the kind of service that is required.

(c) Customer Service Issues

Other than the above issues, there is another issue that needs to be resolved which is customer service issue. Suppose, a customer has bought a particular product from a company and is facing certain problems regarding it. Then the customer contacts the customer service section of the company for product enquiry. In such cases, the customer service operator must respond immediately to the customer rather than making the customer wait.

The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,



The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,

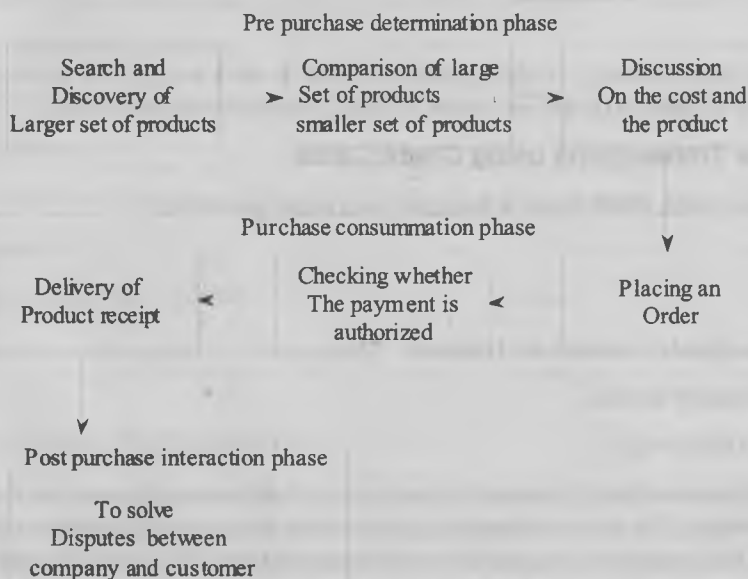


Figure: Three Phases of Mercantile Models from Consumer's Perspective

Q14. Discuss in detail the two forms of payment used in purchase consummation phase.

Answer :

Model Paper-II, Q11(a)

Based on mode of payment used, interaction/transaction between customer and vendor (also known as mercantile process) varies. There are two forms of payment used in purchase consummation phase. They are,

- (i) Mercantile process transactions using digital cash (e-cash).
- (ii) Mercantile process transactions using credit cards.

(II) Mercantile Process Transactions Using Digital Cash (E-cash)

E-cash stands for electronic cash. It is one of the forms of on-line payment. It is similar to paper currency that can be easily transmitted through some electronic means. It also has a risk of theft or loss, so requires security for its storage.

Following are the various steps involved in this process,

Step 1

Customer takes out e-cash from the bank.

Step 2

Customer informs the vendor that he wants to purchase a particular product.

Step 3

Vendor tells the customer about the cost of the product.

Step 4

Customers pay e-cash to the vendor purchasing the product.

Step 5

On receiving e-cash, vendor sends this e-cash to the bank for validation.

Bank of the vendor validates e-cash. If found valid, vendor's bank sends a message to the vendor saying that the e-cash is valid.

The diagrammatic representation of all the three phases of the process model from consumer's perspective is provided below,

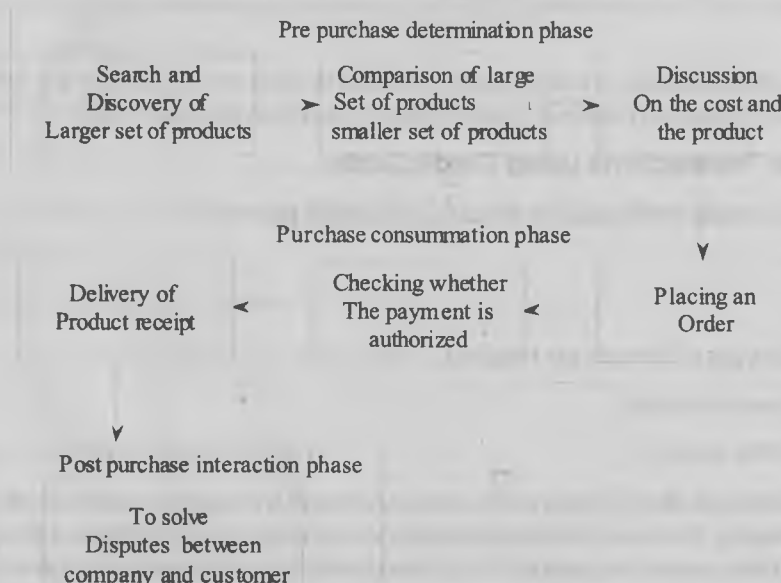


Figure: Three Phases of Mercantile Models from Consumer's Perspective

Q14. Discuss in detail the two forms of payment used in purchase consummation phase.

Answer :

Model Paper-II, Q11(a)

Based on mode of payment used, interaction/transaction between customer and vendor (also known as mercantile process) varies. There are two forms of payment used in purchase consummation phase. They are,

- (i) Mercantile process transactions using digital cash (e-cash).
- (ii) Mercantile process transactions using credit cards.

(I) Mercantile Process Transactions Using Digital Cash (E-cash)

E-cash stands for electronic cash. It is one of the forms of on-line payment. It is similar to paper currency that can be easily transmitted through some electronic means. It also has a risk of theft or loss, so requires security for its storage.

Following are the various steps involved in this process,

Step 1

Customer takes out e-cash from the bank.

Step 2

Customer informs the vendor that he wants to purchase a particular product.

Step 3

Vendor tells the customer about the cost of the product.

Step 4

Customers pay e-cash to the vendor purchasing the product.

Step 5

On receiving e-cash, vendor sends this e-cash to the bank for validation.

Step 6

Bank of the vendor validates e-cash. If found valid, vendor's bank sends a message to the vendor saying that the e-cash is valid.

Step 7

Vendor on getting this message from the bank, delivers the product to the customer.

Step 8

Finally, after delivery of the product, vendor informs its bank to mark e-cash sent by the customer as already used. So, next time customer in order to purchase a new product, must provide new e-cash.

(ii) Mercantile Process Transactions using Credit Cards

Mercantile transactions using credit cards is based on two major processes,

- ❖ Authorization
- ❖ Settlement.

For authorization, two types of devices are required,

- ❖ Third party processors/devices.
- ❖ Point Of Sale (POS) devices.

All the necessary information that is required for authorization of transaction process done through credit cards is obtained by third party processors. The same information is also stored on point of sale devices by using dial up/ telephone connection. With the help of this connection, information is transferred from third party processor to point of sale devices. So, both systems have the same information. But the actual authorization is done on POS devices. Here, credit card number used for transaction is compared with the actual credit card number of the customer. The actual credit card number information will be known from the bank of the customer. If both the numbers match, then the transaction is successful. Otherwise, this process is stopped immediately. Once, the authorization process is complete, the final process is done on a third party processor.

This transaction process in a step wise fashion is described below,

Step 1

Once the customer has taken the product, he gives his credit card to the retailer for payment of the product. Retailer uses different devices for scanning the credit card information. For Example, an electronic cash register, point of sale device.

Step 2

The information of transaction done through credit card is transmitted to the network access point by POS device. The purpose of this access point is to establish a connection so that the information is distributed or stored over the network.

Step 3

Transaction information is now available on the network. Hence, POS device checks whether the source of transaction is valid or not. Then, the transaction information is sent through the network to the customer's bank to check whether the credit card is authorized or not. The confirmation is displayed on the screen of POS device.

Step 4

Once the transaction process is complete, the retailer starts a new type of transaction called "close out" transaction. This transaction deletes all the current transaction information from point of sale device for space for new transactions.

Q15. Describe briefly the mercantile model from the merchant's perspective.

Answer :

Oct./Nov.-11, Q11(a)

Mercantile Models from Merchant's Perspective (or) Order to Delivery Cycle from Merchant's Perspective

The two important factors that various organizations must keep in mind from the order to delivery of the product are,

- ❖ Quality of the product.
- ❖ Cost of that product.

Organizations must make sure that the products they produce are of good quality and maintain that quality for a long time. Another point that organizations must consider is to ensure the cost of the product is reasonable.

There are eight different steps from product ordering to delivery (also known as order management cycle).

1. Order planning and order generation
2. Cost estimation and pricing
3. Order receipt and entry
4. Order selection and prioritization
5. Order scheduling
6. Order fulfillment and delivery
7. Order billing and account/payment management
8. Post sales service.

1. Order Planning and Order Generation

This is the first step of order management cycle. In this step, a plan regarding the requirements for a particular order is made. This requires a proper coordination between the particular departments of a company for completing the order of the customer. For example, the concerned departments must discuss together the workers required to complete the order, cost for completing the order etc. If there is no proper coordination between the departments, the end result will not be as expected. With proper planning of order, order can be properly generated.

2. Cost Estimation and Pricing

This is the second in order management cycle. Now, after a company has completed an order given by the customer, it must know how to fix a price for that order. Pricing acts as a link between the requirements of the customer for an order and ability of the company to complete that order. There are various factors that help the company to fix a price for an order,

- ❖ When company has created an order, it must ensure whether that order will be of any help to customer.
- ❖ Consideration on the cost that will be good for order completion.

3. Order Receipt and Entry

This is the third step of the order management cycle. Checking whether the order is received properly or not by the customer, whether the entry of the order is done correctly or not. All these tasks are handled by a separate department of the company which is customer service department. The people working in this department might be experienced or inexperienced. Irrespective of this, customer service people are in regular contact with the customers.

4. Order Selection and Prioritization

This is the fourth step of the order management cycle. Other than handling order receipt and entry tasks, customer service department also decides which orders are good or bad for the company. Selection of those orders are made from which the company can profit.

After order selection, next step is order prioritization. Prioritizing an order is nothing but taking a decision on which order can be carried out more quickly. Unfortunately, these decisions are taken by those people of the company which are having absolutely no knowledge of prioritizing an order.

5. Order Scheduling

This is the fifth step of the order management cycle. In this step, orders which are prioritized are placed in different company departments. As a result, scheduling the orders will be more difficult because every department will be having its own way of scheduling the orders.

6. Order Fulfillment and Delivery

This is the sixth step of the order management cycle. Order fulfillment and delivery process is carried out from more than one place of the company. For example, separate places are required for creation of orders, manufacturing of orders, and storage of orders etc.

7. Order Billing and Account/Payment Management

This is the seventh step of the order management cycle. Order billing and account/payment management task is handled by finance department of the company. The only functionality of this department is just to deliver the bills to the customers and receive the payments from them. This department is beneficial only for the company and not for the customers. This is because most of the customers are not satisfied with the billing system.

8. Post Sales Service

This step provides different services that will help in the development of a company. The services are,

- (a) Providing training to the customers
- (b) Installing the product in the system as well as repairing and maintaining the product.

The diagrammatic representation of order management cycle is as follows,

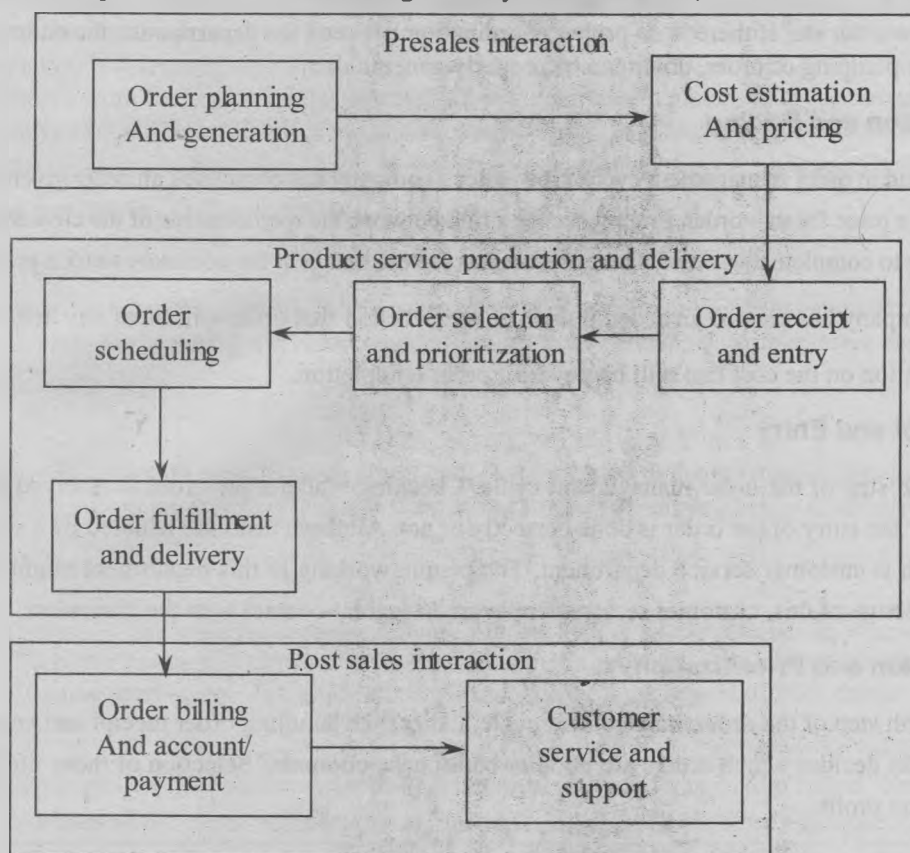


Figure: Order Management Cycle/Order to Delivery Cycle

Q16. Explain mercantile process model.

March/April-17, Q11(a)

OR

Explain about Electronic Payment Systems.

Oct./Nov.-16, Q11(a)

OR

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Discuss about merchantile process model.

March/April-16, Q11(a)

OR

Discuss in detail about mercantile process models.

March/April-13, Q11(a)

OR

What are mercantile process models from consumer's and merchant's perspective.

Answer :

March-11, Q11(b)

Mercantile Process Model from Consumer's Perspective

For answer refer Unit-III, Page No. 81, Q.No. 13.

Mercantile Process Model from Merchant's Perspective

For answer refer Unit-III, Page No. 84, Q.No. 15.

3.3 ELECTRONIC PAYMENT SYSTEMS

Q17. Define electronic payment system. What are the advantages of electronic payment system?

Model Paper-III, Q11(a)

OR

Explain electronic payment system.

Answer :

March/April-17, Q11(b)

Electronic Payment System (EPS)

Electronic payment system is a building block of E-commerce which refers to the online exchange of money. This exchange is carried out over different platforms such as E-cash, E-check, credit cards etc. The widespread adoption of these methods is due to the fact that it reduces cost and time of a transaction.

Advantages

The advantages of electronic payment system are as follows,

1. Globally Accepted

Electronic payment system has been widely accepted around the world because of its hassle free process of converting money or funds into accepted form and it requires less amount of time for processing. Whereas traditional payment system has some of the political and geographical restrictions due to which the processing becomes difficult and requires more amount of time.

2. Enhanced Security

Electronic payment systems provides enhanced security by minimizing frauds related to cheques and physical cash. Whereas traditional payment system donot hold much security.

3. Low Transaction Expenses

Electronic payment refers to the process of a transaction in a digitized way i.e., it does not require human intervention. The expenses that occur in paper less transactions are relatively low when compared to paper based transactions.

4. Speedy Transactions

Electronic payment system is the fastest way of operating transactions in the present era. It resolves the problems which are faced by the people in traditional payment system. In EPS, transactions are processed in just a click or by swiping the cards through card readers. It provides users an easy way to perform transactions feature by using their PDA's, Phones, Laptops.

5. Providing Real Time Access

Electronic payment systems facilitate users to access funds which are deposited in the accounts as per their requirement. Some of the methods which are used by the users to spend according to their needs are E-cheque, E-cash and Store Value Card. On the otherhand, methods adopted by traditional payment system does not allow accessing funds, anytime, anyway, anywhere according to user's will.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Q18. Discuss the factors to be considered for designing EPS.

Answer :

Designing Electronic Payment System

The different factors that are to be considered while designing electronic payment systems are,

1. Privacy and confidentiality
2. Security and protection
3. Intuitive interfaces
4. Database integration
5. Network bankers
6. Cost assigning
7. Standards.

1. Privacy and Confidentiality

Privacy must be ensured and maintained by every electronic payment system. Every user must be assured that details of their transactions are kept confidential so that they can trust the payment systems.

2. Security and Protection

Different security techniques must be embedded within the system such as access control and authentication that verifies the identity of parties that are involved in the transaction.

3. Intuitive Interfaces

The electronic payment system should be developed using a convenient and easy to use interfaces.

4. Database Integration

It is very important to integrate different databases that store various accounts associated with a customer. This customer related information is kept up-to-date and free from any errors so that a customer can gain access to any database using home banking service.

5. Network Bankers

A broker is essentially required while designing a payment system. Broker is the one who is responsible for clearing conflicts and performing financial operations electronically.

6. Cost Assigning

How to price the services offered by electronic payment system is of major concern while designing payment system. For example, is it necessary to use any subsidies to motivate the customer for changing their form of payment since they consume more resources that waste a lot of money. Without subsidies it is impossible for any payment system to assign the cost to a service accurately.

7. Standards

With the help of standards, it is possible for different customers, operating on different networks by using a variety of payment systems to interoperate. Interoperability is assured by using standard protocols and message formats.

Q19. Explain credit card based electronic payments system.

Answer :

There are two steps in which credit card payment is negotiated,

1. The seller presents the buyer with cost of goods or services, confirmation of order and its status, notification of delivery and choices for payment that the seller can accept.
2. The buyer presents the seller with the payment option and required information in a secure way.

Electronic payment system that is based on credit card is used to avoid the difficulties and time-consuming issues that were present while processing e-cash or e-checks. Here, the processing is done by credit card company when a customer wishes to purchase any goods or services.

Types of Credit Card Payment Methods

Credit card based payments can be processed by using the following three methods,

1. Using plain unencrypted credit card features for payment
2. Using encrypted credit card features for payment
3. Using third-party authorization for credit card payment.

1. Plain Unencrypted Credit Card Feature for Payment

This is the simplest form of payment over public network such as Internet. The problems that arise using plain credit card are,

- (i) Security level provided by Internet is very low that allows any hacker to interpret the network and gather valuable information like credit card number, account number etc.
- (ii) Lack of authentication techniques.

Security and authorization can be provided by using a third-party which is a company that gathers and verifies the payment of funds that flows from one party to another.

Companies that are providing infrastructure to on-line credit card processing are First Virtual Holdings (FVH), interactive transaction partners, VISA interactive, master banking.

2. Encrypted Credit Card Features for Payment

In this type of payment, credit card is encrypted before performing any transaction using various encryption techniques like PGP, PEM. One important factor to be considered is its cost that limits micro-payment transactions to be executed because they even add to total transaction cost.

As soon as credit card details are entered into a browser which is used to navigate over the internet, encryption process is started so that these details are encoded into cipher text while it is being transmitted from a payer PC to payee PC such that it is not intercepted by any intruder. This encrypted credit card system fails to meet the requirements of a financial institute such as providing protection, high speed and non-repudability.

The following sequential steps are followed to provide protected and non-reputable credit card transaction,

- (i) A payer gives the credit card details to the payee with payment choice in a secure manner.
- (ii) Payee performs authentication to verify the identity of card holder.
- (iii) Payee presents the charge details and digital signature to online processors of credit card.
- (iv) The processor then presents the details to the payer's financial institution for validating and verifying the ownership of a card holder.
- (v) Payer's financial institution then returns the charge authentication, credit card verification details to the payee.

Encryption is provided using two numerical keys viz., private key and a public key which are generated by each buyer and seller. The public key is stored on public key server in a credit card company which sends a unique credit card number and limits the usage of credit card to payer.

Encryption is performed again on the private key using the password of buyer and seller. In order to start the transaction, buyer must initially sign the message using the public key. Buyer does this by encrypting the message using the own password. After the completion of buyer's transaction, seller digitally signs the message using the private key. The information about the card is transferred to credit card company, which is responsible for sending the bill to the buyer. The seller stores the receipt and presents it to acquiring bank that transfers the amount to sellers account by deducting it from payer's account.

It is not possible to misuse the system because neither there is a chance for buyer to disagree to transaction nor a seller can introduce fake charges. In order to make credit card payment system to work efficiently, it is necessary to develop distributed key servers and card checkers.

3. Third-party Authorization for Credit-card Payment

Third-party is a company that gathers and verifies the payment of funds that flow from one party to another. In this type of processing, a buyer needs to register himself with the third-party company.

The differences between third-party processor and electronic tokens are,

- (a) Third-party processors are dependent on current financial devices.
- (b) For providing additional security, they require an extra party or numerous parties to perform the transactions online that sometimes make processing very difficult.

Using the following steps that are created by Online Third-Party Processor (OTPP), it is very easy to purchase any software or information online,

1. After filling all the fields of registration form accurately, OTPP account number is given to buyer that relays to the processor, information about buyers profile who uses a credit card as their financial device.
2. The buyer sends a request to seller regarding the online purchase by specifying OTPP account number.
There are two ways in which the purchase request is made,
 - (i) The buyer gives the access privileges to seller who can access their account number and produces the bill.
 - (ii) The buyer himself can enter the account details.
3. The seller then submits the buyer's account number to OTPP accounting server.
4. Accounting server after receiving the account detail verifies if the account number specified is accurate and checks if the account has sufficient amount for purchase.
5. The accounting server then sends an e-mail or any electronic message to the buyer who can reply in any of the following three ways,
 - (i) Yes, I am ready to pay the bill
 - (ii) No, I disagree to pay the bill
 - (iii) Fake, I have never sent a purchase request.
6. If OTPP server receives a positive acknowledgment, a message is sent to the seller who then allows the buyer to download the software or information.
7. OTPP server will store the buyer's account details unless it receives and acknowledges about the completion of the purchase process.

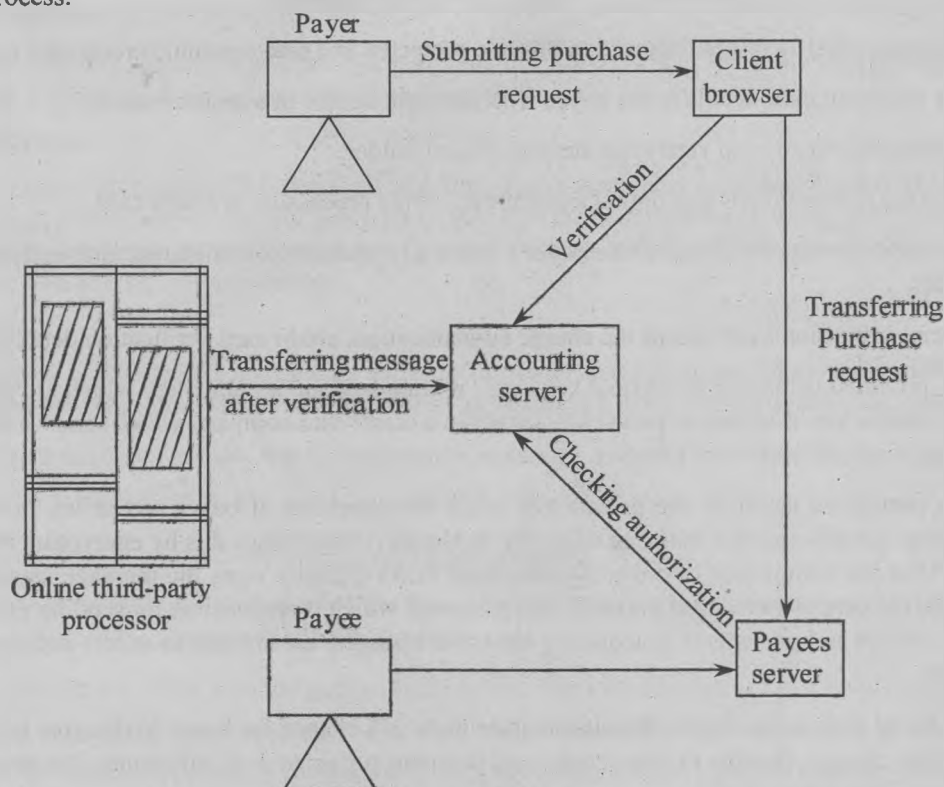


Figure: Third-party Verification

The prerequisites for using this system is that, both buyer and seller must be registered with OTP accounting server.

For performing low-value payments online, it is necessary to automate the previous steps. This can be made possible by using WWW browser that consists of two servers (1) Seller server, (2) Billing or accounting server.

In order to initiate the transaction, both buyer and seller need to register themselves with accounting server by creating an account. Then, a buyer sends a purchase request to seller server by clicking on the URL of the accounting server. The URL contains the following details that are required for making any purchase,

1. Cost of product
2. Destination URL
3. Time duration.

The above information is encoded and transmitted to accounting server that verifies the buyer by requesting their account number and other associated information for verifying the identity. If accurate information is provided, the transaction is processed by accounting server which then gives the items web page along with access URL that encodes the purchase information.

The access URL ensures the seller that the buyer has paid for the purchase which acts as an invoice in digital form that has been marked and paid by accounting server. The access URL is the actual destination URL transmitted by seller server with extra field such as,

- (i) Time of expiry
- (ii) Address of buyer.

A HTTP server is executed by a seller that is manipulated and edited to access URL's. This HTTP server verifies the validity of URL and gives the necessary privileges if the time is not expired. If access becomes invalid i.e., if the expiration time is exceeded, then server gives the buyer a chance to purchase a product again.

After verifying customer's authentication, the payment is processed automatically. Payment paradigm is implemented by accounting server that maintains various payment accounting systems such as credit card account wherein the server system has to establish a connection with the clearing house of credit card. All micro transactions are then executed by this system after collecting and providing instant settlement in aggregate format. Online statement is used for recording each and every transaction that gives a within overview of all purchases that have been done recently where each line in this overview is the hypertext link.

3.3.1 Legal Issues and Digital Currency – E-Cash and E-Cheque

Q20. Explain briefly about the digital currency or electronic cash.

Model Paper-III, Q11(b)

OR

What is E-cash? What are the properties of E-cash?

Answer :

Sep./Oct.-15, Q11(b)

Digital Currency/Electronic Cash (E-cash)

Electronic cash is a form of electronic payment system which provides high level of security and reduces the overhead of paper cash. Because of its adaptable and flexible nature, it opened a way for new markets and applications. In spite of that, there are several reasons, why paper currency is still superior over e-cash.

- (i) Lack of belief or confidence in banking system.
- (ii) Inadequate clearing and agreement of non-cash transactions.
- (iii) Negative rate of real interest paid on all the bank deposits.

Due to its superior, dominant nature, business practises can be changed in order to improve the process of purchasing. In order to replace cash, e-cash should possess some features of paper cash.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Properties of E-cash

The four important properties of e-cash are,

1. Monetary value
2. Interoperability
3. Retrievability and storability
4. Security and protection.

1. Monetary Value

E-cash possesses monetary value that is evaluated in terms of money, credit/debit cards or cashier's check that is certified by bank. There should not be any confusion or conflicts while e-cash transaction is being processed between two financial institutions. Every e-cash token should be certified by bank in order to avoid the risk of disagreement.

2. Interoperability

E-cash has the ability to be exchanged easily with either other e-cash, paper cash or other electronic payment systems including credit cards or banks commitment etc. Multiple banks are responsible for managing this e-cash exchangeability along with cosmopolitan clearing house that involves an association of banks.

3. Retrievability and Storability

It is possible to perform storage and retrieval operations remotely that allows customers to perform transactions involving e-cash exchange either from their office or while on a business trip. These remote operations are performed by storing cash either in smart card device or electronic purses that can be easily transported. In order to provide security, it is better to store cash on specialized devices that are static and cannot be changed. These devices provide security by means of various authentication and access control techniques.

4. Security and Protection

It is very important to provide security while an e-cash exchange transaction is being processed so that it is not easy to copy or swindle the transaction. The major problem present in the internet is forgery, which is very difficult to detect if appropriate conformity is not available. Methods should be implemented to detect and avoid double spending of e-cash. It is very difficult to prevent this issue, if multiple banks are responsible for handling transaction exchange.

Advantages of E-cash to Customers

Electronic cash or digital cash offers a large number of advantages to both customers and merchants. E-cash transactions are more efficient than traditional cash transactions. Hence, more business can be done and businessmen can offer lower prices to consumers.

1. Traditional money exchange systems involve banks, clerks, automated teller machines and many others. As a result, traditional money exchange becomes expensive. On the other hand, e-cash transfer simply uses Internet and hence the operating cost of e-cash transfer is considerably low.
2. Moving physical cash or checks over a distance will incur some cost. The cost of movement of currency depends on the distance it is moved. However, movement of electronic cash is independent of the distance of movement i.e., transferring money from Hyderabad to Delhi will cost the same as transferring it from Hyderabad to New York.
3. One consumer can pay e-cash directly to other consumer, in the same way as one merchant pays to other merchant in a business-to-business relationship. There is no need of an authorization, as in the case of credit card transactions.
4. E-cash provides shopping convenience to the customers, hence they are free to choose from a variety of products available globally.
5. E-cash eliminates the risks associated with carrying the paper cash all the time.
6. E-cash also provides a high transaction privacy compared to other credit card transactions because of its blind signatures.
7. E-cash system uses several transaction protocols which employ RSA public key cryptography to avoid message tampering and eavesdropping.
8. The protection of e-cash on the local machine can be done by using password protection and encryption mechanisms. so e-cash is safe on both sides i.e., during the transit and also on the local machine.

Advantages of E-cash to Merchants

E-cash offers tremendous advantages to merchants,

1. It enables the merchants to think beyond the local markets. The merchants can now attract global customers because they can send and receive money throughout the world with just a mouse-click on their desktop.
2. Merchants can even restrict the E-cash on purchase of certain products. For example, a TV merchant can limit his E-cash such that, the e-cash cannot be used to purchase any other item except televisions.
3. The currency limitations of a particular country can also be eliminated because, E-cash can be filed into and withdrawn from a smart card from anywhere and in any currency.
4. It is much more difficult to forge (duplicate) electronic cash than physical currency.

Disadvantages of E-cash

1. E-cash is susceptible to forgery.
2. It may act as a major disadvantage in case of power failures, loss of records.
3. It is very difficult to trace electronic cash due to which problem of money laundering is faced.
4. It faces the problem of hacking and retrieving personal information in an illegal way which can lead to intrusion in someone's privacy without its knowledge.

Q21. What are the legal issues and business issues related to electronic cash?

Answer :

Legal Issues

Bankers and regulators are forced to form lawful policies with the implementation of e-cash because paper cash is not versatile with current taxation and enforcement system. Transaction that are anonymous i.e., confidential transactions occupy a place in underground economy which is limited to process micro-transactions.

If micro-transactions are processed and if they can be expressed in terms of monetary value, then they are accepted by lawful bodies as a mean of advanced mercantile state that is mostly irrelevant. If larger transactions are being processed, the lawful bodies are more conscious and report flow of funds using the cash related reporting law.

Business Issues

Two main functions that are accomplished by e-cash are,

1. It acts as a medium for performing exchange transactions.
2. It acts as a storage of values.

1. Medium for Performing Exchange Transactions

E-cash has become an important and easy way of processing exchange transactions. The complexity of interlocking credits and liabilities is simplified by assigning value in terms of money to e-cash and by making settlements of transaction instantaneously. Using this method, a small-scale organization doesn't have to wait for a longer period for getting their bills paid.

2. Storage of Values

Paper currency is perceptible and treated as legal tender which means that payee cannot refuse to accept it. If this cash is bank certified, many people wish to use financial institutions like banks to store their money and settle their payments using checks or debit cards. On the other hand, If e-cash is treated as a legal tender it would create a problem if each component of e-cash represent a real cash element then there will be no rate of interest earned on real balances of e-cash.

The other business issue that is related to e-cash arises if there is huge up and down in face value of cash. E-cash is more suitable for being exchanged at traditional rates of market rather than using it for by passing foreign exchange market. The only way of starting conventional exchange market is to develop its own gray market.

Q22. Write short notes on electronic cash in action.**Answer :****Electronic Cash in Action**

A cryptographic technique called digital signature, is used to perform secure e-cash transaction. This technique makes use of two keys,

1. Public key used for decoding
2. Private key used for encoding.

Both the public and private keys used are numeric keys that are basically very large prime numbers. When a message is being transmitted, it is encoded into cipher format by using private key and decoded into plain message format by using public key. The private key is kept secret whereas public key is known to everyone.

Bank gives the public key to all its customers and allows them to decode the message that was encoded using the private key. If decoding is performed successfully, then the customer is assumed that the encoding was done by bank but not by an intruder.

Purchasing Digital Cash from Currency Server

There are two steps that are to be considered while purchasing e-cash from online bank,

1. Creating an account
2. Maintenance of sufficient funds in the account.

Many users prefer to buy e-cash using paper cash because they do not possess any bank account or they want to preserve their anonymity.

The primary prerequisite of purchasing e-cash from any online bank is to create an account with currency server. E-cash must be present in multiple currencies that are supported by different financial institutions in order to gain global privileges. If this is made possible, then a person residing in one country can purchase an e-cash token from a person residing in another country and perform the exchange transaction locally.

Steps for Purchasing E-Cash

1. Creating an account with central online bank or currency server by filling the registration form. This account is used for withdrawing and depositing e-cash.
2. A series of random numbers are generated using e-cash software which can be used as a digital note.
3. Before transmitting the note to customer, the bank signs the note digitally for the requested amount by using its secret key. This digital signature specifies that the bank is responsible for representing the face value of note in terms of dollar amount.

Digital signature is very secure to use since neither the buyer nor the seller can swindle that signature. By applying digital signature method, the following types of protection can be achieved,

- (i) Bank is protected against any counterfeit.
- (ii) Sellers are protected against a situation wherein a legal digital note is rejected by a bank.
- (iii) Buyers are protected against fake charges.

Q23. Explain in detail about electronic checks.**Answer :****Electronic Checks (E-Checks)**

Electronic check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper cash. The e-cash system is generally an electronic implementation of paper check system. These checks make use of digital signature for signing and endorsing and use digital certificates to authenticate the buyer, the buyer's financial institution and the buyer's account. Digital signature authentication is provided by using public key cryptography.

Q22. Write short notes on electronic cash in action.**Answer :****Electronic Cash in Action**

A cryptographic technique called digital signature, is used to perform secure e-cash transaction. This technique makes use of two keys,

1. Public key used for decoding
2. Private key used for encoding.

Both the public and private keys used are numeric keys that are basically very large prime numbers. When a message is being transmitted, it is encoded into cipher format by using private key and decoded into plain message format by using public key. The private key is kept secret whereas public key is known to everyone.

Bank gives the public key to all its customers and allows them to decode the message that was encoded using the private key. If decoding is performed successfully, then the customer is assumed that the encoding was done by bank but not by an intruder.

Purchasing Digital Cash from Currency Server

There are two steps that are to be considered while purchasing e-cash from online bank,

1. Creating an account
2. Maintenance of sufficient funds in the account.

Many users prefer to buy e-cash using paper cash because they do not possess any bank account or they want to preserve their anonymity.

The primary prerequisite of purchasing e-cash from any online bank is to create an account with currency server. E-cash must be present in multiple currencies that are supported by different financial institutions in order to gain global privileges. If this is made possible, then a person residing in one country can purchase an e-cash token from a person residing in another country and perform the exchange transaction locally.

Steps for Purchasing E-Cash

1. Creating an account with central online bank or currency server by filling the registration form. This account is used for withdrawing and depositing e-cash.
2. A series of random numbers are generated using e-cash software which can be used as a digital note.
3. Before transmitting the note to customer, the bank signs the note digitally for the requested amount by using its secret key. This digital signature specifies that the bank is responsible for representing the face value of note in terms of dollar amount.

Digital signature is very secure to use since neither the buyer nor the seller can swindle that signature. By applying digital signature method, the following types of protection can be achieved,

- (i) Bank is protected against any counterfeit.
- (ii) Sellers are protected against a situation wherein a legal digital note is rejected by a bank.
- (iii) Buyers are protected against fake charges.

Q23. Explain in detail about electronic checks.**Answer :****Electronic Checks (E-Checks)**

Electronic check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper cash. The e-cash system is generally an electronic implementation of paper check system. These checks make use of digital signature for signing and endorsing and use digital certificates to authenticate the buyer, the buyer's financial institution and the buyer's account. Digital signature authentication is provided by using public key cryptography.

Online services provided by electronic checks allow,

1. The seller to verify if the buyer has sufficient funds in his/her account.
2. Improved security at each step of transaction processing.

The following are the steps for performing e-check transaction,

1. Before using an e-check, the purchaser must register himself with the billing server which also acts as an account server.
2. Depending on billing server, the registration process may differ in a way that some account server require a credit/debit card to prove one's identity or needs to have a bank account.
3. After registration process is completed, a buyer can purchase any product or service by contacting a seller.
4. After purchasing has been done, purchaser sends the details along with e-check information to seller which presents it to the accounting server for verification.
5. Once the check is deposited in the bank, the payer's identity is authenticated and the balance in the account is checked.

Electronic check is a form of electronic document which contains the following information,

- (i) Payer's name
- (ii) Bank's name
- (iii) Account number of payer
- (iv) Payee's name
- (v) Amount to be paid.

Using electronic check, security and authentication is provided using digital signature. If the process of authorization is completed successfully, the checks can be exchanged electronically between banks using electronic clearing network as a medium.

3.3.2 Electronic Fund Transfer (EFT)

Q24. Write about the types of E-payments.

March/April-16, Q11(b)

OR

Discuss about categories of EFT.

March/April-15, Q11(a)

OR

Discuss the different types of payment systems.

Answer :

March/April-13, Q11(b)

Electronic Fund Transfer (EFT)

Electronic payment means paying the amount for purchased goods electronically. Electronic Fund Transfer (EFT) is defined as a process of transferring funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices.

Electronic fund transfer is different from traditional methods of payment that depends on physical delivery of cash by using physical means of transport.

Electronic payment media can be grouped into three types depending on information being transferred online,

1. Banking and financial payment
2. Retailing payment
3. Online e-commerce payment.

1. Banking and Financial Payment

The banking and financial payment system is again classified into three types. They are,

- (a) Large-scale payment
- (b) Small-scale payment
- (c) Home banking.

(a) Large-scale Payment

Bank-to-bank transfer is a good example for this kind of payment where the funds flow from one bank to another instantaneously.

(b) Small-scale Payment

ATMs and cash dispensers are examples for this kind of payment using ATM. A customer can withdraw money from anywhere at anytime.

(c) Home Banking

Home banking service can be classified into three types,

- (i) Basic services include personal finance service
- (ii) Intermediate services include financial management
- (iii) Advanced services include trading service.

2. Retailing Payment

Retailing payment is classified into three types. They are,

- (a) Credit payment
- (b) Debit payment
- (c) Charge-card payment.

(a) Credit Payment

If a customer purchases any product or service using credit card, then the card details can be transferred to the service provider and then the credit-card company processes the transaction.

(b) Debit Payment

In this type of retailing payment, the customer pays in advance for enjoying the privileges of information to be retrieved. Examples for such prepaid payment system is the electronic purses.

(c) Charge-card Payment

Charge-card is a way of getting a short-term loan for a purchase. It is similar to credit card, except that the customer makes an agreement with the financial institution that he will pay some fixed charges to it each month. Example of charge-card payment include American Express.

3. Online E-commerce Payment

Online payment system is classified into two types. They are,

- (a) Token-based payment system
- (b) Credit-card based payment system.

(a) Token-based Payment System

Three different types of token-based payment are,

- (i) E-cash
- (ii) E-check
- (iii) Smart cards.

(i) E-cash

It is a form of digital cash which provides a high level of security. It also reduces the overhead of paper cash.

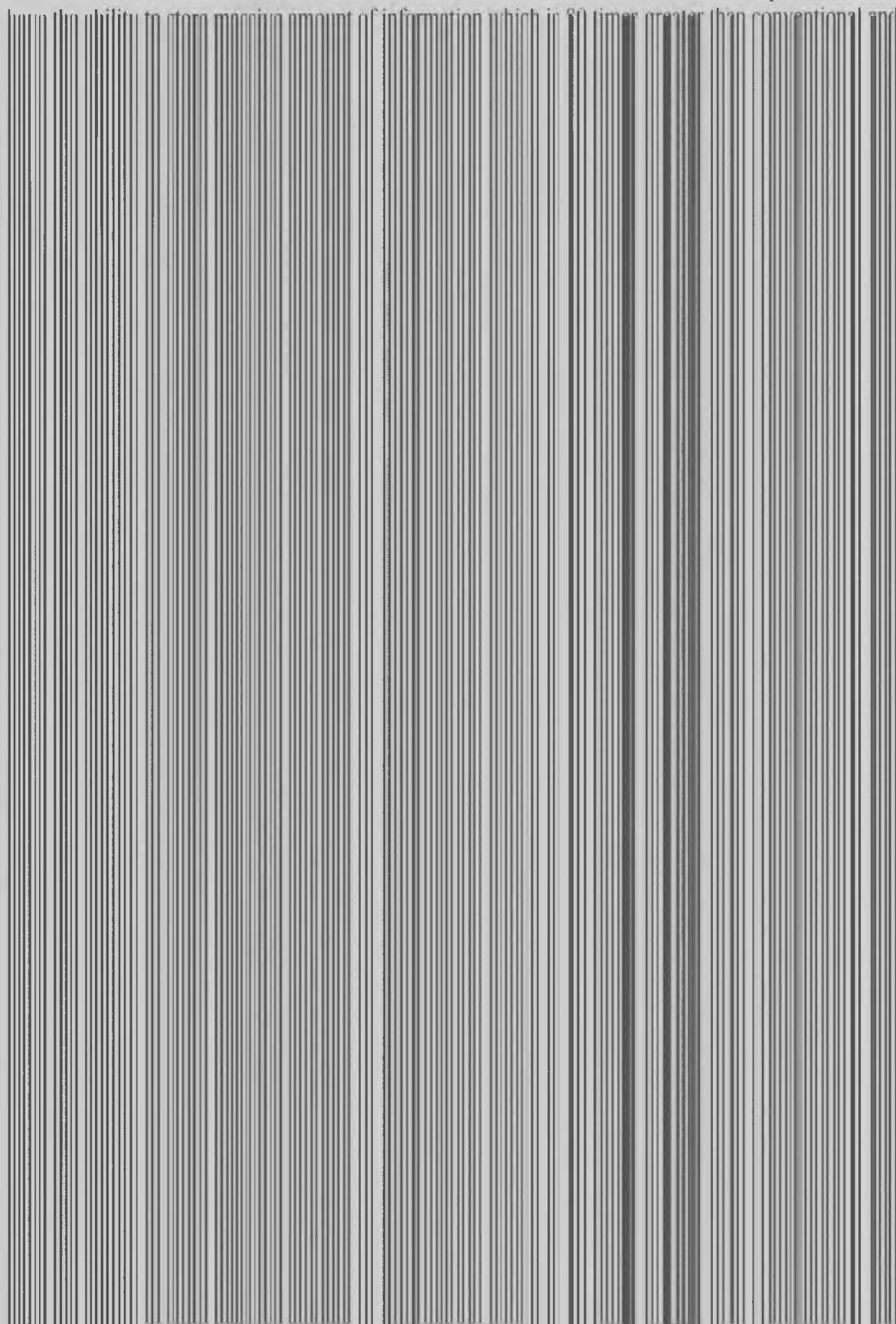
(ii) E-check

E-check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper currency.

Example: Net cheque, net bill.

(iii) Smart Cards

Smart cards are similar to debit/credit cards but with enhanced features such as micro processors that



(i) E-cash

It is a form of digital cash which provides a high level of security. It also reduces the overhead of paper cash.

(ii) E-check

E-check is another form of electronic payment system. These checks are preferred when a customer is willing to make a payment without using paper currency.

Example: Net cheque, net bill.

(iii) Smart Cards

Smart cards are similar to debit/credit cards but with enhanced features such as micro processors that have the ability to store massive amount of information which is 80 times greater than conventional and magnetic strip cards.

Example: Mondex electronic currency card.

(b) Credit-card Based Payment Systems

The different types of credit-card based payment systems are,

- (i) Plain credit-card payment system
- (ii) Encrypted credit-card payment system
- (iii) Online third-party credit-card payment system.

(i) Plain Credit-card Payment System

In this type of payment system, the credit-card transaction is provided without using any encryption techniques. It is one of the simplest form of payment system.

(ii) Encrypted Credit-card Payment System

In this type of payment, credit-card is encrypted before performing any transaction using various encryption schemes like Privacy Enhanced Mail (PEM) and Pretty Good Privacy (PGP).

(iii) Online Third-party Credit-card Payment System

Security and verification can be provided by using third-party, which is a company that gathers and verifies the payment of funds that flow from one party to another.

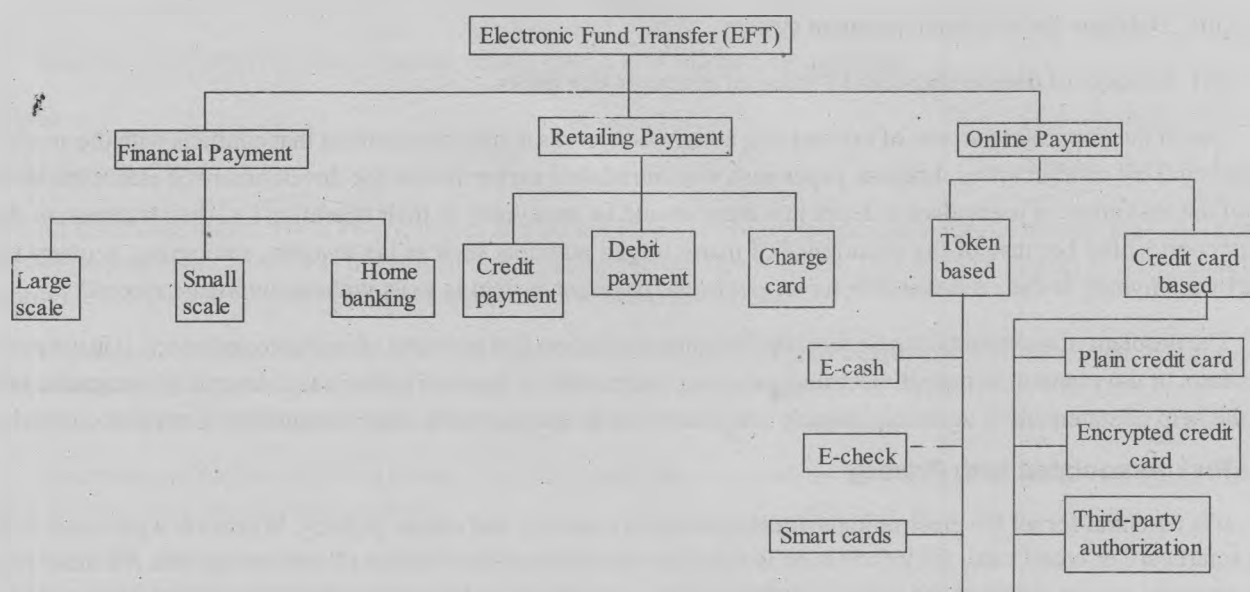


Figure: Types of Electronic Payment System

3.3.3 Advantages and Risks

Q25. What are the advantages and risks involved in electronic payment system? Discuss.

OR

Discuss about the risks involved in E-payments.

(Refer Only Topic: Risks Involved in EPS)

Answer :

Sep./Oct.-15, Q11(a)

Advantages of EPS

For answer refer Unit-III, Page No. 87, Q.No. 17, Topic: Advantages.

Risks Involved in EPS

The risks that are associated with electronic payment system are,

1. Risks associated with fraud or mistakes
2. Risks associated with privacy
3. Risks associated with credit cards.

1. Risk Associated with Fraud or Mistakes

Every electronic payment system has the capability of recording data automatically and electronically. It is very easy and less expensive to store data in electronic devices. This automatic record gives the deflated description of the transactions without any external effort made by any other involved party.

When transactions are imperceptible and depend only on automatic records, then all the financial institutions follow a principle which states that "it is not necessary to delete any requirement of data". Characteristics of records that are stored automatically using electronic systems are,

- (i) Persistent storage
- (ii) Attainability and traceability
- (iii) Database for electronic payment system
- (iv) Capable of transferring data to financial institutes like banks.

One of the important purpose of maintaining automatic records is risk management that conflicts with the anonymity of currency. This conflict arises, because paper cash was introduced earlier before the development of electronic devices. Most of the customers or users always desire that there should be anonymity in their operation i.e., their transaction should be kept confidential because of the occurrence of many forged attempts such as tax evasion, smuggling. A query that is raised by anonymity is that, is it possible for an electronic payment system to exist without automatic record?

The problem of anonymity can be resolved by using regulation that provides security to customers. It is not possible for bankers or government to accept electronic payment system that is unremarkable in the absence of automatic record. With the help of statement of accounts, forgery and frauds can be solved easily only if regulation is applied correctly.

2. Risk Associated with Privacy

It is essential for all the electronic payment systems to maintain and ensure privacy. Whenever a purchase is made using smart card or credit card, the information is stored in the database that consists of various records. All these records in the payment system database are linked together to form a single folder that gives information about what or when the products were purchased, from where the purchase was made etc. However tracking these informations contradicts a law which states that privacy of customers should be ensured.

All customers must ensure that information about their transactions are confined to parties that are involved in the transaction process. Privacy should be provided by protecting the transaction from intruders present on the network and from persons that are not authorized to access the transaction. It should be protected from being deceived, cheated until the whole transaction processing is completed. This protection can be provided using trusted third party agents that can verify the identification of parties that are involved in transaction processing.

3. Risk Associated with Credit Cards

In order to handle credit card risk, digital online central bank have developed various procedures to reduce insolvencies. Every procedure has its own benefits and drawbacks,

- (i) Either the bank settles its net position with guarantee, or
- (ii) Bank settles its net position without guarantee.

(i) With Guarantee

This procedure eliminates the need of insolvency test because the bank presumes that risk associated with credit card is from different banks and not from buyers and sellers.

(ii) Without Guarantee

In this policy, it is necessary for digital banks to define the terms and conditions needed to extend the liquidity for settlement of their net position.

3.3.4 Digital Token-based E-Payment System – Smart Cards

Q26. Explain about digital token-based electronic payment system.

Answer :

Electronic token or electronic token is one of the e-commerce system which is entirely based on internet. The payment systems that are based on this system are used to resemble paper currency.

For remaining answer refer Unit-III, Page No. 96, Q.No. 24, Topic: Token-based Payment System.

Q27. Describe smart cards as an electronic payment system.

Model Paper-I, Q11(b)

OR

Explain relationship based smart credit cards and electronic purses.

Answer :

Hybrid/Smart Card

As electronic tokens are not very secure and do not have the ability to manage multiple transactions, another form of electronic payment system was developed that replaced the electronic token. This form of system is called smart cards that provide more security while exchange transaction is being performed.

Smart cards are also known as store value cards and are similar to credit cards but with enhanced features such as microprocessor or integrated circuit chip technology that stores massive amount of customer specific information such as electronic money and is 80 times greater than the conventional magnetic strip cards.

Electronic payment in the form of smart card is mostly used in countries like Japan, France, Germany that use these cards for transaction, phone calls payments.

There are two types of smart cards,

1. Relationship based smart cards
2. Electronic purses.

1. Relationship Based Smart Cards

Relationships based smart cards are generally used to replace conventional credit cards in order to fulfill the demands of technical customers and to satisfy the need of using well-developed electronic payment system. Relationship based smart cards are nothing but improvement in services of existing cards or introducing new services that a bank gives to its customers using integrated chip based card. New services such as,

- (i) Providing access to many financial accounts
- (ii) Developing value-added marketing program
- (iii) Storing customer-specific information.

Chip-based cards are used to meet particular accounting and personal needs of an individual. The customer-specific information is used by seller to track the behavior of a buyer.

Advantages of Relationship based Smart Cards

- (i) They access to many financial accounts.
- (ii) They provide different kinds of functions like bill payment, balance enquiry etc.
- (iii) They provide various means of accessing the account that is situated at multiple locations using different types of devices such as ATM, PDA or a screen phone.

2. Electronic Purses

Though relationship-based smart cards are flexible and versatile, their payments are done based on credit and there is no instant settlement using them. Electronic purses have been developed by many financial companies as well as government organizations for meeting their demands for developing a financial device that substitutes paper cash. Electronic purses are wallet sized smart cards that include a microchip for storing electronic money that a card holder utilizes for purchasing products or services.

Working of Electronic Purse

When the required amount of electronic money is stored in electronic purse, it can be used for purchasing any product or service. The transaction of electronic purse is processed using electronic device that is embedded with a card reader. The two things that an electronic device needs to verify is,

- 1. Authentication of card holder
- 2. Balance in the account (to know if there is sufficient money for the purchase).

When a purchase is made, the amount is deducted from the buyer's account immediately and saved in the electronic cash box. The balanced amount is displayed on the electronic machine or it can be checked by using balance reading device. When there is no amount left on electronic purse, it can be recharged again at any ATM center or using special telephone. The drawback of electronic purses is that they are very expensive.

Q28. What is a smart card? What are their types and uses?

Answer :

Smart Card and its Types

For answer refer Unit-III, Page No. 99, Q.No. 27.

Uses of Smart Card

Smart cards are used in a huge collection of applications as follows,

- 1. Pay phones
- 2. Mobile communications
- 3. Banking and retail
- 4. Health care sector
- 5. ID verification and access control.

1. Pay Phones

By integrating smart card option in the pay phone, both the customers and the company will be beneficial because the customer does not have to worry about carrying the appropriate number of coins, remembering large access codes, pin codes etc. On the other hand, the company does not require coin recognizer, storage box for coins etc. Also the need for a company professional to collect the coins from various terminals is eliminated.

2. Mobile Communication

In GSM digital mobile phones, smart card serves as an identification device because it contains all the significant information about the users so that the user will be billed according to their usage irrespective of the phone terminal utilized.

3. Banking and Retail

The smart card can also be used in banking and retail sector i.e., a smart card can serve as a credit card, debit card or a stored value card. The smart card is integrated with a highly powerful microchip that authenticates the user (customer and merchant). Another microchip present in the smart card reader authenticates the bank. Thus, fraudulent usage is avoided. The smart card also supports other features like phone banking, automatic memory dialing and online services.

4. Health Care Sector

The smart card helps the hospital staff to obtain the history of the patient so that they could be treated by keeping their past medical conditions in mind. Smart card also helps in the identification of doctors and provides them with a secured multi-level access to the private information. It also helps in designing an insurance policy for the patients.

5. ID Verification and Access Control

Smart cards are also capable of storing the finger prints of the user, their pictures etc. This information is used for revealing the identification of the card owner. A smart card reader enabled network can be easily accessed by the user after proper authentication.

Q29. Explain the functionality of smart cards.

March/April-14, Q11(a)

Answer :

Smart Cards

Smart cards store massive volume of customer's information such as verification ID, health sector care, financial banking. Apart from this, it even stores electronic money which can be used for processing transactions. It stores more information when compared to traditional magnetic strips cards. It can be programmed to support distinct applications. Some smart cards has the feature of editing and updating even after issuing it to the customers. Smart cards can be used by customer's in their daily life.

Working of Smart Cards

1. The user inserts the smart card in the slot.
2. The card reader reads the information which is embedded on it.
3. The user enters the PIN.
4. The entered PIN security authorities checks based on the certifications issued.
5. The trusted CA verifies the certificates.

Thus, if the certificates are valid then the transaction is processed or else it is terminated. Once the transaction gets successful then the information is updated in the card.

Q30. Explain about,

(i) Electronic purses

(ii) Debit cards.

Answer :

(i) Electronic Purses

For answer refer Unit-III, Page No. 100, Q.No. 27, Topic: Electronic Purses.

(ii) Debit Cards

A debit card is a card that is used instead of cash in shopping. Debit cards can be used for e-commerce transactions in the same way as a credit card. The only difference in the credit card is the way to pay later, whereas a debit card is a way to pay then and there itself. Debit cards are also known as cash cards. Whenever the buyer uses debit card for shopping, his account will be instantly debited (i.e., the amount is immediately deducted from his savings account). The debit cards can be used anywhere merchants display the debit cards brand name or logo. ATM cards have the features of debit card. It is mostly accepted by grocery stores, retail outlets, gasoline stations, restaurants etc.

4. Health Care Sector

The smart card helps the hospital staff to obtain the history of the patient so that they could be treated by keeping their past medical conditions in mind. Smart card also helps in the identification of doctors and provides them with a secured multi-level access to the private information. It also helps in designing an insurance policy for the patients.

5. ID Verification and Access Control

Smart cards are also capable of storing the finger prints of the user, their pictures etc. This information is used for revealing the identification of the card owner. A smart card reader enabled network can be easily accessed by the user after proper authentication.

Q29. Explain the functionality of smart cards.

March/April-14, Q11(a)

Answer :

Smart Cards

Smart cards store massive volume of customer's information such as verification ID, health sector care, financial banking. Apart from this, it even stores electronic money which can be used for processing transactions. It stores more information when compared to traditional magnetic strips cards. It can be programmed to support distinct applications. Some smart cards has the feature of editing and updating even after issuing it to the customers. Smart cards can be used by customer's in their daily life.

Working of Smart Cards

1. The user inserts the smart card in the slot.
2. The card reader reads the information which is embedded on it.
3. The user enters the PIN.
4. The entered PIN security authorities checks based on the certifications issued.
5. The trusted CA verifies the certificates.

Thus, if the certificates are valid then the transaction is processed or else it is terminated. Once the transaction gets successful then the information is updated in the card.

Q30. Explain about,

(i) **Electronic purses**

(ii) **Debit cards.**

Answer :

(i) **Electronic Purses**

For answer refer Unit-III, Page No. 100, Q.No. 27, Topic: Electronic Purses.

(ii) **Debit Cards**

A debit card is a card that is used instead of cash in shopping. Debit cards can be used for e-commerce transactions in the same way as a credit card. The only difference in the credit card is the way to pay later, whereas a debit card is a way to pay then and there itself. Debit cards are also known as cash cards. Whenever the buyer uses debit card for shopping, his account will be instantly debited (i.e., the amount is immediately deducted from his savings account). The debit cards can be used anywhere merchants display the debit cards brand name or logo. ATM cards have the features of debit card. It is mostly accepted by grocery stores, retail outlets, gasoline stations, restaurants etc.

Advantages of Debit Card

1. It is much easier to obtain a debit card than a credit card.
2. Using of debit card saves individuals from showing personal identification.
3. Debit card frees the user from carrying cash and cheque book.
4. In most of the countries merchants accept debit cards than cash or cheques.

Disadvantages of Debit Cards

1. They are less secured than the commonly used credit cards.
2. The liability for unauthorized debit cards will be more when it is stolen.

Q31. What is a hybrid card? What is its role in e-commerce?

Answer :

Hybrid Card

For answer refer Unit-III, Page No. 99, Q.No. 27, Topic: Hybrid/Smart Card.

Role of Hybrid Cards in E-commerce

- ❖ Smart cards or hybrid cards are used as credit/debit cards, transit payment cards etc. Therefore, a consumer can perform electronic payment through these cards.
- ❖ They act as a reliable medium for carrying password protected personal data like bank account information, passwords etc.
- ❖ Other confidential data like medical records, secret cryptographic keys etc., can also be stored in the card in a form that is understandable to the card reader only.
- ❖ The micro-controller chip present in hybrid/smart card has the ability to decide with whom to share data. These cards work with only those vendors that they trust.
- ❖ Mostly the smart cards are register based stored value cards. The secret keys that are present in the card are known only to the issuing authority and not even to the card owner. If the card owners got to know the secret keys then they can mint electronic cash.
- ❖ Hybrid cards are multiple application smart cards. A single hybrid card may serve multiple purposes. For example, a single hybrid card may store personal information (driver's license information, social security, medical information), website passwords, digital signatures, works as a phone card, a debit card, a credit card.

With such a secure and flexible environment, smart or hybrid cards are definitely of much use. Use of these cards in future is beyond expectation.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. _____ are used by those customers who are not having enough knowledge about computers. []
 - (a) Intermediate services
 - (b) Basic services
 - (c) Advanced services
 - (d) None of the above
2. _____ is an electronic market place having more number of suppliers and less number of customers. []
 - (a) Private company
 - (b) Independent industry
 - (c) Customer portals
 - (d) Consortia sponsored electronic market place
3. In _____ step of purchase consummation phase of mercantile model, the vendor tells the customer the cost of the product. []
 - (a) Second
 - (b) Third
 - (c) Fourth
 - (d) Fifth
4. _____ is the first step of order management cycle. []
 - (a) Order scheduling
 - (b) Order selection and Entry
 - (c) Cost estimation and pricing
 - (d) Order planning and order generation
5. _____ is the final step of mercantile model from Merchant's perspective. []
 - (a) Order fulfillment and delivery
 - (b) Order billing and account/payment management
 - (c) Post sales service
 - (d) None of the above
6. _____ is a type of e-payment system. []
 - (a) E-cash
 - (b) E-check
 - (c) Credit card
 - (d) All the above

7. _____ is the simplest form of payment over public network such as Internet. []
- (a) Encrypted credit card features for payment
 - (b) Plain unencrypted credit card feature for payment
 - (c) Third-party authorization for credit-card payment
 - (d) None of the above
8. Bank-to-bank transfer is an example of _____. []
- (a) Large-scale payment
 - (b) Small-scale payment
 - (c) Home banking
 - (d) Debit payment
9. In _____ type of payment system, the credit-card transaction is provided without using any encryption techniques. []
- (a) Plain credit-card
 - (b) Encrypted credit-card
 - (c) Online third- party credit card
 - (d) All the above
10. _____ cards store massive volume of customer information such as verification ID, health sector care, financial banking etc. []
- (a) Debit card
 - (b) Smart card
 - (c) Credit card
 - (d) Electronic purse

II. Fill in the Blanks

1. _____ is an example of intermediate service customer software.
2. Full form of QDPMM is _____.
3. The most commonly used online catalog is _____ catalog.
4. The term used to refer software that are available free of cost is _____ software.
5. Grainger electronic market place is an example of _____.
6. Number of phases involved in Mercantile model from Consumer's perspective is _____.
7. EPS stands for _____.
8. A cryptographic technique called _____ is used to perform secure e-cash transaction.
9. EFT stands for _____.
10. _____ cards are also known as cash cards.

KEY**I. Multiple Choice**

1. (b)
2. (d)
3. (a)
4. (d)
5. (c)
6. (d)
7. (b)
8. (a)
9. (a)
10. (b)

II. Fill in the Blanks

1. QDPMM
2. Quick and Dirty Personal Money Management
3. CD-ROM
4. Freeware
5. Customer Portals Electronic Market Place
6. Three
7. Electronic Payment System
8. Digital Signature
9. Electronic Funds Transfer
10. Debit

III. Very Short Questions and Answers**Q1. Write a note on mercantile process model.****Answer :**

Mercantile process models enables the consumers to perform online shopping with same features as that of manual shopping. This model consists of seven different functions and each of these functions are in turn placed in three different phases.

Q2. What is the third step of order management?**Answer :**

Order receipt and entry is the third step of the order management cycle. Checking whether the order is received properly or not by the customer, whether the entry of the order is done correctly or not. All these tasks are handled by a separate department of the company which is customer service department. .

Q3. Define EFT.**Answer :**

Electronic Fund Transfer (EFT) is defined as a process of transferring funds electronically from one financial institution to another. This type of electronic transfer started using different electronic devices like computers, telephone devices, electronic terminals, telecommunication devices.

Q4. List the factors to be considered for designing EPS.**Answer :**

The different factors that are to be considered while designing electronic payment systems are,

1. Privacy and confidentiality
2. Security and protection
3. Intuitive interfaces
4. Database integration
5. Network bankers
6. Cost assigning
7. Standards.

Q5. Write a brief note on electronic purse.**Answer :**

Electronic purse is a wallet sized smart card that include a microchip for storing electronic money that a card holder utilizes for purchasing products or services.

UNIT 4

ELECTRONIC DATA INTERCHANGE



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Meaning of Electronic Data Interchange.
- ❖ Way information flows in an organization with Non-EDI system.
- ❖ Way information flows in organization with partial EDI system and fully integrated EDI system.
- ❖ Different prerequisites for EDI.
- ❖ Legal, security and privacy issues of EDI.

INTRODUCTION

In today's electronic market, most of the companies are trying out different methods for improving their business. For instance, they are using a method called Electronic Data Interchange (EDI). EDI is a method that deals with exchange and sharing of business documents between organizations or businessmen electronically. Before EDI, organizations had to rely on postal systems for exchange of business information. EDI has made a positive impact on the working of various organizations. Business information can be transferred quickly to various parts of the world. Organizations can have access to their business partners anytime and anywhere in the world.

Partially integrated EDI system is a system consisting of both Non-EDI system and EDI system, that is there are certain operations that are carried out manually and certain operations which are carried out electronically. Fully integrated EDI is an EDI system that carries out information flow electronically. In contrast to partially integrated EDI, the fully integrated EDI performs their transactions with high speed and high-level of accuracy but with a trade-off cost. The components that are required for EDI implementation are standards, translation software, banks, VAN services, trading partners and proprietary hardware and network. It is necessary to ensure that transaction data is legalized and secured.

UNIT 4

ELECTRONIC DATA INTERCHANGE



LEARNING OBJECTIVES

After learning this unit, a student will have thorough understanding about the following key concepts,

- ❖ Meaning of Electronic Data Interchange.
- ❖ Way information flows in an organization with Non-EDI system.
- ❖ Way information flows in organization with partial EDI system and fully integrated EDI system.
- ❖ Different prerequisites for EDI.
- ❖ Legal, security and privacy issues of EDI.

INTRODUCTION

In today's electronic market, most of the companies are trying out different methods for improving their business. For instance, they are using a method called Electronic Data Interchange (EDI). EDI is a method that deals with exchange and sharing of business documents between organizations or businessmen electronically. Before EDI, organizations had to rely on postal systems for exchange of business information. EDI has made a positive impact on the working of various organizations. Business information can be transferred quickly to various parts of the world. Organizations can have access to their business partners anytime and anywhere in the world.

Partially integrated EDI system is a system consisting of both Non-EDI system and EDI system, that is there are certain operations that are carried out manually and certain operations which are carried out electronically. Fully integrated EDI is an EDI system that carries out information flow electronically. In contrast to partially integrated EDI, the fully integrated EDI performs their transactions with high speed and high-level of accuracy but with a trade-off cost. The components that are required for EDI implementation are standards, translation software, banks, VAN services, trading partners and proprietary hardware and network. It is necessary to ensure that transaction data is legalized and secured.

PART-A**SHORT QUESTIONS WITH SOLUTIONS****Q1. What is EDI?**

(Model Paper-II, Q4 | Oct./Nov.-16, Q3 | Oct./Nov.-11, Q6)

OR**Electronic Data Interchange****March/April-17, Q4****OR****EDI****Answer :**

(Oct./Nov.-13, Q4 | March-11, Q4)

EDI can be defined in many different ways. Few possible definitions of EDI are,

1. Electronic Data Interchange (EDI) is a technique which follows a standardized procedure for electronically transmitting various kinds of information. For instance, commercial information, administrative information etc.

or

2. EDI can be referred to as a process used by various trading partners for transmitting information among themselves without any interference.

or

3. EDI can be defined as a medium of passing business information in a standardized format.

Q2. Write a short note on Internet based EDI.

(Oct./Nov.-11, Q7 | March-11, Q6)

OR**Internet Based EDI****Sep./Oct.-15, Q4****OR****Write a note on Internet based EDI.****March/April-14, Q5****Answer :**

In this type of service, transfer of EDI data is possible through Internet without using VAN network. In order to perform this type of transaction, business partners must use same protocol for exchanging messages.

This service offers two types of methods through which messages are exchanged. They are,

- (i) E-mail based messaging
- (ii) FTP-based messaging.

(i) E-mail Based Messaging

E-mail is the conventional method of exchanging message. Every e-mail message should encapsulate EDI interchange and encryption techniques for ensuring e-mail privacy.

(ii) FTP Based Messaging

FTP-based messaging is another message exchange method provided by VAN-free Internet EDI service. In order to exchange EDI messages using FTP, the trading partner needs to create an agreement.

Q3. What are the benefits of EDI?

Model Paper-I, Q4

OR

Benefits of EDI**Answer :**

Oct./Nov.-12, Q4

The benefits of EDI are as follows,

1. It reduces paper-based systems
2. It improves problem resolution and customers service
3. It expands the customer/supplier base.
4. It offers higher transmission accuracy.
5. It enhances the communication thereby improving the customer service.
6. It reduces the number of data entry errors, human intervention, processing delays etc. So, the quality of the outcome will be good.

Q4. Define VAN.

OR

VAN**Answer :**

March/April-13, Q4

VAN is a network that makes communication possible among different business partners. These partners exchange EDI messages such as purchase orders, invoices. The other services provided by VAN's are,

- (i) Holding EDI messages in electronic mailboxes.
- (ii) Interfacing with other VAN's.
- (iii) Supporting various telecommunication modes and transfer protocols.

Q5. What are the features of supply chain management?**Answer :**

Oct./Nov.-11, Q5

The features of supply chain management are as follows,

1. It has the capability to act as a source of raw-materials as well as finished goods from any part of the world.
2. All management as well as global business strategies results from accurate execution.
3. As the real time information is processed online, the information associated with supply chain is transparent.
4. It has the capability of managing information within the organization or between the organizations.
5. It is capable of performing integration of all processes present in supply chain that consist of various users, standards, information systems etc.
6. It is capable of developing and implementing accounting models that are used as the tools for reducing cost and increasing performance.

Q6. Write about Intra-organizational E-commerce.**Answer :**

Intra-organizational E-commerce refers to the activities that are performed within the organization so as to consistently deliver superior quality service to consumers. These activities include methods and technologies that support the internal business processes of the organization. The main focus of intra-organization commerce activities is to achieve the most efficient business process. The various activities of intra organizational commerce are work flow management, supply chain management and product and service customization.

(i) Work Flow Management

Work flow management is a process of coordinating the tasks of various individuals or departments within the enterprise. The departments usually work in isolation with each other. However, work flow management collaborates their individual work to get a complete product.

(ii) Supply Chain Management

A supply chain refers to a network in which customers and suppliers are present. Management of supply chain is an important activity for any enterprise as it makes the business operation possible. In this competitive world, it is impossible for a single company to stand alone and work isolated from others.

(iii) Product and Service Customization

Customization refers to build the product according to the specifications given by the consumer. Consumers always want their customized products to be of high quality, high reliability and of longer life spans.

Q7. Explain in brief the privacy issues in EDI.

Oct./Nov.-11, Q4

OR

Privacy issues of EDI

Oct.-14, Q4

Answer :

Privacy issues play an important role in most of the organizations. Since, they are the mean to collect consumer information easily using digital tool like digital signatures. In order to ensure the privacy of consumers, there is a requirement of timely resolution with government and business working together. This is made possible by developing a few particular standards that are part of uniform business code to carry out transaction over Internet.

Q8. List the EDI standards.

Model Paper-III, Q4

OR

EDI Standards**Answer :**

(March/April-16, Q8 | March/April-15, Q4)

Standard play a very important role in the success of EDI system. Standards make sure that the information is properly transmitted.

Some of the financial EDI standards are,

1. BAI (Bank Administration Institute)
2. 820 and 823
3. CCD (Cash, Concentration and Disbursement)
4. CTP (Corporate Trade Payments)
5. CCD+
6. CTX (Corporate Trade Exchange)
7. EDIFACT (EDI For Administration, Commerce and Transport):

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****4.1 INTRODUCTION**

Q9. What is EDI? Explain four layers of EDI architecture.

Answer :

Model Paper-I, Q12(a)

Electronic Data Interchange (EDI)

EDI can be defined in many different ways. Few possible definitions of EDI are,

1. Electronic Data Interchange (EDI) is a technique which follows a standardized procedure for electronically transmitting various kinds of information. For instance, commercial information, administrative information etc.

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****4.1 INTRODUCTION**

Q9. What is EDI? Explain four layers of EDI architecture.

Answer :

Model Paper-I, Q12(a)

Electronic Data Interchange (EDI)

EDI can be defined in many different ways. Few possible definitions of EDI are,

1. Electronic Data Interchange (EDI) is a technique which follows a standardized procedure for electronically transmitting various kinds of information. For instance, commercial information, administrative information etc.

or

2. EDI can be referred to as a process used by various trading partners for transmitting information among themselves without any interference.

or

3. EDI can be defined as a medium of passing business information in a standardized format.

Electronic Data Interchange is a method using which relevant business information is exchanged from one computer to another computer in an electronic format. Other than companies, this method is also used by banks, government organizations etc.

EDI Architecture

Architecture of EDI mainly consists of four different layers,

- (i) EDI semantic/application layer
- (ii) EDI standards translation layer
- (iii) EDI transport/packaging layer
- (iv) Physical network infrastructure/EDI document transport layer.

The EDI layered architecture is shown below.

EDI Semantic Layer (1 st Layer)	Application Level Services					
EDI Standard Layer (2 nd Layer)	EDIFACT Standards		ANSI X12 Standards			
EDI Transport Layer (3 rd Layer)	E-mail	X435, MIME	Point to Point	FTP TELNET	WWW	HTTP
EDI Physical Layer (4 th Layer)	Internet, I-way Dial Up Lines					

Table: EDI Layered Architecture

Description of each of these layers is as follows,

(i) EDI Semantic/Application Layer

This is the first layer of the EDI architecture. EDI semantic layer tells which business application plays an important role in the development of EDI. It is particularly based on,

- (a) The type of company that operates on this layer
- (b) The kind of software used by the company for the operation.

Therefore, data available on this layer will be in company's specified format. Hence, a company must convert the data into universally accepted format before transmitting the data to their partners. In order to do this, the company requires usage of different EDI standards. The current EDI standards that can be used are,

- | | |
|--------------|--|
| (a) ANSI X12 | } These standards define the appearance
a particular EDI form |
| (b) EDIFACT | |

Consider two trading partners who want to transmit a file between them. A special type of software is used by trading partners for file transmission. This type of software is called EDI translation software. This software converts the file sent by the trading partner at the sender's side into a format that is easily understood by the trading partner at the receiver's side.

(ii) EDI Standards Translation Layer

This is the second layer of the EDI architecture. This layer describes the structure of EDI form that was available on the EDI application layer and the appearance of EDI form on the higher layer.

(iii) EDI Transport/Packaging Layer

This is the third layer of the EDI architecture. In this layer, the business form is sent from one company to another. Various companies do not use any electronic medium for transmission of business information among themselves. They transmit information either by using regular postal system, or a special type of carrier service called a united parcel service. Often the information is exchanged via e-mail.

(iv) Physical Network Infrastructure/EDI Document Transport Layer

This is the fourth layer of the EDI architecture. In this layer, transmitting business document is more complex when compared with the transmission of e-mail information, or file sharing through a modem or some other electronic device. The reason behind this is that the business document information is far more organized than the e-mail information and hence requires lots of processing.

Q10. What is EDI? List out the advantages and disadvantages of EDI.

Answer :

Sep./Oct.-15, Q12(b)

EDI

For answer refer Unit-IV, Page No. 111, Q.No. 9, Topic: Electronic Data Interchange (EDI).

Advantages of EDI

EDI offers numerous advantages as given below,

1. It reduces the paper work.
2. It reduces the time consumed by order-invoice-payment cycle.
3. It increases the customer base for an organization significantly.
4. It offers higher transmission accuracy.
5. It enhances the communication thereby improving the customer service.
6. It reduces the number of data entry errors, human intervention, processing delays etc. So, the quality of the outcome will be good.
7. It enhances the transmission rate and transaction processing speed.
8. It reduces the need for having large inventory.
9. It reduces the number of personnel required. Also, EDI reduces the data entry cost.
10. It simplifies order entry and processing.

Disadvantages of EDI

The following are the disadvantages associated with EDI.

1. EDI forces management to heavily rely on computer systems because, it reduces the number of personnel involved. As a result, fewer individuals are responsible for handling more tasks via computer systems. So, there is a possibility of having a greater impact in-case any of the system fails.
2. If errors occur during data processing and transmission, the information sent to the trading partners will be inaccurate. Thus, inconsistency issue arises which possibly results in losses to the trading partners.
3. EDI transaction data must always be maintained and secured for a long period of time because, it is the only evidence of transmission between the trading partners. In case of any dispute between the trading partners, EDI transaction data serves as the substantial evidence. Thus, a backup copy of all the EDI transactions must be maintained which in turn involves additional overhead.
4. EDI also requires an organization to hire several third party softwares and applications so as to provide transaction security.
5. For serving the business operations of the client, the organization simply rely on the computer systems of the trading partners. As a result, any errors, vulnerabilities, viruses in those systems (i.e., trading partners) will certainly have an impact on the business operations.
6. If the application serving EDI is corrupted, then all EDI transactions will be affected.
7. Inappropriate operating decisions will be resultant, if errors remain undetected in transactions received from trading partners.
8. Since, EDI involves heavy utilization of computer and communication systems, the possibility of intruders and hackers will be more. Thus, there is no guarantee for the consistency of information exchanged. Apart from this, privacy may not be completely preserved.

Q11. Explain tangible benefits of EDI.**Answer :**

In order to be successful in today's electronic market, companies have to satisfy customers as well as their suppliers. This requires lot of money and time.

Following are the ways by which EDI can reduce the time and cost,

- (a) By reducing paper based systems
- (b) By improving problem resolution and customer's service
- (c) By expanding the customer/supplier base.

(a) By Reducing Paper-based Systems

Before EDI, various companies required a lot of man power for doing their work. For instance, keeping records of the customers as well as suppliers, storing company's relevant information consumed both time and effort. Because of this, everything is done automatically and making payments through EDI also became a lot easier and quicker.

(b) By Improving Problem Resolution and Customer's Service

Companies with the implementation of EDI can solve their business problems a lot quicker. EDI also plays an important role in improving the customer service of the company. By using EDI, the order of the customers can be completed faster without any errors.

(c) By Expanding Customer/Supplier Base

By using EDI, companies not only interact with different customers having different needs, but also with different kinds of suppliers.

Q12. Explain in detail about the working of Non-EDI system.

Answer :

The working of Non-EDI system can be illustrated with the help of following example.

Consider an example wherein customer and vendor communicate regarding purchasing application.

The interaction takes place between customer and vendor by using mailrooms called paper based mailrooms. These mailrooms are available on both customer side as well as vendor side. Suppose a customer wants to pass a purchase order request to vendor, then the following steps are involved,

- (i) Customer must first take out a receipt of purchase order information from his/her mailroom.
- (ii) Customer must then transmit this receipt to the vendor.
- (iii) Vendor gets the receipt of purchase order in a letter or fax format.
- (iv) Finally, this receipt of purchase order is stored in vendor's mailroom.

This can be as shown in figure below,

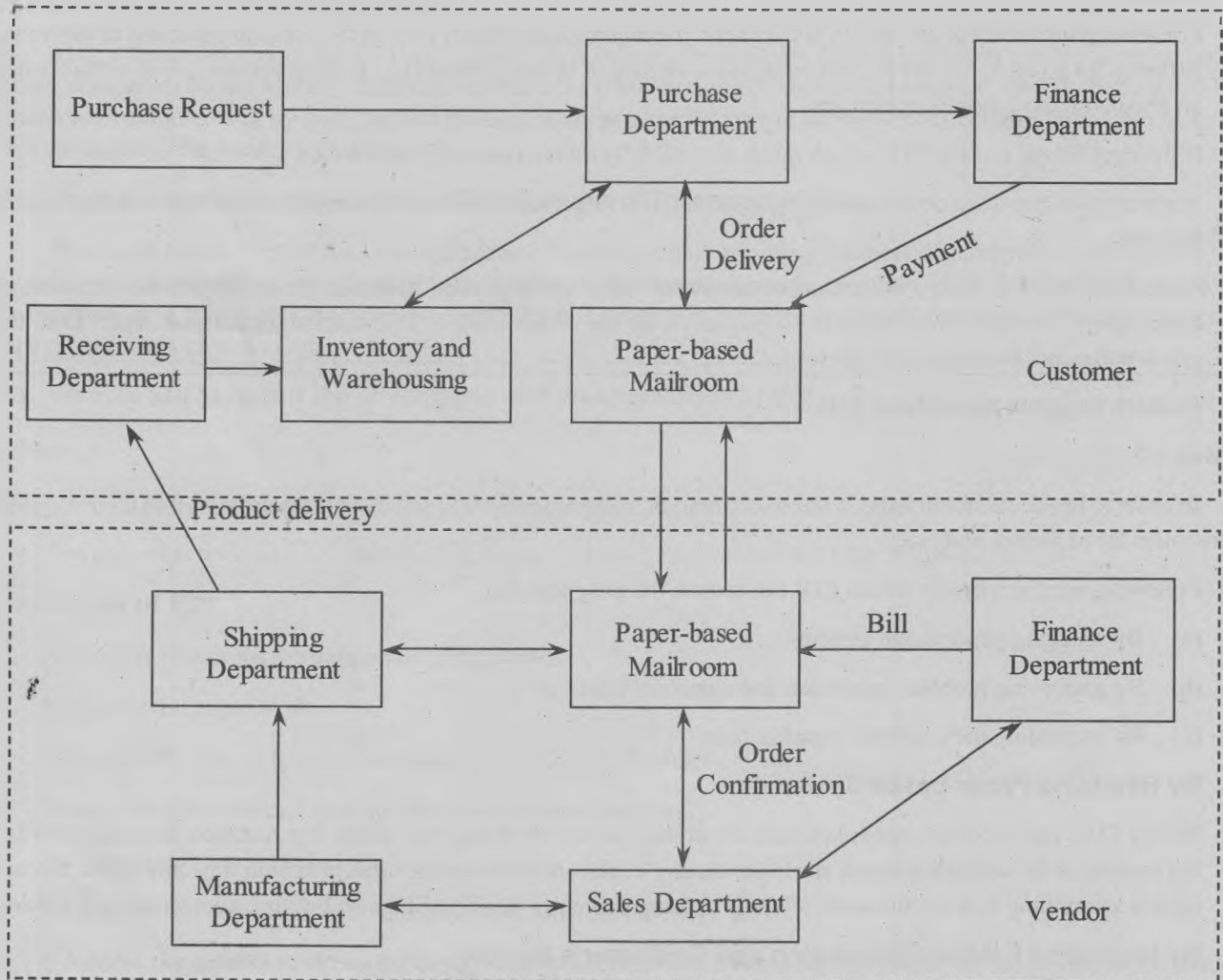


Figure: Working of NON-EDI System

Q13. Explain prerequisites of EDI.

March/April-17, Q12(a)

OR

Explain the prerequisites for EDI.

March/April-14, Q12(b)

OR

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

What are the prerequisites of EDI?**Answer :**

Oct./Nov.-12, Q12(b)

When two companies or organizations agree for conducting business with each other, the both parties need to sign an agreement or a contract which consists of the information regarding,

- (i) Kind of business transaction to be done.
- (ii) How the business transaction will be done.
- (iii) Source of transmission for business transactions.
- (iv) Standard that will be used for transactions.

Similarly, the same procedure is followed when carrying out business in e-commerce, wherein EDI technique is used for doing transactions. It is important to ensure that if the concerned parties are willing for the business proposal, then it is necessary for these parties to agree for use of EDI. Only then EDI can be implemented otherwise, it cannot be implemented.

The benefit of using EDI process is that there will be no inference during transmission. This is because EDI system provides a standard by which information can be transferred.

Prerequisites of EDI

The prerequisites of EDI are the components that forms the basic kit necessary for EDI implementation. These components include,

1. Standards
2. Translation software
3. Bank
4. VAN services
5. Trading partners
6. Proprietary hardware and network.

1. Standards

Standards play a very important role in the success of EDI system. They make sure that the information is properly transmitted.

2. Translation Software

The translation software is responsible for,

- (a) Sending messages among trading partners.
- (b) Integrating data into current computer applications as well as from current complete application.
- (c) Translating the data between EDI message standards.

3. Bank

It offers payment as well as remittance.

4. VAN Services

VAN is a service provider that allows communication possible among different business partners. These business partners exchange electronic data such as purchase orders and invoices.

5. Trading Partners

Trading partners are nothing but suppliers and customers of firm who are responsible for running the business.

6. Proprietary Hardware and Network

If the company is a sponsor or hub company, then it allows the use of EDI. Sponsors are the bigger companies such as Ford, GM and Toyota.

Q12. Explain in detail**Answer :**

The work
Consider
The
mailroom
require

Oct-Nov-12-Q12(b)
115

is and structure of EDI transaction.

Model Paper-II, Q12(a)

just to make sure that two concerned parties communicate properly but also to
ware devices can be used at the same time for smooth flow of business data.

ards were developed but most of them were found to be incompatible. This affected the usage
To overcome this incompatibility, two standards were developed. These standards are as follows,

1. ANSI X 12 standard
2. EDIFACT standard.

1. ANSI X 12 Standard

One of the standards that is used to describe how EDI based transactions should be done is X 12 standard. This standard was developed by American National Standards Institute (ANSI) along with Accredited Standards Committee (ASC) in 1979. Hence, this standard is also referred to as ANSI ASC X 12 standard.

Types of transactions defined by this standard are,

- (a) Purchase order transactions
- (b) Delivery order transactions
- (c) Invoice transactions
- (d) Shipping transactions.

This type of standard is mostly used by United States. The protocols used for ANSI X 12 defined transactions are,

- (i) MIME based protocol
- (ii) X.400 protocol

There are different types of X 12 standards. Some of them are as follows.

- ❖ X 12 finance standard
- ❖ X 12 transportation standard
- ❖ X 12 insurance standard.

2. EDIFACT Standard

The full form of this standard is Electronic Data Interchange for Administration, Commerce and Transport. This standard was developed under United Nations in the year 1987. Hence, it is also referred as UN/EDIFACT. ANSI X 12 standard got merged with EDIFACT standard in the year 1997. The purpose of these standards is make the system versatile. EDIFACT standard was further developed with the help of UN/ECE. It stands for United Nations Electronic Commission for Europe.

Some of the transactions defined by this standard are similar to those defined by ANSI X 12 standard. For instance, purchase order transaction, delivery order transaction, invoice transaction etc. This type of standard can be used to transmit information among various countries or companies. Most of the transactions under this standard are done by using an Interactive Exchange Protocol called I-EDI. EDIFACT standard specifies how data can be properly organized by defining some rules.

With so many benefits provided by EDIFACT standard, in future there are chances that all the countries will be using only this standard for doing transmissions.

Q12. Explain in detail**Answer :**

The work
Consider
The
mailroom
request

Oct/Nov-12, Q12(b)
need to sign

115

Is and structure of EDI transaction.

Model Paper-II, Q12(a)

just to make sure that two concerned parties communicate properly but also to
ware devices can be used at the same time for smooth flow of business data.

ards were developed but most of them were found to be incompatible. This affected the usage
to overcome this incompatibility, two standards were developed. These standards are as follows,

1. ANSI X 12 standard
2. EDIFACT standard.

1. ANSI X 12 Standard

One of the standards that is used to describe how EDI based transactions should be done is X 12 standard. This standard was developed by American National Standards Institute (ANSI) along with Accredited Standards Committee (ASC) in 1979. Hence, this standard is also referred to as ANSI ASC X 12 standard.

Types of transactions defined by this standard are,

- (a) Purchase order transactions
- (b) Delivery order transactions
- (c) Invoice transactions
- (d) Shipping transactions.

This type of standard is mostly used by United States. The protocols used for ANSI X 12 defined transactions are,

- (i) MIME based protocol
- (ii) X.400 protocol

There are different types of X 12 standards. Some of them are as follows.

- ❖ X 12 finance standard
- ❖ X 12 transportation standard
- ❖ X 12 insurance standard.

2. EDIFACT Standard

The full form of this standard is Electronic Data Interchange for Administration, Commerce and Transport. This standard was developed under United Nations in the year 1987. Hence, it is also referred as UN/EDIFACT. ANSI X 12 standard got merged with EDIFACT standard in the year 1997. The purpose of these standards is make the system versatile. EDIFACT standard was further developed with the help of UN/ECE. It stands for United Nations Electronic Commission for Europe.

Some of the transactions defined by this standard are similar to those defined by ANSI X 12 standard. For instance, purchase order transaction, delivery order transaction, invoice transaction etc. This type of standard can be used to transmit information among various countries or companies. Most of the transactions under this standard are done by using an Interactive Exchange Protocol called I-EDI. EDIFACT standard specifies how data can be properly organized by defining some rules.

With so many benefits provided by EDIFACT standard, in future there are chances that all the countries will be using only this standard for doing transmissions.

Structure of EDI Transaction

Structure of EDI consists of three important fields. They are,

- (a) Transaction set
- (b) Data segments
- (c) Data elements.

Each field is interrelated to one another.

(a) Transaction Set

Transaction set is the first field in the structure of EDI message. It can be defined as a collection of data segments or

Structure of EDI Transaction

Structure of EDI consists of three important fields. They are,

- (a) Transaction set
- (b) Data segments
- (c) Data elements.

Each field is interrelated to one another.

(a) Transaction Set

Transaction set is the first field in the structure of EDI message. It can be defined as a collection of data segments or documents that are transmitted using EDI. There are around three hundred transaction sets in ANSI X 12 standard.

(b) Data Segments

This is the second field in the EDI structure. Data segments are nothing but a set of data elements. The purpose of using data segments is that they provide information regarding different transactions like,

- ❖ Information related to invoice transaction
- ❖ Information related to shipping transaction
- ❖ Information related to purchase order transaction.

(c) Data Elements

Third and final field in EDI structure is data elements. This field comprises numerical data like,

- (i) Identification of number of the transaction
- (ii) Cost of the product to be sold.

4.2.1 Types of EDI

Q15. Explain the types of EDI.

March/April-17, Q12(b)

OR

Write about,

- (i) Partial EDI
- (ii) Fully integrated EDI.

Oct./Nov.-16, Q12(a)

OR

Describe EDI systems.

Answer :

(Model Paper-II, Q12(b) | Oct.-14, Q12(b))

There are two types of EDI systems that are as follows,

(i) Partial EDI System

Partially integrated EDI system is a system consisting of both Non-EDI system and EDI system, that means there are certain operations that are performed manually (paper-based work) and certain operations which are performed electronically. The information flow in this system can be understood by considering the following example which is explained in step-wise manner.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

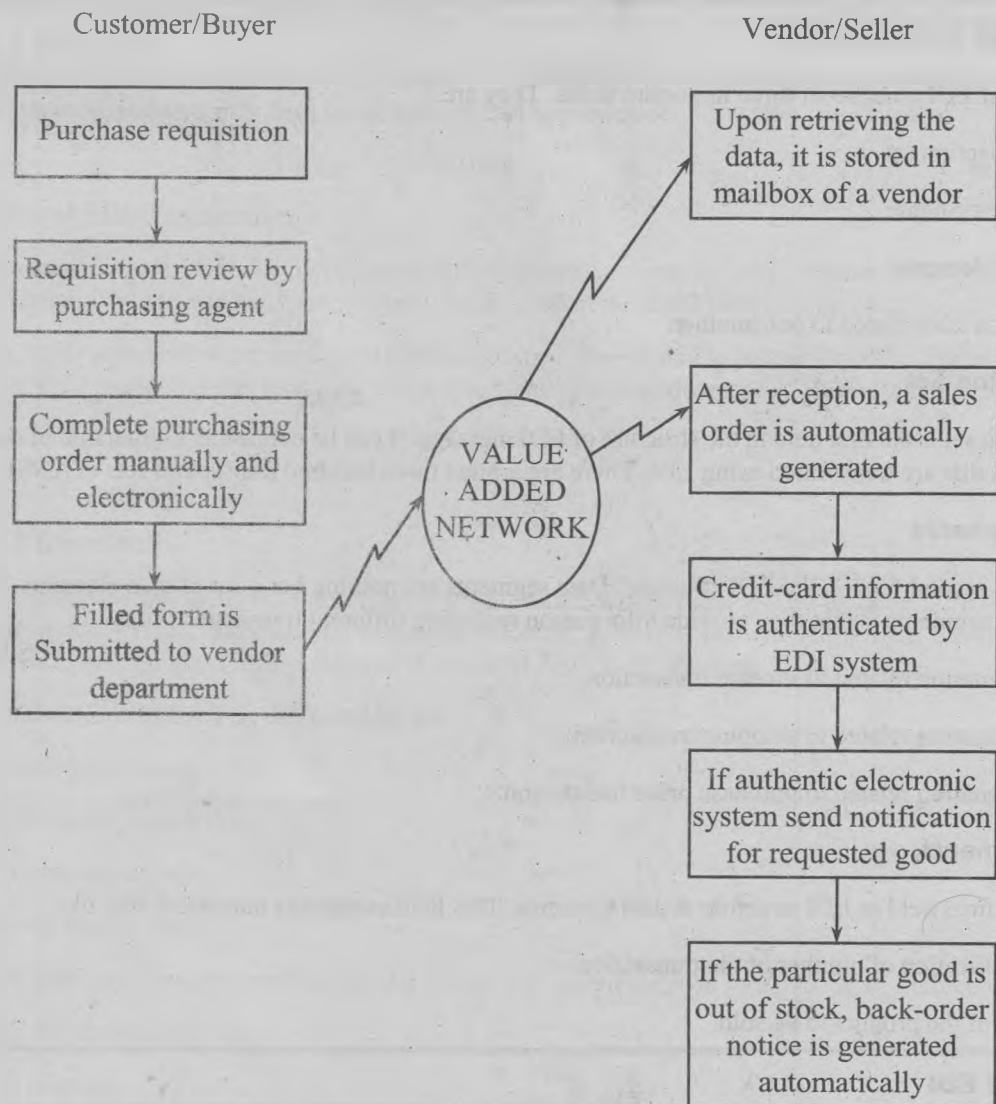


Figure: Partially Integrated EDI System

1. Purchase requisition is done by a department and to the purchasing department.
2. This requisition is reviewed by purchasing agent.
3. This agent manually completes the purchasing order but places a purchase order form in a computerised manner.
4. This form is filled-up by the agent and is submitted to the selling department.
5. Upon submission of the data to the VAN it is stored in the respective mailbox of a vendor.
6. The receiving vendor retrieves the order from VAN, thereby generating a sales order automatically.
7. Credit-card information is authenticated by EDI system.
8. If authentic, the electronic system sends a notification to the inventory to ship the requested item.
9. If a particular item is out-of-stock, then EDI system automatically generates the back-order notice.

Advantages of Partially Integrated EDI System

1. Clerical errors incurred because of the data entry is decreased. Since, purchasing agent is not filling out the form manually.
2. The time period for completing the purchase order is reduced.

(ii) Fully Integrated EDI System

Fully integrated EDI is an EDI system that carries out information flow electronically. In contrast to partially integrated EDI, the fully integrated EDI performs their transactions with high speed and high-level of accuracy but with a trade-off cost.

Consider the following example wherein customer and vendor communicate regarding purchasing products to illustrate the fully integrated EDI system.

1. Customer transmits purchase order request from the EDI-enabled computer to vendor's EDI-enabled computer.
2. Vendor responds to the request by giving confirmation message from the EDI-enabled computer.
3. Vendor transmits booking request from the computer to transport company's EDI-enabled computer.
4. Transport company responds to the request by giving a confirmation message from the computer.
5. Vendor transmits advance shipment notice from the computer to customer's EDI-enabled computer.
6. Transport company transmits status message to the vendor in order to know about the status of the vendor.
7. Customer passes receipt advice message to the vendor in order to know about the detailed list of various products supplied.
8. In response, vendor sends list of products supplied along with their cost to the customer.
9. Finally, customer transmits the payment check to the vendor.

This can be as shown in figure below,

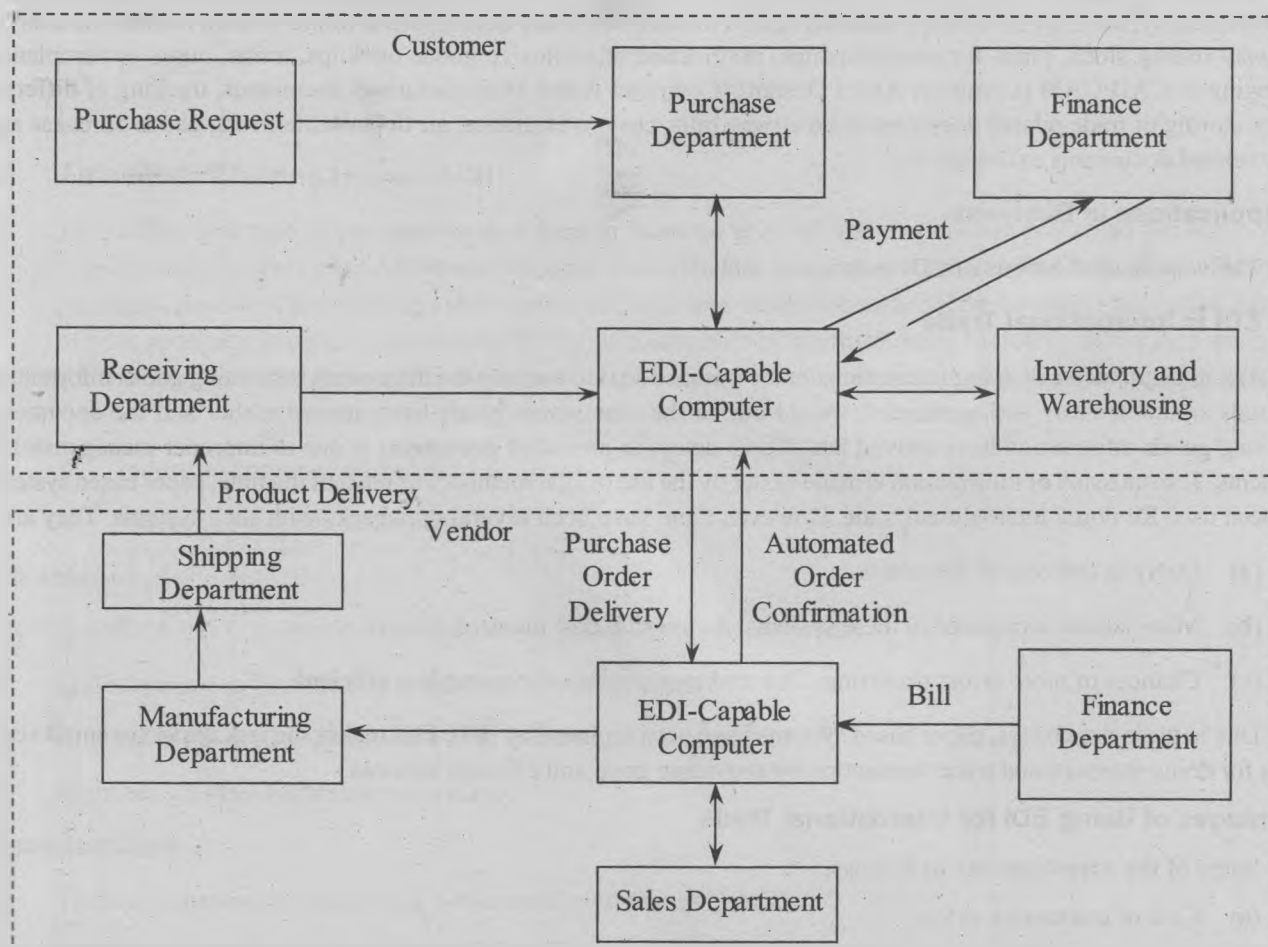


Figure: Example of Fully Integrated EDI System

4.2.2 EDI Applications in Business

Q16. Describe about EDI applications in business.

(Sep/Oct.-15, Q12(a) | Oct.-14, Q12(a))

OR

What is an EDI? What are the various EDI applications in business?

(Model Paper-III, Q12(a) | March-11, Q12(a))

OR

Discuss about EDI applications in business.

Oct./Nov.-13, Q12(a)

OR

What are the EDI applications in business?

Oct./Nov.-11, Q12(a)

OR

Explain about financial EDI and types of financial EDI.

March/April-16, Q12(b)

(Refer Only Topic: Financial EDI)

Answer :

Electronic Data Interchange

Electronic Data Interchange (EDI) can be defined as a medium of transmitting business information in a standardized format. Generally, there are several applications of EDI that are still under development. Some of them include monitoring of railway rolling stock, plans for containerships, notification of explosive goods on ships, trains, buses or aeroplanes, exchanging of CAD/CAM (Computer Aided Design)/(Computer Aided Manufacturing) documents, tracking of different tenders, storing of trade related documents like airway bills, custom clearance, air ticket settlements, goods purchase and supply related documents exchange etc.

EDI Applications in Business

The various applications of EDI in business include,

1. EDI in International Trade

The main objective of doing international trade transaction is to transmit the documents containing goods information and goods simultaneously and on time. It should not be the case where goods have arrived earlier and the documents containing goods information have arrived late. These delays in arrival of documents is due to improper management of documents. Transmission of information is made easier by the use of EDI method. For most of the time, paper based systems have been used for doing international trade. However, there have been several drawbacks with such systems. They are,

- (a) Delay in delivery of information.
- (b) More labour is required in these systems. As a result, cost incurred is more.
- (c) Chances of more errors occurring. This makes paper based systems less efficient.

Due to these drawbacks, paper based systems have been replaced by EDI. EDI makes the task easier for small-scale traders for doing international trade transaction by providing good and efficient services.

Advantages of Using EDI for International Trade

Some of the advantages are as follows,

- (a) Cost of transaction is less.
- (b) Transmission of goods on time.
- (c) Better customer service.

2. Financial EDI

Financial Electronic Data Interchange is a special type of EDI mechanism used for doing financial transactions online. With the use of financial EDI, the transmission of financially related transactions will be more quick and less time consuming. For instance, transfer of money or payment transactions.

Types of Financial EDI

Financial EDI consists of three types of payment methods. They are,

- (a) Checks
- (b) Electronic Funds Transfer (EFT)
- (c) Automated Clearing Houses (ACH).

(a) Checks

It is one of the

2. Financial EDI

Financial Electronic Data Interchange is a special type of EDI mechanism used for doing financial transactions online. With the use of financial EDI, the transmission of financially related transactions will be more quick and less time consuming. For instance, transfer of money or payment transactions.

Types of Financial EDI

Financial EDI consists of three types of payment methods. They are,

- (a) Checks
- (b) Electronic Funds Transfer (EFT)
- (c) Automated Clearing Houses (ACH).

(a) Checks

It is one of the payment methods used in financial EDI. It is the most commonly used payment method.

(b) Electronic Funds Transfer (EFT)

Electronic Funds Transfer is the second payment method used in financial EDI. EFT is a transmission technique used by various banks to do payment transactions among each other. Different kinds of payment transactions are possible like credit transactions, debit transactions etc. In simple terms, EFT is a technique used for bank-bank communication.

The two most commonly used EFT techniques are,

- (i) E-checks
- (ii) E-cash.

(c) Automated Clearing House (ACH)

This is the third type of payment method used in financial EDI. All transactions are processed through a special type of central server called Automated Clearing House (ACH). For instance, credit based transactions like payroll payments, payments to contractors and vendors etc., and debit based transactions like consumer payments, payments of bills, mortgage loans etc., are all possible through Automated Clearing House. Therefore, rather than using credit cards or debit cards for doing transactions, most of the businesses today are doing transactions through ACH payment system. This type of payment system is particularly useful for two types of customers,

- ❖ Industrial corporate customers
- ❖ Financial corporate customers.

Advantages

- (a) Quick transfer of money for the customer is possible with financial EDI.
- (b) Transactions can be done at any time i.e., round the clock.
- (c) Eliminates the need to approach a bank to carry out a transaction.
- (d) Replaced all labour-intensive activities.

Disadvantages

- (a) There are chances of losing cash if connection terminates abruptly.
- (b) They are more prone to cyber attacks.
- (c) Payments may incorporate significant delays if the transmission speed is low or transmission media is congested.

3. Manufacturing/Retail Procurement using EDI

Manufacturing process in e-commerce is basically done by using a special type of technique called JIT or Just in Time. The importance of EDI with JIT is as follows,

(a) EDI with JIT

Many of the companies using EDI with JIT are finding it easier to do manufacturing process. Companies can now deliver the products on time to their suppliers. This is because, once the orders get completed, the respective products are delivered to the suppliers electronically, which helps in decreasing the time-consumed in delivering the products.

(b) EDI with Quick Response

Retailing process in e-commerce can be done efficiently using a technique called Quick Response (QR). The usage of this technique depends on the individuals using it. Customers use quick response technique so that they get to know about the latest products and their services in the market. Retailers and suppliers use this technique to have an edge over their competitors. Just like EDI was used along with JIT to make the manufacturing process easier, similarly, EDI is used with Quick Response for simplification of the retailing process.

There are mainly two reasons why EDI is used with quick response,

- (i) To minimize the time that is taken for order generation till order completion.
- (ii) To identify the type of goods are for sale and the type of goods are for purchase. For this, a special EDI technique called Point of Sale (POS) is used. In other words, this technique is used for proper inventory management.

Advantages

- (a) The overhead and the cost involved in storing a large inventory of products is eliminated by using Just-In-Time technique.
- (b) The retailers make use of the Quick Response (QR) technique, which mainly focuses on the inventory-level of all the products. Once the product inventory goes below a specific level, QR technique automatically generates purchase orders for its suppliers.

Disadvantages

- (a) There is a possibility of losing bulk orders if inventory level becomes low.
- (b) JIT and QR techniques work well till the relationship between retailers, suppliers and manufacturers is good but once this relationship breaks then the suppliers and the retailers will not have sufficient stock to satisfy customer demands until they get a new manufacturer.

Q17. Explain the working of financial EDI for E-commerce.

Answer :

Financial EDI Payments

There are two types of information that are absolutely necessary in financial EDI,

- ❖ Payment information
- ❖ Remittance information.

So, financial EDI payments can be done in two possible ways,

- (i) Transmitting payment information and remittance information simultaneously
- (ii) Transmitting payment information and remittance information separately.

(i) Transmitting Payment and Remittance Information Simultaneously

Consider two companies, say company A and company B involved in financial EDI payment transaction. For doing such type of payments, a special central bank server called ACH(Automated Clearing House) is needed. ACH manages transactions that take place between customer's bank and supplier's bank. In this example, assume company A as the customer and company B as the supplier.

The steps involved in payment transaction process between company *A* and *B* are as follows,

1. Company *A* passes the remittance information and payment instructions to its bank. Both the information contains the details of the amount to be paid to the supplier as well as the date that was given for payment respectively.
2. On receiving both the information, bank of company *A* sends them to ACH.
3. ACH operator updates the payment instructions, extracts accounting data and then sends the payment instructions remittance information to the bank of company *B*.
4. Finally, the bank of company *B* sends both these pieces of information to company *B*.

The diagrammatic representation of transmission process of payment and remittance information simultaneously is as follows,

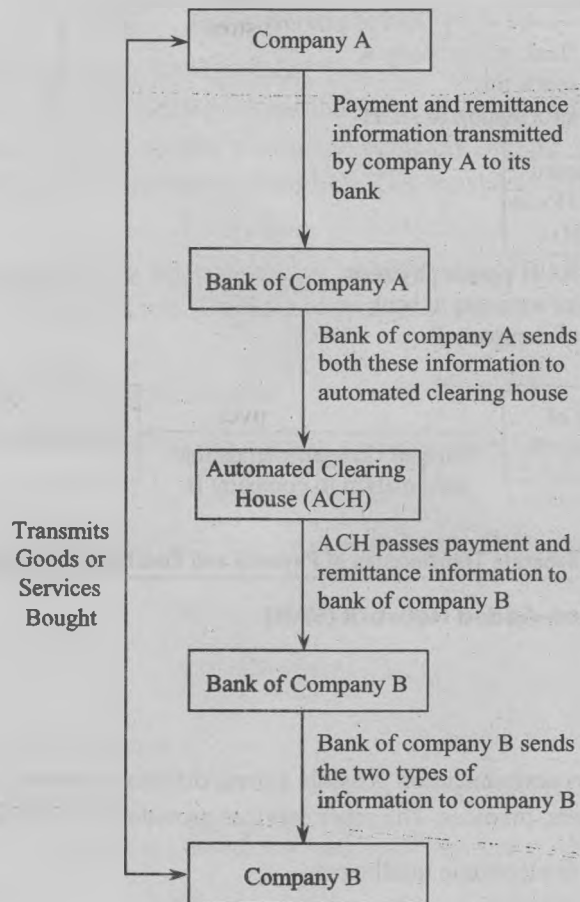


Figure: Simultaneous Transmission of Payments and Remittance Information

(ii) Transmitting Payment and Remittance Information Separately

In the previous transmission process, company *A* transmitted payment instructions and remittance information simultaneously to company *B*. In the current type of process, both these pieces of information are transmitted separately to company *B*.

The steps involved in this type of transmission process are as follows,

1. Company *A* passes the payment instructions to its bank.
2. On receiving this information, bank of company *A* sends the information to ACH.
3. ACH transmits payment instructions to bank of company *B*.
4. Bank of company *B* on getting the information passes it to company *B*.
5. For passing remittance information to the company *B*, company *A* uses a special type of network called Value Added Network. Company *A* sends remittance information to Value Added Network (VAN).
6. VAN on receiving the remittance information, sends it to company *B*.

The diagrammatic representation of transmission process of payment instructions and remittance information separately is as shown below,

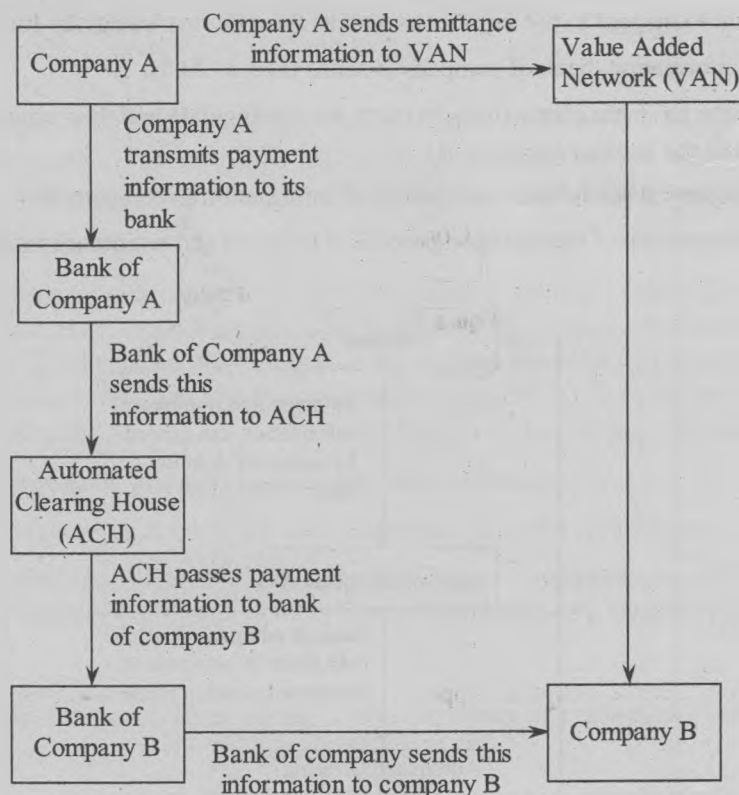


Figure: Separate Transmission of Payment and Remittance Information

Q18. Discuss in brief about Value-Added Network (VAN).

Answer :

Value Added Network (VAN)

VAN is a network that makes communication possible among different business partners. These partners exchange EDI messages such as purchase orders, invoices. The other services provided by VAN's are,

- (i) Holding EDI messages in electronic mailboxes.
- (ii) Interfacing with other VAN's.
- (iii) Supporting various telecommunication modes and transfer protocols.

Electronic MailBoxes

It is a feature of software that stores EDI messages which users fetch depending on their requirements. It is very much similar to home personal mailboxes.

Many business transactions are performed by establishing a connection directly between businesses or by making use of VAN. VAN acts as middleman and allows companies to automatically and securely exchange crucial data over the network. Through VAN, the exchange of EDI messages takes place in the following order,

- (a) A company transmits an EDI message
- (b) This message is stored in VAN mailbox
- (c) It is present in the mailbox, until it is fetched or retrieved by destination company.

EDI process can be understood by considering the following example.

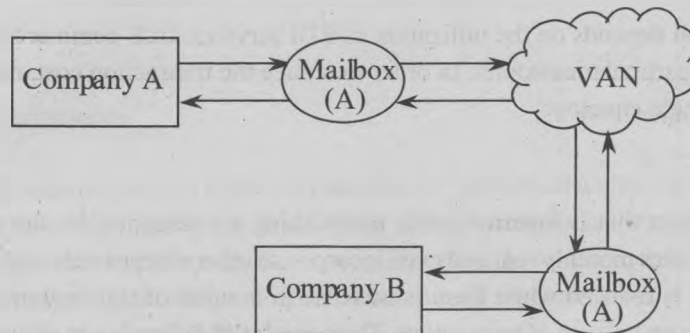


Figure: Working of VAN

Company A sends an EDI message to VAN mailbox. This message consists of a destination address. Using this destination address, VAN transmits the EDI message to mailbox of company B. It is stored over there until company B retrieves it by logging in. Company B sends a reply message to company A in the same way. This cycle is repeated on regular basis. This type of service is termed as mail-enabled EDI. The drawback of this service is that it is very slow and very costly.

An organization that has many trading partners opt for VAN for using EDI. However, it is not optional for small organization with less number of trading partners. There are various factors that are needed to be considered while selecting VAN,

- (a) Reputation of VAN, level of technical support
- (b) Experience of VAN, service capacity cost, ways of making connection with VAN.

VAN Pricing Structures

Pricing structure of VAN is based on services that are provided by it. Different services offered by VAN are,

- (i) E-mail capability
- (ii) Inter-VAN connectivity
- (iii) EDI to fax support
- (iv) Supporting EDI translation software
- (v) Transmission of X.12 documents.

There are three categories of costs that are associated with VAN services,

1. Account start up costs
2. Usage or variable costs
3. Interconnect costs.

1. Account Start Up Costs

Whenever an account with VAN is created, start up cost and network usage cost is incurred. Network usage cost is the monthly rent that should be paid even if services are not utilized.

It may also incorporate mailbox fee that maintains an account and a password. There are various factors on which start up costs depend,

- (a) Number of trading partners
- (b) Line configuration
- (c) Application software
- (d) Whether an organization and trading partner are willing to utilize EDI services.

2. Usage or Variable Cost

This is a variable cost that depends on the utilization of EDI services. In E-commerce, usage refers to the number of transactions carried out by a particular customer. In order to reduce the transaction cost, many transactions are merged together and transmitted in a single envelope.

3. Interconnect Costs

Interconnect cost is the cost that is incurred while establishing a connection for the purpose of exchanging EDI messages. Interconnect cost includes monthly rent and even incorporate other charges only when a transaction is performed. Usage cost on each transaction is reduced when there is increase in number of transactions conducted. This is because VAN offers discounts depending on volume of transaction. There is a lot of difference in incurrence of costs while sending message to a customer using same VAN or using another VAN.

Q19. Describe about Internet based EDI.

Answer :

March/April-15, Q12(b)

In Internet-based EDI, the data is transferred through Internet without using VAN network. This is possible only when both communicating business partners use same protocol for exchanging messages.

This service offers two types of methods through which messages are exchanged. They are,

- (i) E-mail based messaging
- (ii) FTP based messaging.

(i) E-mail Based Messaging

E-mail is the conventional method of exchanging message. Every e-mail message should encapsulate EDI interchange and encryption techniques for ensuring e-mail privacy. The following information is exchanged among business partners,

- (a) E-mail address for EDI messages and personal communications.
- (b) Agreement on various encryption and authentication techniques used including e-mail feedback in the form of acknowledgment.
- (c) Public keys used in encryption techniques such as PEM or PGP (Pretty Good Privacy).
- (d) Agreement on message format.

(ii) FTP Based Messaging

FTP-based messaging is another message exchange method provided by VAN-free Internet EDI service. In order to exchange EDI messages using FTP, the trading partner needs to create an agreement that will include,

- (a) FTP login and password for each trading partner
- (b) Rules for naming a file or directory
- (c) Encryption techniques, public keys
- (d) EDI headers that are encapsulated within an EDI message
- (e) Agreement on format of the message.

Most of the organisations today are using Internet for carrying out EDI based transactions. The researchers of DOD (Department of Defence) states that a trading partner can make a choice of using either VAN or Internet as their communication medium if VAN and Internet interoperate with each other.

Q20. What is intra-organisational E-commerce? What are its features?**Answer :****Intra-Organisational E-commerce**

Intra-organizational E-commerce refers to the activities that are performed within the organization so as to consistently deliver superior quality service to consumers. These activities include methods and technologies that support the internal business processes of the organization. The main focus of intra-organization commerce activities is to achieve the most efficient business process. The various activities of intra organizational commerce are,

- (i) Work flow management
- (ii) Supply chain management
- (iii) Product and service customization.

(i) Work Flow Management

Work flow management is a process of coordinating the tasks of various individuals or departments within the enterprise. The departments usually work in isolation with each other. However, work flow management collaborates their individual work to get a complete product.

Effective intra-organization commerce can be obtained by,

- (i) Removing the useless or unnecessary operational steps from the business process.
- (ii) Replacing the internal paper work with computerized processes. By doing so, the processing time and speed of the business process is reduced.
- (iii) Using electronic commerce methods in coordinating enterprise processes.
- (iv) Using new technology to improve the automation process of work-flow.

(ii) Supply Chain Management

A supply chain refers to a network in which customers and suppliers are present. Management of supply chain is an important activity for any enterprise as it makes the business operation possible. In this competitive world, it is impossible for a single company to stand alone and work isolated from others. A successful business is not just a single company but a network of companies like suppliers, distributors, retailers, manufacturers and others. In order to effectively manage the supply chain, many companies are using technology to coordinate the supply chain. It requires online, real-time distributed information processing system that provides the overall information about the supply chain. The information processing system must have the ability to manage the information not only within a company but also across the industries and enterprises.

(iii) Product and Service Customization

Customization refers to build the product according to the specifications given by the consumer. Consumers always want their customized products to be of high quality, high reliability and of longer life spans. This activity is related with agile manufacturing wherein elimination of inventory and other useless activities are performed. This is done to achieve more flexibility in production scheduling a help quality product.

4.2.3 Legal – Security and Privacy Issues in EDI

Q21. Write about the various issues involved in EDI.

March/April-16, Q12(a)

OR

Write about legal, security and privacy issues in EDI.

March/April-15, Q12(a)

OR

Explain about the legal, privacy issues in EDI.

March/April-14, Q12(a)

OR

Explain about legal issues of EDI.

(Refer Only Topic: Legal and Security Issues)

Oct./Nov.-13, Q12(b)

OR

What are the legal and security issues in EDI?

(March/April-13, Q12(b) | Model Paper-I, Q12(b))

(Refer Only Topic: Legal and Security Issues)

OR

Explain about the security issues in EDI.

March/April-12, Q12(b)

(Refer Only Topic: Legal and Security Issues)

Answer :

Legal and Security Issues

Mostly, EDI transactions are carried out on a large scale. For example,

- ❖ Transactions between two countries
- ❖ Transactions between two corporations.

Therefore, it is necessary that transaction data is legalized and secured before transmission. Legalizing and securing process also plays an important role when any particular application is designed, especially an EDI based application. In order to use an EDI globally, it is mandatory that transactions through EDI should be legalized. Efforts have been made to legalize EDI based transactions. Generally, a law is used for making transactions legal in e-commerce. This law contains three types of communication standards which basically define the type of transactions that are legalized. These standards are based on special type of service called USPS (United States Postal Service).

The three communication standards are as follows,

- (i) Instantaneous communication standard via USPS
- (ii) Delayed communication standard via USPS
- (iii) Delayed communication standard via Non-USPS.

(i) Instantaneous Communication Standard Via USPS

This is one of the standards based on United State Postal Service. This standard is used to make telephone based transactions legal.

(ii) Delayed Communication Standard via USPS

This is another standard based on USPS. It is mailing system transactions especially USPS mailing system.

(iii) Delayed Communication Standard via Non-USPS

Unlike previous two standards, this standard does not use features of USPS. This standard legalizes telegram based transaction.

Privacy Issues

Privacy issues play an important role in most of the organizations. Since, they are the mean to collect consumer information easily using digital tool like digital signatures. In order to ensure the privacy of consumers, there is a requirement of timely resolution with government and business working together. This is made possible by developing a few particular standards that are part of uniform business code to carry out transaction over Internet.

Digital Signatures and EDI

Digital signatures are cryptographic process of making sure that the transactions between the sender and receiver is legal. Digital signatures guarantee that no alterations occur during transactions.

Transactions between Sender and Receiver using Digital Signatures

Before transmitting a message, the sender uses hashing technique to convert it into a special type of message called message digest. This message digest is then encrypted by using a private key which is known only to its owner (the sender). This encrypted private key is called digital signature. Now, the original message as well as the digital signature is sent to the receiver.

Receiver gets the original message as well as the digital signature. In order to check the authenticity of the sender or in other words, if receiver wants to know whether sender is authorized or not, the receiver decrypts the digital signature into a message digest by using its public key. Also, receiver with the help of hashing techniques converts the original message into another message digest. Hence, there will be two message digests. Finally, the receiver cross checks both the message digests. If both the message digest matches, receiver will be assured that the sender is authorized. There is no question of alteration of such type in transaction process. If digital signature process is implemented for EDI transactions, then legalization of EDI is possible which in turn ensures security and privacy of transactions.

4.2.4 EDI and E-Commerce

Q22. Explain different types or services of EDI used to support e-commerce.

Answer :

EDI transactions require some latest EDI services that have been developed to support e-commerce. They are as follows,

1. Traditional EDI service
2. Open EDI service.

1. Traditional EDI Service

Traditional EDI service is a type of EDI service where orders are transmitted through a special type of network called Value Added Network (VAN). In other words, traditional EDI service is a service where EDI transactions are done through Value Added Network. This service can also be referred to as conventional EDI service.

Traditional EDI service is used for converting EDI based documents into a standard that can be easily understood by trading partners. It uses a special technique called EDI Translation Software which sends the documents to partners over communication channels.

Different techniques are used in traditional EDI service. Few of them are as follows,

- ❖ Electronic funds transfer
- ❖ Trade data interchange.

Electronic funds transfer is issued in traditional EDI service to carry out financial transactions.

Trade data interchange technique is used in traditional EDI service carry out trade based transactions.

Traditional EDI service can be classified into two types,

- (a) Old EDI service
- (b) New EDI service.

(a) Old EDI Service

Old EDI service is one of the traditional EDI services that is used to carry out business related transactions. For example, retail transactions between retailer and supplier.

Old EDI service can also be defined as a service used for standardizing or defining the documents to ensure proper transmission. Documents are defined by using standards like ANSI X 12, EDIFACT etc. The drawback of this service is that it is very costly to use. Moreover, to access this type of service, some special programs must be built.

(b) New EDI Service

New EDI is also used for defining the documents for proper document transmission. The difference is that in new EDI service, no standards are used. The standardization of documents is done by the programmer using a set of programs.

In new EDI service, documents are defined not only for simplifying transmission, but also for simplifying processing. Other than this, new EDI service also plays an important role in transmission of documents that are structured. For example, XML documents. For this, the new EDI uses a special technique called DTD (Document Type Definitions).

An example of new EDI service is Interactive EDI Service also called Interactive Query Response. This service can be defined as a service where business transactions are done using internet as a medium of transmission rather than value added network.

2. Open EDI Service

Open EDI service is used as an alternative for traditional EDI service. The problem in traditional EDI service is that the time is taken for transactional exchange through EDI between two companies is more. For EDI based transactions, companies should sign an agreement. After signing, transactional standards must be defined for legalization of transactions. For different transactions, different standards are needed. So, creating standard for each transaction will take a long time. Thus, till the development of standards both companies have to be associated with each other. Without them the transactions cannot be considered as legal.

To overcome these drawbacks, open EDI service is used. In open EDI service, there is no need of signing an agreement for doing transactions.

Working of open EDI service is based on two important standards.

- ❖ Business Operational View (BOV) standard.
- ❖ Functional Service View (FSV) standard.

It former defines the process of business transactions in open EDI service whereas FSV defines how I.T plays an important role in doing transactions.

4.2.5 EDI Software Implementation**Q23. Explain basic kit necessary for EDI implementation.**

Answer :

When two companies or organizations want to do business collaboratively, they sign an agreement or a contract which consists of the information regarding,

- (i) Kind of business transaction to be done
- (ii) Process of business transaction
- (iii) Source of transmission for business transactions
- (iv) Standard that will be used for transactions.

The same procedure is followed when doing business in e-commerce. In e-commerce, EDI technique is followed for doing transactions. An important point to be noted here is that if the concerned parties agree to use EDI, then only EDI can be implemented. Otherwise, it cannot be implemented.

The benefit of using EDI process is that there will be no interference during transmission. This is because EDI system provides a standard by which information can be transferred.

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Standards play a very important role in the success of EDI system. These standards make sure that the information is properly transmitted. Other than standards, there are few other components that are also important in implementing EDI successfully,

- (a) Translation software
- (b) Banks
- (c) VAN services
- (d) Trading partners.

Features of EDI

Some of the features of Electronic Data Interchange are,

1. Messages are created anatomically through EDI. This means that no human involvement is required in message generation.
2. Integrity of the message is also verified automatically. In short, EDI minimizes the human interference.
3. Information can be received quickly through Electronic Data Interchange.
4. Using EDI, different forms of business documents can be transmitted. For instance, purchase orders, invoices etc.

Q24. Explain EDI software implementation and how much an EDI cost.

Answer :

Model Paper-III, Q12(b)

EDI Software Implementation

The four layers of EDI software implementation are,

1. Business application layer
2. Internal format conversion layer
3. EDI translator layer
4. EDI communication layer.

Using these four layers, message is encapsulated in the form of packets and transmitted to the destination using VAN network. When receiver gets the packets, it performs decapsulation in order to retrieve actual message.

1. Business Application Layer

In this EDI layer, a document in a software application is created which is then transferred to EDI translator. The responsibility of EDI translator is to convert a message into the format as specified in EDI standard. If EDI translator and software application belong to different vendors, it becomes necessary to merge document preparation application with EDI translation software. If both the softwares belong to same vendor, then data transmission can be performed with high speed. EDI translator also helps in creation and wrapping of document into EDI package.

The document that is created has a unique mailbox ID that is used to identify target business partners.

2. Internal Format Conversion

In this layer, the document is converted to a specific format so that it can be used by translator.

3. Translator Layer

The main purpose of using translator is to define the association that exists between data elements present in software application and EDI standards. Translation is the core part of EDI process.

The task of translator is to ensure that data is translated according to the format as specified in EDI standards that business partners can use to understand the message. There is a chance of running a business without EDI translator, which could be a risk if business partners are unable to read the message that is transmitted.

Many companies themselves have developed their own custom EDI translators as,

- (i) When compared to commercial translator, custom translator does not get any support or help when required or if any difficulty arises.
- (ii) Custom translator is confined to transact with only one business partner i.e., it is limited and performs the operation within the organization boundary.
- (iii) It is extremely difficult to update custom translator.

4. Communication Layer

Communication can be a module of translation software or it can be a separate application.

The different types of access methods through which communication is possible are as follows,

- (a) Direct-dial systems
- (b) Limited VAN services
- (c) Full VAN services.

(a) Direct-dial Systems

Using these systems, business partners can communicate with each other through modem. The benefit of such systems is that they are more simple to use.

(b) Limited VAN Services

The technical services offered by limited VANs are as follows,

- (i) Converting one network protocol to another
- (ii) Detecting and correcting errors
- (iii) Routing EDI message envelope to several business partners including buyers and sellers
- (iv) Delivering the received envelope to appropriate mailbox of the intended business partner.

(c) Full VAN Services

The important features of third party VANs include electronic mailbox and also offer features like providing security through access control and tracking the document.

Gateways are used in order to have inter connectivity between dissimilar third party networks.

There are various reasons why a company is using EDI VAN service provider,

- (i) Route EDI message to correct destination
- (ii) Perform data translation between different message formats
- (iii) Set up an audit trail for enabling an organization for validating the message.

Steps that are Required for Performing EDI Transaction

- (a) Business layer creates an application which is transferred to EDI translation layer.
- (b) EDI translation layer performs translation so that application is based on EDI standards.
- (c) EDI communication layer receives the application in the form of an EDI envelope. This layer transfers the envelope to VAN mailbox.

On the receiving end,

- (a) EDI communication layer fetches the envelope from the mailbox using VAN network.
- (b) EDI translator decapsulates the envelope and retranslates the message into a form that can be read by the receiver.
- (c) EDI business layer performs validation of the application received from EDI translator layer.

The diagrammatic representation of the four layers is as follows,

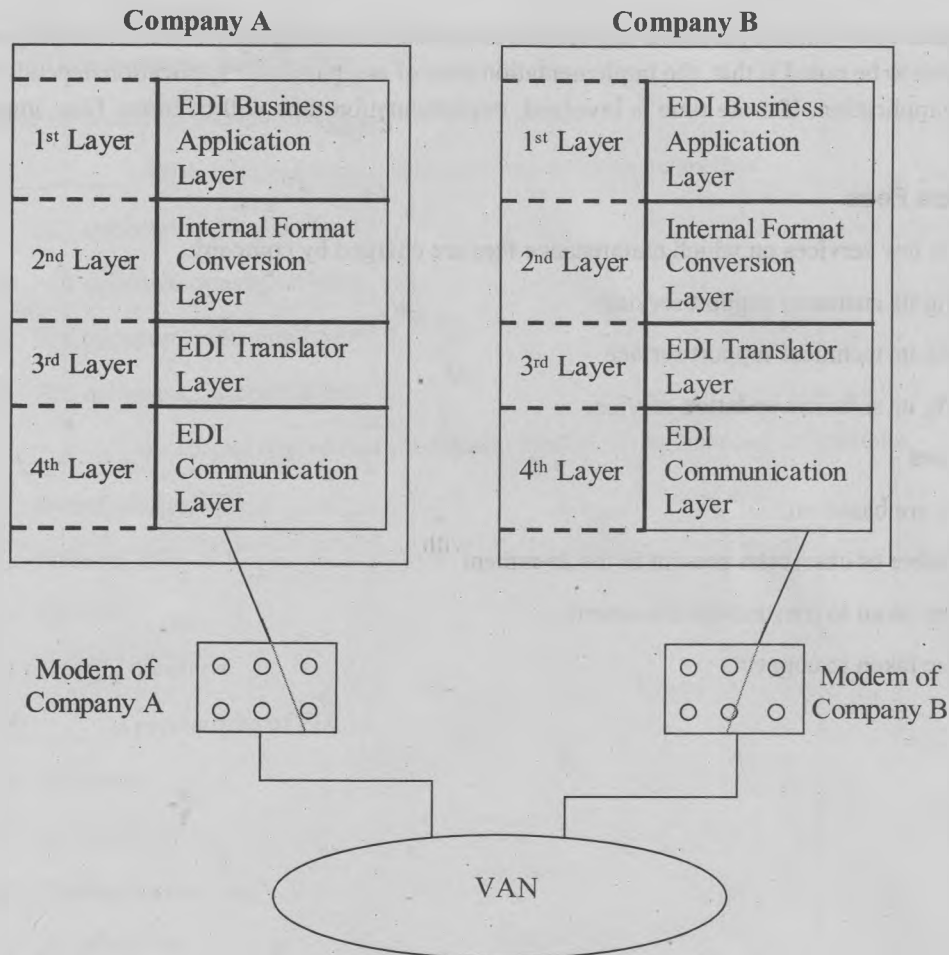


Figure: Four Layers of EDI Software

EDI Implementation Cost

There are various factors on which the cost of EDI product depends,

1. Expected volume of electronic documents
2. Economics of EDI translation software
3. Implementation time
4. Maintenance fees
5. VAN charges.

1. Expected Volume of Electronic Documents

The number of documents managed by EDI products depends on the cost of EDI products. If the cost of EDI products is more, then EDI products can manage more number of electronic documents. If cost of EDI products are less, then they can manage less number of documents.

2. Economics of EDI Translation Software

Cost of this type of software varies based on two things,

- (a) Usage of latest transaction sets
- (b) Upgrading of transaction sets.

3. Implementation Time

To implement or carry out any particular application or software, it is necessary to have knowledge about it. Another important point to be noted is that, the implementation time of any particular application depends on the time taken to learn that application. If more time is involved, implementation time will be more. Else, implementation time will be less.

4. Maintenance Fees

Following are few services on which maintenance fees are charged by company,

- (a) On using its customer support service
- (b) On using its technical support service
- (c) On using its software updation service.

5. VAN Charges

VAN charges are based on,

- (a) The number of characters present in the document
- (b) The time taken to transmit the document
- (c) The time taken to connect.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. The first layer of EDI architecture is _____. []
 - (a) EDI semantic/application layer
 - (b) EDI standards translation layer
 - (c) EDI transport/packaging layer
 - (d) EDI document transport layer
2. In _____ layer, business form is sent from one company to another. []
 - (a) EDI semantic/application layer
 - (b) EDI standards translation layer
 - (c) EDI transport/packaging layer
 - (d) EDI document transport layer
3. _____ is a special type of EDI mechanism used for doing financial transactions. []
 - (a) Manufacturing EDI
 - (b) Financial EDI
 - (c) QR EDI
 - (d) None of the above
4. _____ is prerequisite of EDI. []
 - (a) Standards
 - (b) VAN services
 - (c) Trading partners
 - (d) All the above
5. _____ is the conventional method of exchanging messages. []
 - (a) FTP based messaging
 - (b) E-mail based messaging
 - (c) QR system
 - (d) None of the above
6. _____ refers to the activities that are performed within the organization so as to consistently deliver superior quality service to consumers. []
 - (a) Intra-organizational E-commerce
 - (b) Inter-organizational E-commerce
 - (c) Non-EDI system
 - (d) None of the above

7. Number of layers involved in EDI software implementation is _____. []
- (a) Four
 - (b) Five
 - (c) Six
 - (d) Seven
8. The number of documents managed by EDI products depends on _____ of EDI products. []
- (a) Economics
 - (b) Demand
 - (c) Cost
 - (d) Maintenance fees
9. CCD stands for _____. []
- (a) Corporate Cash Distribution
 - (b) Cash, Concentration and Disbursement
 - (c) Cash Collection Data
 - (d) None of the above
10. Maintenance fees are charged by company on using _____. []
- (a) Customer support service
 - (b) Technical support service
 - (c) Software updation service
 - (d) All the above

II. Fill in the Blanks

1. _____ is the second layer of EDI architecture.
2. Full form of VAN is _____.
3. _____ prerequisite of EDI is responsible for sending messages among trading partners.
4. EDIFACT stands for _____.
5. The first field in the structure of EDI message is _____.
6. _____ is a system consisting of both Non-EDI system and EDI system.
7. The main objective of doing international trade transaction is to transmit _____ containing goods information and goods simultaneously and on time.
8. The two most commonly used EFT techniques are _____ and _____.
9. _____ is the monthly rent that should be paid even if services are not utilized..
10. _____ is a variable cost that depends on the utilization of EDI services.

KEY**I. Multiple Choice**

1. (a)
2. (c)
3. (b)
4. (d)
5. (b)
6. (a)
7. (a)
8. (c)
9. (b)
10. (d)

II. Fill in the Blanks

1. EDI Standards Translation Layer
2. Value Added Network
3. Translation Software
4. EDI For Administration, Commerce and Transport
5. Transaction Set
6. Partially Integrated EDI System
7. Documents
8. E-Checks and E-Cash
9. Network Usage Cost
10. Usage Cost

III. Very Short Questions and Answers**Q1. List the layers of EDI architecture.****Answer :**

Architecture of EDI mainly consists of four different layers,

- (i) EDI semantic/application layer
- (ii) EDI standards translation layer
- (iii) EDI transport/packaging layer
- (iv) Physical network infrastructure/EDI document transport layer.

Q2. What are the types of information that are needed in financial EDI?**Answer :**

There are two types of information that are needed in financial EDI. They are,

- ❖ Payment information
- ❖ Remittance information.

Q3. How data is transferred in internet based EDI?**Answer :**

In Internet-based EDI, the data is transferred through Internet without using VAN network. This is possible only when both communicating business partners use same protocol for exchanging messages.

Q4. Write a note on electronic mailbox.**Answer :**

Electronic mailbox is a feature of software that stores EDI messages which user fetches depending on their needs. It is very much similar to home personal mailboxes.

Q5. Define customization.**Answer :**

Customization refers to the process of building the product according to the specifications given by the consumers. Consumers always want their customized products to be of high quality, high reliability and of longer life spans. This activity is related with agile manufacturing, wherein elimination of inventory and other useless activities are performed.

UNIT 5

E-MARKETING TECHNIQUES



LEARNING OBJECTIVES

After learning this unit, a student will have through understanding about the following key concepts,

- ❖ Meaning of E-Marketing and different E-Marketing Techniques.
- ❖ New Age of Information based Marketing.
- ❖ Influence of E-Commerce on Marketing.
- ❖ Charting the On-Line Marketing Process.
- ❖ Applications of 5P's in E-Marketing.
- ❖ E-Advertisement.
- ❖ Virtual Reality and Consumer Experience.
- ❖ The Role of Digital Marketing.

INTRODUCTION

E-marketing is the achievement of marketing goals through the utilization of the Internet and the web based technologies. E-marketing is also known as Internet marketing or marketing on the web or online marketing.

A search engine can be defined as a software system designed to search information on Internet. Unlike directories, the search engines are considered to be the most popular method in finding sites. The search engines operates by taking user-defined words and boolean expression in search bar.

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites.

Online advertising is a marketing strategy that make use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers.

Digital marketing refers to the management and execution of marketing activities by using digital electronic technologies and channels like digital TV, E-mails, web, wireless media and digital data concerning consumer behavior and its attributes.

PART-A**SHORT QUESTIONS WITH SOLUTIONS****Q1. What is E-Marketing?****Answer :**

E-marketing is the achievement of marketing goals through the utilization of the Internet and the web based technologies. E-marketing is also known as Internet marketing or marketing on the web or online marketing.

Online marketing is a part of e-business or e-commerce. The Internet marketing has changed the way of working, buying and living of the people. It involves the exchange of products, services, information and payments through the electronic medium of networks.

Q2. Write about Internet Marketing Techniques.**Answer :**

The different Internet advertising techniques are,

1. Search engines
2. Solicited targeted emails
3. Interactive sites
4. Banners advertising
5. Spam mails
6. Email chain letters.

Q3. Write about spam mail.**OR****Spam Mail****Answer :**

(Model Paper-III, Q5 | March/April-17, Q7 | March/April-13, Q5 | March/April-12, Q7)

Spam mail is a forceful means of attracting customers. The term spam mail refers to the unwanted and unrequested on-line email called 'junk mail' which is repeatedly sent to multiple recipients at a time. Here, the word spam means "postage due marketing", which indicates thousands or millions of messages residing on the host systems of recipients. These messages reside until they are deleted. This mail can be an advertisement from an organization that tries to sell something to the recipient. Usually spam mails are sent to those who have never visited the site. Sending of spam mail requires e-mail addresses. Spammers usually collect the e-mail addresses from the social websites, chat rooms etc. They also employ an e-mail appending technique that makes use of known information about the Internet users and searches the e-mail addresses of such users based on the available information.

Q4. Write a short note on E-mail.**OR****E-Mail****Answer :**

(Model Paper-I, Q5 | March/April-16, Q5)

Electronic mail is simply an information that is sent electronically from one computer user to another. E-mail is a fast and convenient way to handle correspondence. E-mail is a system for sending and receiving text messages, graphics, audio and videos through the user's computer. E-mail provides fast, inexpensive and convenient service to the computer users.

E-mail system has five functions. They are,

- (i) Compose
- (ii) Send
- (iii) Report
- (iv) Display
- (v) Disposition.

Q5. Write about directories.**Answer :**

Oct./Nov.-16, Q5

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites. The listing of the websites can be done either alphabetically or category wise. The indexes which are listed category wise displays the indexes in a sequential order. So, when the users click on one category, they are then navigated to the respective page. However, the role of the directory service is critical and it is important that the categories are listed in accordance to the user's expectations. This is necessary because if any category is missing or listed somewhere else, the user may think that the intended content is not present on that site. Apart from this, they exist many directory services that depict the organization businesses in multiple categories.

These days, there are many directory services that registers the websites free of cost. Some of these include info seek, Internet mall, the yellow pages and yahoo.

Q6. What are the banners?

OR

Banners**Answer :**

(March/April-15, Q8 | March/April-14, Q6 | March/April-13, Q8)

Banners are the most popular form of online advertising method which is used to attract visitors. A banner typically can be defined as a rectangular shape box, about 60 pixels high and 360 pixels wide. Generally banner advertisements contain texts, graphics or some times only graphics. They are meant to appear on screens of each engines, web browser software and web-sites so as to capture the attention of WWW users. These advertisements are referred to as "click-through" advertisements. They contain hypertext links corresponding to the site about which the banner is advertising.

Q7. Write about Applications of 5P's in Internet.**Answer :**

(Model Paper-II, Q5 | Oct./Nov.-12, Q8)

The applications of 5P's in internet are,

(i) Product

Product refers to the goods or services provided to the customers by a company.

(ii) Pricing

Pricing is a mechanism using which price of the physical good or service is determined.

(iii) Place

Place corresponds to the distribution of the product i.e., moving of the product from the producer's warehouse to customer.

(iv) Promotion

Promotion refers to the marketing activities which are involved in order to create awareness of the products among the users.

(v) People/Personalization

People is an element which refers to individual, staff and customers. Personalization is a technique in which users are allowed to customize their home pages according to their individual preferences.

Q8. What is Search Engine?**Answer :**

Oct./Nov.-13, Q8

A search engines can be defined as a software system designed to search information on Internet. Unlike, directories, the search engines are considered to be the most popular method in finding sites. The search engines operates by taking user-defined words and boolean expression in search bar. The generated search results are represented in a line of strings, which are a list of closely matched websites and are often called as Search Engine Results Pages (SERPs). The generated result content may be the combination of web pages, images and various types of files. So, when the user types certain string in search bar and clicks enter, the search engine periodically "crawls" through the Internet searching for new pages and updates the existing databases. The speed with which the engine performs updation and searches the number of location have major impact on the total number of sites indexed as well as on the revenue to the site. That is the more number of clicks to a site by user, the higher income to the site owner. In addition to this, the search engines maintains real-time information by using an algorithm on web-crawler.

PART-B**ESSAY QUESTIONS WITH SOLUTIONS****5.1 E-MARKETING TECHNIQUES - INTRODUCTION**

Q9. Explain the E-marketing techniques in detail.

(Model Paper-II, Q13(a) | March/April-14, Q13(b)

OR

Write about E-marketing techniques.

Oct./Nov.-16, Q13(a)

OR

Explain any three E-marketing techniques in detail.

(Refer Only Topics: Search Engine and Directory Registration, Solicited Targeted E-mail, Interactive Sites)

Answer :

March/April-17, Q13(a)

Internet Marketing Techniques

There are two types of Internet marketing techniques,

(a) Passive

Passive technique refers to the methods in which users retrieve i.e., “pull” information from the website. The user actively participates and retrieves the required information.

(b) Aggressive

Aggressive technique refers to the methods in which website actively searches potential user's and tries to communicate with them. In this method “Push” technology is used by the websites without considering whether the customers are really interested or not.

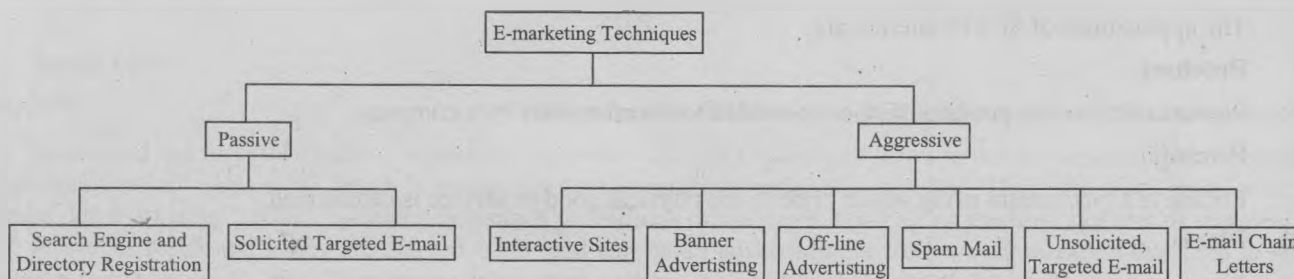


Figure: E-marketing Structure

The different Internet marketing techniques are,

1. Search Engine and Directory Registration

A search engine can be defined as a software system designed to search information on Internet. Unlike directories, the search engines are considered to be the most popular method in finding sites. The search engines operate by taking user-defined words and boolean expression in search bar. The generated search results are represented in a line of strings, which are a list of closely matched websites and are often called as Search Engine Results Pages (SERPs). The generated result content may be the combination of web pages, images and various types of files. So, when the user types certain string in search bar and clicks enter, the search engine periodically “crawls” through the Internet searching for new pages and updates the existing databases. The speed with which the engine performs updation and searches the number of locations have major impact on the total number of sites indexed as well as on the revenue to the site. That is the more number of clicks to a site by user, the higher income to the site owner. In addition to this, the search engines maintain real-time information by using an algorithm on web-crawler.

The designing of a webpage must be done in such a way that, it should increase the site's “Hit rates” and “Ranking”. Both hit rates and ranking is very important because the designing of website list on Internet entirely depends on it. The hit rate can be defined as total number of matches obtained from user entered text and website given results. On the other hand, based on the hit-rates ranking is assigned to the websites. That is, that website with maximum hit rate is ranked first. Subsequently, the following sites will be those sites that match less with the user-typed text and the user's probability of visiting will also be less. However, different search engines operate differently and yields slightly different results.

2. Solicited Targeted E-mail

E-mail marketing is the most popular type of communicating channel. It offers quite reasonable charges for its services and supports HTML messages which comprises of colorful text with images of the products. It also provides links to the users through which they can order the product. There is a technique which has been adopted in order to attract visitors to the website. The aim is not only to gain their attention but to involve both the customer and website promoter. This type of techniques helps in promoting the products which are available on the Internet. It helps in promoting its own product as well as redirects them to the other sites of other products. These type of techniques attains benefits to the business by helping them in unloading the products which are not in use from the warehouse. So, the mutual agreement of businesses for offering services to the customers retain their interest thereby, forcing them to sign up for the services. Now signing up requires customers to furnish their details on the websites. If the websites requires more amount of information to be furnished then they can expect less number of visitors therefore websites should try to retrieve only the information that is necessary.

The above techniques can be considered as a "pull" technique because the user has requested the information but it can also be considered as a "soft push" technique because the website has gained user's interest by attracting them with the services offered by firm.

3. Interactive Sites

There are few websites which are trying to retain customers attention in an interactive manner. It is done only to create awareness about the benefits offered by them. This is to enable the user to make a choice whether to buy the product or not. For instance, there is a website of an attorney who provides answer to the users for their queries on any kind of legal services. The site helps the visitors to clearly understand their situation and make them think whether they really need an attorney or not. Thus, the attorney is attracting its website visitors indirectly.

4. Banner Advertising

Online banner advertising is an effective technique but at the same time it is highly expensive. Companies pay some amount of money to the Internet marketing firms for providing them flash advertising banners which link to its business site. These links are usually provided on the pages of other websites. One of the advantage is, firms can easily keep a track of the visitors who visited the site by clicking on the link.

5. Off-line Advertising

Some of the off-line advertising methods used for promoting a website are television, print and radio. These techniques require more money when compared to the other methods. One of the example of this technique is Victoria Secret's website promoting live fashion show. It promoted its event not only on national and local televisions but also invested in the highest paid advertising event called the Super Bowl. Apart from this, it also gave its advertisement in some of the popular newspaper such as USA Today, Barron's, the Wall Street Journal, the New York Times. Due to all these, the show got its success and massive number of people turned on to watch the show.

6. Spam Mail

Spam mail is a forceful means of attracting customers. The term spam mail refers to the unwanted and unrequested on-line email called 'junk mail' which is repeatedly sent to multiple recipients at a time. Here, the word spam means "postage due marketing", which indicates thousands or millions of messages residing on the host systems of recipients. These messages reside until they are deleted. This mail can be an advertisement from an organization that tries to sell something to the recipient. Usually spam mails are sent to those who have never visited the site. Sending of spam mail requires e-mail addresses. Spammers usually collect the e-mail addresses from the social websites, chat rooms etc. They also employ an e-mail appending technique that makes use of known information about the Internet users and searches the e-mail addresses of such users based on the available information.

7. Unsolicited, Targeted E-mail

In this method, the customer receives e-mails related to sales/promotion of items even if they do not request for it. This method would be inefficient if too many emails are sent due to which the customer gets annoyed and may block the service. However, the method proves to be efficient if the e-mails are not sent in bulk. This can be done with the help of cookies. Cookies track the response of customers to those e-mails advertisements. Based on that, the e-mails are sent which grab the customers attention instead of annoying them.

8. E-mail Chain Letters

It is an aggressive advertising technique which is designed to attract the attention of the users. It is a low-cost technique which can be used by firms for promoting their products or services. For instance, whenever a user registers by visiting a site and forwards its link to others, then the referring individual gets extra benefits for every person who visited the site by clicking on the link.

5.1.1 Search Engines – Directory Services – Chain Letters

Q10. Explain,

- (i) Search Engines
- (ii) Directory Services
- (iii) Chain Letters.

Answer :

(i) Search Engines

A search engines can be defined as a software system designed to search information on Internet. Unlike, directories, the search engines are considered to be the most popular method in finding sites. The search engines operates by taking user-defined words and boolean expression in search bar. The generated search results are represented in a line of strings, which are a list of closely matched websites and are often called as Search Engine Results Pages (SERPs). The generated result content may be the combination of web pages, images and various types of files. So, when the user types certain string in search bar and clicks enter, the search engine periodically “crawls” through the Internet searching for new pages and updates the existing databases. The speed with which the engine performs updation and searches the number of location have major impact on the total number of sites indexed as well as on the revenue to the site. That is the more number of clicks to a site by user, the higher income to the site owner. In addition to this, the search engines maintains real-time information by using an algorithm on web-crawler.

The designing of a webpage must be done in such a way that, it should increase the site’s “Hit rates” and “Ranking”. Both hit rates and ranking is very important because the designing of website list on Internet entirely depends on it. The hit rate can be defined as total number of matches obtained from user entered text and website given results. On the other hand, based on the hit-rates ranking is assigned to the websites. That is, that website with maximum hit rate is ranked first. Subsequently, the following sites will be those sites that matches less with the user-typed text and the user’s probability of visiting will also be less. However, different search engines operates differently and yields slightly different results. Generally the ranking is done based on the following tags of Hyper Text Markup Language (HTML).

(ii) Directory Services

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites. The listing of the websites can be done either alphabetically or category wise. The indexes which are listed category wise displays the indexes in a sequential order. So, when the users click on one category, they are then navigated to the respective page. However, the role of the directory service is critical and it is important that the categories are listed in accordance to the user’s expectations. This is necessary because if any category is missing or listed somewhere else, the user may think that the intended content is not present on that site. Apart from this, they exist many directory services that depict the organization businesses in multiple categories.

These days, there are many directory services that registers the websites free of cost. Some of these include info seek, Internet mall, the yellow pages and yahoo.

(iii) E-mail Chain Letters

E-mail Chain Letters is an aggressive advertising technique which is designed to attract the attention of the users. It is a low-cost technique which can be used by firms for promoting their products or services. For instance, whenever a user registers by visiting a site and forwards its link to others, then the referring individual gets extra benefits for every person who visited the site by clicking on the link.

Q11. List out the advantages and disadvantages of E-marketing.

Answer :

(Model Paper-III, Q13(a) | Oct./Nov.-13, Q13(b))

Advantages of E-marketing

E-marketing is a readily accessible, inexpensive, fastest means of bringing together various buyers and sellers, large and small all over the world. When the buyers and sellers are electronically linked, huge volumes of data can be interchanged which ultimately results in increasing trading activities. The advantages of E-marketing can be divided into the following,

- (a) Advantages to sellers
- (b) Advantages to customers.

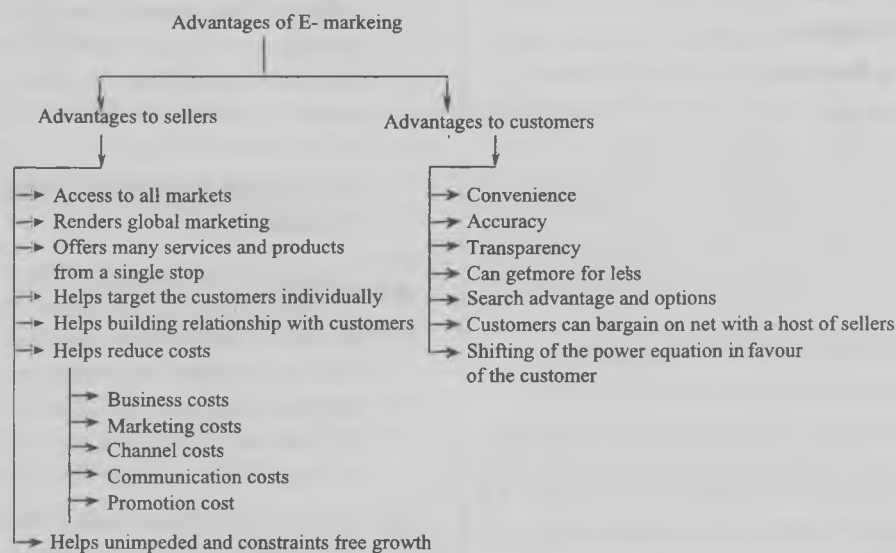


Figure: Benefits of Online Marketing

(a) Advantages to Sellers

1. Access to all Markets

Online marketing provides competition from the various parts of the world. Unlike, the traditional marketing wherein the buyers and sellers were confined only to certain specific geographic areas, online marketing enables them to access any corner of the world. An online marketer can access global customers, follow global strategies, compete globally and fluid global supply chains. Opening a website is equivalent to opening a marketing office.

2. Global Marketing

With the help of online marketing, even small firms can have access to all the markets at a cheaper rate. Example, a sole trader having the business of hair oil in some local area in India can sell its products and services anywhere in the globe and that too at a comparatively lower marketing cost.

3. Scope for Unimpeded, Constraints Free Growth

Limitations of showroom's space, warehouses, sales staff, office building, retail shop and many other do not cause any effect on the running of the business. The marketers can operate through web by using a single warehouse and limited staff members.

4. Offers Many Services and Products from a Single Stop

A huge number of buyers and sellers interact with each other and they offer a very big variety of goods and services on a single website. This is possible because of the direct and indirect access of the marketer to the customer.

5. Targets the Customer Individually

The online direct and interactive communication help marketers to target the customers individually. They can get all the necessary information about the customer irrespective of the location and the marketer also provides all the necessary information to the customer. Targeting customers individually helps to provide a tailor made product and personalized services.

6. Helps in Building Relationships with Customers

Online marketing being interactive and one-to-one marketing helps in building relationship with customers. Due to good relationship between the seller and the customer, the seller can offer more customized products, services and incentives. They may also offer a product totally according to the customer's specifications. Example, customized services provided by the Dell computers.

7. Helps to Reduce Costs

The online marketing helps in reducing various costs such as business costs, channel costs, communication costs etc. Business costs includes various costs which are incurred to carry out the business operations without the use of paper. It is estimated that web business costs only one-tenth of the traditional business. Channel costs are reduced as the product is marketed through the web. It reduces the cost of showrooms, warehouses etc. Communication or promotion costs are also reduced as the product is advertised through web to large group of people.

8. A Versatile Medium of Communication

Online is said to be a versatile medium of communications as it is a combination of newspaper, magazines, radio, billboards, telephone and T.V. The online marketing is flexible in nature which is a distinctive feature of it. Internet is a unique medium as it is a mass, personalized medium in reaching people and at a low cost.

(b) Advantages to Customers**1. Convenience**

The customer can purchase the product just by clicking a mouse button staying at home. Lots of time and money is saved in online marketing. The customers can have 24 × 7 access to the online marketing. There is online interaction between the marketer and the customer. The customer can have the demonstration of the product, make online orders, make online payments and accomplishes the entire purchase process through net.

2. Search Advantage and Wider Options

In traditional shopping customer was provided with limited choices. They had to visit 4 or 5 outlets in order to get the best of it, which used to be tedious. But the whole scenario is changed with the use of online marketing. Online marketing provides the customers with a large variety of products throughout the world.

3. Customers can Bargain on Net with a Host of Sellers

Online marketing being interactive in nature helps its customers to bargain with sellers for the low prices. The customer can make comparisons regarding the brands, prices and makes the best deal.

4. Transparency and Accuracy

The online marketing provides the customer with high level of transparency unlike, the business transactions. Nothing is hidden from the customers. Just by a click of mouse the customer comes to know about every minute detail of the product regarding its prices and terms.

5. Customers can get 'More for Less'

Online marketing helps the customers to get more value for their money. The sellers offer the product to the customers at appropriate price and value keeping the point in mind that, the customer can purchase the product anywhere in the world. So, they follow the policy 'more for less'.

6. The Power Equation Shifts in Favour of the Customer

The web marketing alters the power equation from the marketer to the customer. In case of traditional marketing more focus was laid on the supply side and the customer was taken as granted. There was an assumption that the customer will make and take all troubles to purchase the product from the stores as long as the stores are fully stocked.

Due to the benefits of online marketing it has become fast and has manifested itself in three ways,

- ❖ Growth in volume
- ❖ Enlargements in the range of products marketed
- ❖ Growth in Internet subscriber base.

Disadvantages of E-marketing

The disadvantages of online marketing are,

1. All Products do not Lend Equally Well for Web Marketing

The first and foremost drawback of online marketing is that it is not suitable for any and every product. For instance, when Philips India went in for web marketing it had to select a few products and keep the others off.

2. Costs Involved are Not Inconsequential

Costs involved in web marketing are not low as it is often made out. The costs are not incurred just once at the time of creating up a website but the marketer is required to spend money on running, maintaining and updating the site. If the marketer does not spend sum on the above mentioned activities then there are chances of losing a large number of customers.

3. No Reliability about Profitability

Many marketers in the present era are struggling to make their business viable and profitable. Even Amazon the world's biggest online marketer is yet to break even.

4. Lack of Personal Interaction While Making a Purchase

Many people prefer the live interaction when they buy. They believe in having face to face conversation rather than online marketing.

5. Security

Security is a major concern for about 70% of Internet users. There is a real fear of their privacy being invaded as their personal details are being revealed to or exchanged with other online companies. And also the possibility of their credit card numbers being intercepted and used for any number of purchases. Consumers and even policy makers are extremely worried that marketers are going a little too far and breach all rights to privacy.

6. Can Leave Businessman Feeling Isolated

This is very common. Because the world wide web is faceless, it can appear cold and inhuman. This can make the businessman feel isolated and very inward. Everyone likes to socialize and meet people, but in this case it is quite difficult.

7. Hard to Tell if People are Lying

There is so much information on the world wide web now, it is sometimes hard to tell the difference between crap and quality.

8. Costly for Marketers

Online marketing is costly for marketers as it includes the cost of software, hardware peripherals, website designing, website maintenance and online distribution cost.

Q12. Explain about E-marketing techniques and write about advantages and disadvantages.**Answer :**

March/April-15, Q13(a)

E-marketing Techniques

For answer refer Unit-V, Page No. 142, Q.No. 9.

Advantages and Disadvantages

For answer refer Unit-V, Page No. 144, Q.No. 11.

Q13. What is E-Marketing? What are the advantages and disadvantages of E-Marketing?**Answer :**

March/April-16, Q13(b)

E-Marketing

E-marketing is the achievement of marketing goals through the utilization of the Internet and the web based technologies. E-marketing is also known as Internet marketing or marketing on the web or online marketing.

Online marketing is a part of e-business or e-commerce. The Internet marketing has changed the way of working, buying and living of the people. It involves the exchange of products, services, information and payments through the electronic medium of networks.

Advantages and Disadvantages of E-Marketing

For answer refer Unit-V, Page No. 144, Q.No. 11.

5.2 NEW AGE OF INFORMATION BASED MARKETING**Q14. Explain about new age of information based marketing.****Answer :**

Model Paper-I, Q13(a)

With the emergence of information based marketing (i.e., interactive marketing) in electronic commerce, there will be a change in the working of retailers, manufacturers different organizations and companies. This change can be classified into following areas,

- (i) Retailers against manufacturers
- (ii) Target and micro marketing
- (iii) Small organization against large organizations.

(i) Retailers Against Manufacturers

Previously, in electronic commerce, manufacturers dominated the retailers i.e., manufacturers were given more importance than the retailers. But today, the trend had changed. The reason for this is that the retailers started using a special type of system called Point of Sale (POS) scanning systems. Through these systems, retailers are aware of the latest information available in the market. Another benefit of POS systems is that they allow retailers to know the needs of different customers much earlier than they are available to the manufacturers.

Through information based marketing, retailers and manufactures can do the following tasks,

- (a) Market research and customers anticipation
- (b) Establishment of market presence
- (c) Developing bundles of customized products
- (d) Establish a relation between the price and priority of information based products.

(a) Market Research and Customer Anticipation

In today's time, companies have to be clever as well as efficient in order to have good impression on the customers. For instance, companies instead of using traditional methods for gathering information about different needs of the customer, must make use of internet services. In this way, the cost of collecting information can be reduced. Also, the companies can provide better service to customers through internet.

(b) Market Presence

Companies advertise their products in mostly two ways,

1. Through "in your face" advertising, the companies advertises their products in such a manner that they don't consider the profit or loss of selling the product. If customers are interested, they can buy the product. Otherwise, they don't buy the product.

2. By using value added corporate advertising method. In contrast to the above method, here the companies keep in mind the needs of customers when marketing their products. Consider an example, where you want to purchase a car online. The company on its website will display all the possible facilities that the customer wants in a car. Company also allows customers to post their suggestions regarding the car. In this way, company can improve its standard of performance.

In order to establish the market presence, it is important for the companies to know how they should promote their products. Some companies promote their products by offering discounts on them.

(c) Product or Service Bundling

Companies can also attract their customers by using a special method called product bundling method. Product bundling can be defined as a strategy in which company sells a product in combination with another product at a reasonable cost. For example, selling of particular software or hardware along with the computer etc.

Bundling method can be categorized into three types. They are,

1. Only Component Method

In this method each product is sold individually.

2. Only Bundles Method

Only bundles method is just the opposite of the above method. In this type of method, product is not sold separately, but is combined or bundled with another product and then sold.

3. Mixed Method

This is the combination of only component and only bundles methods. Here, the product is sold separately as well as by combining with other products.

The feasibility of the above three methods depends on the following factors,

- (i) Cost of using each method.
- (ii) Profit incurred with each method.

(d) Relation between Pricing and Priority of Information based Products

New type of products are slowly making an impact on e-commerce. These products are called information based products. The possible forms of information based products are,

- (i) Software related products
- (ii) Electronics related products
- (iii) Entertainment related products.

The two important factors that must be considered by customers while using the services of information based marketing,

- ❖ Pricing factor in information based marketing.
- ❖ Priority factor in information based marketing.

Customer must keep in mind that whenever he purchases any product he has to pay not only for the product, but also for the various services provided by that product. In addition to this, customer should also pay for connectivity services offered through information based marketing strategy.

The cost of information based products varies with the rate at which the product is received and also the standard of information available in the product.

The information products cost can also vary depending on these products need to be delivered to the customers. In other words, we can say that the cost depends on the priority given by the customers. Suppose the customer wants the product to be delivered in two hours, then the cost of that product will be less when compared to the customer who needs the product in one hour.

(ii) Target and Micromarketing

Previously, companies found difficulty in targeting the customers by using micromarketing method. This is because they could not understand how to use the method properly. These problems were overcome with the use of different computer based technologies. Companies can now implement the method more easily for fulfilling the customer needs.

Micromarketing can be done in mostly two ways,

- (a) Micromarketing through direct mail
- (b) Micromarketing through tele marketing.

(a) Micromarketing through Direct Mail

In this micromarketing method, companies persuade people to buy their products by writing to them.

(b) Micromarketing through Telemarketing

In this method of micromarketing, companies tell people to buy their products by talking to them through telephones.

The working of both the methods might be different from one another but their objectives are same in order to satisfy the needs of the customers.

Micromarketing can be classified into two types,

1. Direct-relationship Marketing

This is the first type of micromarketing. In this type, companies try to establish a relationship with the customers by direct contacting with them for the purpose of improving their sales.

2. Direct-order Marketing

This is the second micromarketing type. In direct-order marketing, companies are not concerned about how the sales will improve. They just concentrate on how to sell their products and services to different customers.

(iii) Small Organisations Against Large Organizations

Both large and small organizations used television as a medium of advertising. Despite of this, large organizations dominated small organizations for a long period of time. The reason for this was that through television, large organizations not only promoted their products in local markets, but also in global markets. For example, they advertised their products in India as well as outside India. Whereas, small organizations could only do local advertising as cost required for doing global advertising through television was beyond the reach of small organizations.

All this has changed with the emergence of electronic commerce. Now, small organizations can also promote their products globally by using services like internet. This is because using internet is far more cheaper than using television for global advertising.

5.3 E-COMMERCE INFLUENCE ON MARKETING**Q15. Explain the impact of E-commerce on Marketing.****Answer :****Model Paper-II, Q13(b)**

E-Commerce is simply an 'online business' wherein the buying and selling of products and services are carried out through internet. It comprises of both the Business-to-Business (B2B) and Business-to-Consumer (B2C) transactions. Online marketing is a part of e-business or e-commerce. It has changed the way of working, buying and living of the people. It involves the exchange of products, services, information and payments through the electronic medium of networks.

The e-commerce has influenced the field of marketing resulting the benefits followed by the general set of activities that are observed in the marketing mix with the evolution of information technology. The influence of e-commerce on marketing mix is discussed as below.

1. E-Commerce on Product

There is a great impact of e-commerce on the 'product' part of marketing mix. It has transformed many physical products/goods to digital goods. Audio music, videos, movies and even digital books are some of the examples of transformed goods.

E-commerce has brought a drastic change in many economies with the effects that turned as the marketing aspects of the products. They are,

- (i) Availability of new technology-based or technology-enhanced products.
- (ii) Availability of e-commerce results in change in the presentation, distribution and assortment of existing products.
- (iii) Availability of new opportunities for the participation in Business-to-Business (B2B) commerce have come to the lime light.

The common attributes which a customer compares whether it may a product sold online or product sold from department stores is value, brand and product design.

2. E-Commerce on Physical Distribution

E-Commerce has a great impact on retailing, physical distribution and supply chain management. Internet has brought a wide change in the area of physical distribution with Just In Time (JIT) system, EDI and RFID. Supply Chain Management (SCM) is one of the major influences of the internet's open standards for information flow. The efficient flow of information sharing is acquired through some strategies which are leveraged by leading organizations. They include material planning, inventory planning, enhanced participation of partners, extending the research and the distribution channels on the internet.

Thus, internet reduces the interaction costs too on the market place among the manufacturers, wholesalers, distributors, dealers, retailers and customers.

3. E-Commerce on Price

E-Commerce avails a great impact on the price by providing the ease of comparing prices at different websites.

For example: E-campus come forward with an offer that it provides cheaper textbooks compared to bookstores.

The price of a product in the market consists of the elements such as production costs, coordination costs, profits and also the search cost.

Another mode of impact by the e-commerce on the price is the development of internet auctions. It enables the internet users to auction a wide variety of goods. The best example for online website offering internet auction is 'ebay'.

However, e-commerce involves selling of goods directly to the customer without the involvement of retailers and distributors to reduce the intermediary barriers. It provides products to the customers directly at low compared to the offline shopping.

4. E-Commerce on Promotion

The promotion of goods and services has a huge influence on the e-commerce as a medium of communication and a commercialisation tool. It provides an endless offers to promote a company and its products and services. Internet as a powerful platform has emerged the number of subscribers for reaching large audiences and to delivery brand messages.

Online marketing has many ways of promoting a product of a company. E-mail advertising is one among them. It is considered as e-marketing strategy that effects the e-marketing with the use of technology.

The promotion of products through internet not only influenced the digital products but also has influence on tangible products.

The e-commerce can achieve an effective promotion impacts through the promotional strategies and mixes. They are,

- ❖ Advertising on websites where customers can aware about the product by clicking on icons or hypertext to know about the complete information of the product.
- ❖ Sales promotion where it facilitates the movement of product from producers to consumers by short term incentives.
- ❖ Information retrieval through various available websites as shopping assistants.

5.4 CHARTING ON THE ONLINE, MARKETING PROCESS

Q16. Explain the different steps for interface marketing process on the internet.

Answer :

The steps involved in the process of interactive marketing on internet are as follows,

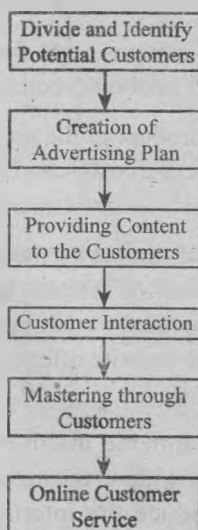


Figure: Charting the Online Marketing Process

Step-1: Divide and Identify Potential Customers

In this criteria, the market is divided or segmented into different customers. Based on the segmentation, capacity of customers is rated.

Various methods are used for segmentation which are as follows,

1. Demographic method
2. Benefit or behavioral method
3. Volume method
4. Business specialization method.

1. Demographic Methods

In this method, market segmentation is carried out with respect to the human characteristics of like age, sex, religion, income etc. For instance, in banking, the market is divided into different customer groups with respect to age factor like

	Age	Group
1.	> 50	Savers
2.	25-44	Heavy borrowers
3.	18-25	Credit risk groups

2. Benefit or Behavioral Methods

In this method, market segmentation is carried out with respect to the people behavior, way of thinking, their attitudes, etc. For instance, in finance market is divided on the basis of two factors.

- (i) On the basis of customers position in financial process, which includes borrowing saving, investing, protecting, cash managing etc.
- (ii) On categorizing the people using online firms,
 - (a) For transaction processing
 - (b) For exploring the information.

3. Volume Methods

In this method, market segmentation is carried out with respect to the volume of the product which includes light, medium, heavy or nonusers of a product. After identifying the worthy product the aim is to target on product sales for acquiring the accurate product volume. For instance, marketing programs centered on business users helps in identifying the volume segmentation.

4. Business Specialization Methods

In this method, market segmentation is carried out with respect to the industry size or its type.

Basically this is meant for business or institutional markets. For instance, special programs are carried out for small business.

As internet is a large network we can still divide these segments into smaller ones called "News groups" which provide customized marketing. News groups are again segmented into relevant areas of the product. With the assistance of news groups, advertisers read the FAQ (Frequently Asked Question) files to know the exact nature of internet forum and figure out the selected news groups for tailoring the product information.

Distinguishing the Product

Product distinguishing plays a central role in business process.

For an effective marketing, "Law of differentiation" was introduced in which "value-added services should exist while doing online business with the organizations".

The process of differentiation is based on two factors,

1. Identifying the needs of tangible and intangible customers.
2. Appropriate creation of products value-added services in order to meet the customer needs.

Step-2: Creation of Advertising Plan

The main purpose for creating an advertising plan is to improve and expand the business level so that it provides positive return on the advertising investment. In order to model the advertising plan, following steps are carried out,

1. Determining the advertising goals which includes business awareness, generating immediate sales, keeping the current customers by developing their loyalties etc.
2. Once the goals are specified, determine the target audience in order to meet the basic requirements of the customers.
3. Finally, the selected target audience will be motivated by the advertising plan.

For producing major benefits in product four aspects are necessary (AIDA), i.e., attract Attention, hold Interest, arouse Desire and motivate Action.

Advertising options are of two types,

(i) Traditional Option

Ads are placed in airports, television, monitors on ski lifts etc.

(ii) Online Option

Ads are placed in news groups, yellow page directories, bulletin boards, WWW pages etc.

Once an advertising campaign is planned the development of promotional materials is carried out which includes traditional advertising and knowledge oriented material.

The advertising methods are divided into two types.

1. Interactive Advertising

Interactive form of advertising is called *nonlinear advertising*. In this form, a reader is allowed to retrieve any kind of information instantly just by "clicking" on the highlighted items. For instance still images, animations, digital video, audio etc. Hence, the interactive content is nonlinear and informative in nature.

2. Content-oriented Advertising

Product advertising is not enough to expand the business but the content should also be good (which adds value to the product). In this form, companies are used to publish relevant news and aims on customer's requirements to develop the product, usage of product with country-specific etc. Based on these factors, customer grasps knowledge about the different products.

Thus, content-oriented marketing should have a broad knowledge about the product's technology, new sources of technology, customer views, capabilities, robustness in business etc.

Step-3: Providing Content to the Customer

The content or material is provided to the customer by using two strategies,

(a) Push-based Marketing

This is a direct type of marketing which takes place through news groups, e-mails, listservs etc. It is also named as *dynamic marketing*.

(b) Pull-based Marketing

This is an indirect type of marketing that occurs through WWW pages. It is also named as *static marketing*. The primary aspect of this strategy is skilled customer management by using predictive models which get activated to carry right message at right time to right people and in right format.

In order to force the marketing program and to step up greater efficiency and productivity valuable, *feed back loops* are included which stores the respondent names along with the response rates and other customer activities etc.

Step-4: Customer Interaction

There are four types of customer interactions. They are,

1. Passive Interaction

It is carried out via anonymous FTP sites (File Transfer Protocol), which is done by just dialling and utilizing the user name and password. The main goal is to provide a way in which customer is unrestrained completely.

2. Direct Interaction (Active Interaction)

It is carried out via e-mail or chatting, which allows two users to have online discussion. The main goal is to follow a customer with answers to questions and requesting for answers.

3. Group Dialog

It is carried out through news groups, bulletin boards across the company and customers. The main goal is to provide customer interaction such that the solutions of unexpected problems are carried out in an easy manner.

4. Video Conferencing

It is carried out via *Multicast Backbone* called *MBone* on internet. The main goal is to provide active participation among customers and to analyze. The product activities through digital broadcasting audio, video and text etc., supported by *MBone*.

Step-5: Mastering through Customers

In this aspect, product evaluation criteria plays a vital role which is carried out by the marketing plan. Marketing plan includes measuring or estimating productivity of elements like price, product, repeat purchase, market share, sales volume etc. Analysis on company's materials compared with channels like endsales, distributor contacts etc. Which is later modified as per the needs of target groups.

Step-6: Online Customer Service

In the process of interactive marketing support for online services to customers plays a crucial role where the customers interaction is compared with other marketing strategies.

Some of the online services which are supported by vendors, public forums incorporates bulletin boards, knowledge bases on the business services like news groups, compuserve etc.

Vendors should develop brand loyalty among consumers, so that the products are purchased repeatedly.

5.5 APPLICATIONS OF 5P's (PRODUCT, PRICE, PLACE, PROMOTION, PEOPLE)

Q17. Explain the E-applications of five P's.

March/April-16, Q13(a)

OR

Discuss about applications of 5P's.

(Model Paper-I, Q13(b) | Oct./Nov.-16, Q13(b))

OR

How do you link 5P's of marketing to the Internet?

Answer :

March/April-15, Q13(b)

The applications of 5P's of marketing are,

1. Product
2. Pricing
3. Place
4. Promotion
5. People/Personalization.

1. Product

Product can be referred as a "good" or a "service" provided to the customers by a company. A "good" signifies physical items which shows its presence. For example grocery items, automobiles and books. On the other hand, "service" refers to execution of some action or a task for the customers. For example, the actions done by accountants, engineers, doctors and lawyers.

With the evolution of Internet, there are many virtual services which are provided to the customers electronically. For example stock market news, online worldwide news. These services have helped many customers due to its ease of use feature. But differentiating between the goods and services which are provided on-line is difficult. For example, one cannot distinguish whether an electronic greeting card is a physical good or a service. Because, after receiving it, if the person prints it then it becomes a physical good, and if that person opens, views and deletes it then it becomes a service. Therefore, it is not necessary to know the difference between a physical good and service. But it is really important to determine the attributes and the advantages offered by the goods and services.

Apart from this, firms also provide prepurchase service and post purchase service on their products to the customers. Prepurchase service is the service which is provided before the customer buy the product in order to minimize cognitive dissonance. Post purchase is the service which is provided after the customer buy the product. For example, if the customer buys automobiles then it receives post purchase service which includes 24 hour round side service. Thus online services provided by the firms enables its customers to easily provide their feedback and to ask their queries.

2. Pricing

Pricing is a mechanism using which price of the physical good or service is determined. It is the amount of money charged to the customers for the goods or services offered by a firm. There are many different strategies which are adopted by a firm in relation to price. For example, a customer is given discounted price if he buys the goods or service in larger volume at a time. There are various strategies used by web based marketers to attract customers. For instance, few sites are offering free of cost services to the customers only to create a community through which it can earn profits by selling advertising space, for example parenthood.com. In another case there are few sites which are paying their customers for using their services on hourly basis only to place its advertising bar on their web browsers. Frequent purchase systems are being introduced in order to gain customers trust and loyalty which indirectly will earn their interest in buying the products online again. Search engines provides an extra functionality to the customers by helping them compare the prices of the products of all the goods and services which are available on the Internet. Now a days online auctions are also attracting the people who frequently shop online. The auctioneers who wants to sell the product sets the price of the product at its lowest, whereas the bidders bid the highest prices sometimes or the prices which are fair enough. There is another technique wherein the price of the product is set according to the prices offered by consumers. For example priceline.com which enables its buyers itself to set prices for hotel reservations, online airline tickets, cars on rent. Prices charged by the different firms for the goods and services are freely available on the Internet. Due to which competition between them is increasing day by day thus forcing each of them to lower down the prices of their products. Apart from this, there are many other criteria on which the price of the product depends. They are,

- (i) Reliability of sellers
- (ii) Availability
- (iii) Service
- (iv) Incentives.

Thus, difference in the price tags of the products offered by different firms brings a challenge to the web based sites. There are different issues faced by the web based sites. One of them is how to standardize the prices. Therefore, it is necessary to employ some strategies which should set the price of the product according to it.

3. Place (Distribution)

Place corresponds to the distribution of the product i.e., moving of the product from the producer's warehouse to customer. There are different channels or mediums through which product is delivered to the consumers, one channel is that the product is sent directly to the consumer whereas the other channels obtains an indirect way. That is products are distributed with the use of intermediaries such as retailers, warehouses, wholesaler. E-commerce can be revolutionary in terms of business and delivery of goods within on time. At present it is the fastest communication channel through which information about the products can be delivered to the customers. For example, insight enterprises is a real time firm which has formed a strategic alliance with federal express. Thus, now federal express delivers the services to the customers directly without the need of warehousing the products.

Internet is a boom in today's era because of its instant delivery of online services to the needy customer. For example, if a person needs to convert its business file into French on urgent basis then he/she requires a English-French business document translation software. Thus, an only option a customer can opt at depending on the moment is to buy an online English-French business document software by visiting an online store using either its debit or credit card.

4. Promotion

Promotion refers to the marketing activities such as press release advertisements, word of mouth, news stories which are used to create awareness of the products or services among the users. It is done with the goal of generating a positive customer response. Some of the methodologies adopted for marketing communication are,

- (i) New stories
- (ii) Paid advertisement channels
- (iii) Consumer's personal experience
- (iv) Packaging
- (v) Word of mouth.

Paid advertisements is a form of marketing communication in which the advertising media channels are paid for advertising firm's products or services. This includes billboards, television, special events, magazine, newspaper, direct mail. Apart from this, Internet acts as a new advertising channel to inform customers about the benefits offered by the product and services. It is a new medium which charges minimum money for advertising. Therefore, every year companies issue a fixed amount of budget for advertising purpose.

Companies try to keep track of the advertising media in order to analyse whether their money which is being spent is leading to success or growing their business scale. But analysing and keeping track of the different number of advertising media is very difficult. Especially to determine the advertising media which has caused the consumer to buy the service or products is a challenging task.

There are two types of channels.

(i) **One Way Channels**

In this channel, a message is sent to the customer without providing a direct technique through which a customer can contact the business person. Some of the examples are roadside bulletin boards, television, magazines, radio, newspaper direct mail.

(ii) **Two Way Channels**

In this channel, a message is sent to the customer and a technique is provided using which the customer communicates with the business person. Some of the examples are direct mail via phone responses, informercials via phone responses and inquiries, electronic mail with hypertext links to interactive websites, telemarketing.

Two way channels does not always provide two communication. For instance, there are some website which provide complete information about their product or services without enabling the user to communicate in return. On the other hand, when ever a firm takes all the benefits which are offered by two way channels then a customer receives a personalized message through which it gets attracted towards the services. Apart from this, there are three other advertising channels which has acted as a powerful tools for advertising. The techniques are consumer personal experience, word of mouth and news stories. The impact of these techniques are either positive or negative from the customer. Positive message outcome can be beneficial to company's reputation and success which can strengthen its position in the market. On the other hand, negative message outcome can lead to company's failure and decline in business sale.

5. **People/Personalization**

People is an element which refers to individual, staff and customers. It covers the customer service levels as well as effective communication and training for the staff because both are significant for growth of the business.

Personalization is a technique in which users are allowed to customize their home page according to the individual preferences. User of the site are given the ability to choose what information they want to see when they open their web browser. For example, a user can customize its homepage for its favourites websites such as facebook, gmail. Its functionality is far better than the product and promotion as it covers both of their functionality. Personalize feature is present in user domain because they use it for customizing and controlling. For example, Hallmark is the best example of it. It not only provides services to the users upon its request but also stores their personal details in the database in order to remind them of any special occasion, or event. So that the users can easily arrange a greeting or anything for others without any difficulty. They also suggest gift items to the users based on the preferences they submitted previously.

5.6 **E-ADVERTISEMENT**

Q18. What is E-Advertisement? Mention the types of E-Advertising.

Answer :

E-Advertisement

Online advertising is a marketing strategy that make use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

Types of E-Advertising

Internet advertising or online advertising can be classified into mainly two types,

1. Push-based advertising
2. Pull-based advertising.

1. Push-based Advertising

It is also known as active advertising. Push-based advertising is the most inefficient type of advertising. This is because its does not convey relevant information to customers. In short we can say that information sent through this advertising is meaningless.

There are two types of push-based advertising,

- (a) Broadcast advertising
- (b) Direct mail advertising.

(a) Broadcast Advertising

This is the first type of push-based advertising. Through broadcast advertising, different companies can advertise their products to unlimited number of customers. One of the ways by which broadcast advertising can be done is by using television. Doing broadcast advertising with television has benefits and drawbacks.

The benefit is companies through television can visually explain the importance of their products.

The drawbacks are,

Using television for advertising is expensive. The time duration allotted for showing advertisements on television is usually thirty sec. Hence in such short span of time, customers cannot get the complete idea about the product. Thus, product advertisement has to be displayed at periodic intervals of times in order to understand the customer. To display the add more than once requires a lot of cost.

Another way in which companies can do broadcast advertising is by using news groups. In other words, company can advertise their products through news groups.

(b) Direct Mail Advertising

This is the second type of push-based advertising. Direct mail advertising is the process in which companies advertise their products by sending mails to different customers. The benefits of this advertising technique are,

- (i) Through direct mail advertising, companies can target only those customers who seems interested in buying their products.
- (ii) Companies can send the product information in their own way. In other words, companies have full control over presentation of the message.

The drawbacks of direct mail advertising are,

There is a possibility that some messages received by customers will be of less importance.

For this reason, direct mail is also referred to as junk mail. These junk mail messages not only waste the customers time but also unnecessarily utilizes the space of the customers mailbox.

Another interesting point to note here is that companies sometimes purposely send junk mails thinking that there will be few customers who will read the message and buy their products.

2. Pull-based Advertising

This type of online advertising is also called as passive advertising. Companies by using pull-based advertising can have a better customer response than through push-based advertising. This is because with the help of pull-based advertising paradigm a feedback loop which directly connects a company and customer is establish thereby providing meaningful information to the customers.

Pull-based advertising can be classified into three types or forms,

- (a) Bill board advertising
- (b) Advertising through yellow pages
- (c) Advertising through endorsements.

(a) Bill Board Advertising

This is the first type of pull-based advertising. It is also known as world wide web advertising. In this type of advertising, one company has to take the help of other company for promotion of its products online. In other words, one company promotes its products through other company's online services.

Advantages

- (i) Inexpensive to implement.
- (ii) Companies through this advertising, can make their products reachable to different customers.

Disadvantages

Most of the customers don't browse through one site for a long period of time. They constantly switches from one site to another. So the product information provided by the company should be in such a format that it is simple short so that the customers can easily understand.

(b) Advertising through Yellow Pages or Yellow Pages Advertising

In this type of pull-based advertising, companies can promote their products by using yellow pages directory services.

Advantages

- (i) Information can be kept for long time.
- (ii) Using yellow pages for advertising is cheap.

Disadvantages

- (i) Product information cannot be frequently updated.
- (ii) Limited creativity in the ads.

There are different types of yellow pages that can be used by companies for promoting their products,

- ❖ Traditional yellow pages .
- ❖ Audiotext yellow pages (talking yellow pages).
- ❖ Interactive or consumer search databases.

(c) Advertising through Endorsements or Endorsement Advertising

In this type of pull-based advertising. Companies ask different celebrities, famous personalities, etc., to promote their products. But in case of online endorsement advertising, a company asks the customers to give feedback for its products. In other words company ask the customers to endorse its products.

Advertising on Internet has its own advantages and disadvantages. The advantages of advertising over internet are,

- (i) Through internet advertising companies can promote their products more efficiently.
- (ii) By advertising through internet, companies can satisfy the needs of different customers.
- (iii) Customers get to know about the latest products available in the market.
- (iv) Income of companies will increase as a result of advertising on internet.

The disadvantages of advertising over internet are,

- (i) Customers sometime receives unwanted messages in their mailbox.
- (ii) No specific rules have been defined till date that describes how advertising should be done.

Q19. Explain various E-advertising techniques.

Answer :

March/April-17, Q13(b)

Online Advertising Mechanisms/ E-advertising Techniques

Online advertising is a marketing strategy that make use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers. This strategy provides quick promotion of product information irrespective of geographical boundaries.

The different online advertising mechanisms include,

- 1. Directories
- 2. Search engines
- 3. Banners
- 4. Sponsorships
- 5. Portals
- 6. Online coupons.

1. Directories

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites. The listing of the websites can be done either alphabetically or category wise. The indexes which are listed category wise displays the indexes in a sequential order. So, when the users click on one category, they are then navigated to the respective page. However, the role of the directory service is critical and it is important that the categories are listed in accordance to the user's expectations. This is necessary because if any category is missing or listed somewhere else, the user may think that the intended content is not present on that site. Apart from this, they exist many directory services that depict the organization businesses in multiple categories.

These days, there are many directory services that registers the websites free of cost. Some of these include info seek, Internet mall, the yellow pages and yahoo.

2. Search Engines

A search engines can be defined as a software system designed to search information on Internet. Unlike, directories, the search engines are considered to be the most popular method in finding sites. The search engines operates by taking user-defined words and boolean expression in search bar. The generated search results are represented in a line of strings, which are a list of closely matched websites and are often called as Search Engine Results Pages (SERPs). The generated result content may be the combination of web pages, images and various types of files. So, when the user types certain string in search bar and clicks enter, the search engine periodically "crawls" through the Internet searching for new pages and updates the existing databases. The speed with which the engine performs updation and searches the number of location have major impact on the total number of sites indexed as well as on the revenue to the site. That is the more number of clicks to a site by user, the higher income to the site owner. In addition to this, the search engines maintains real-time information by using an algorithm on web-crawler.

The designing of a webpage must be done in such a way that, it should increase the site's "Hit rates" and "Ranking". Both hit rates and ranking is very important because the designing of website list on Internet entirely depends on it. The hit rate can be defined as total number of matches obtained from user entered text and website given results. On the other hand, based on the hit-rates ranking is assigned to the websites. That is, that website with maximum hit rate is ranked first. Subsequently, the following sites will be those sites that matches less with the user-typed text and the user's probability of visiting will also be less. However, different search engines operates differently and yields slightly different results. Generally the ranking is done based on the following tags of Hyper Text Markup Language (HTML).

(i) Keyword Tag

It identifies keywords for search engines that uses the information.

(ii) Description Tag

It is the body of the text generated by search engine in order to describe the contents of the websites.

(iii) Title Tag

It is the title of the website lists which is typically generated by search engines.

Furthermore keywords, meta tags and frequency of words plays a critical role in search engines. This is essential because, a repeated word throughout the page can increase the rating for searches using that word. Although, this form of searching is most prevalent but it has been known that few website designers has made an incorrect use of it. This enabled search engine designers to make it as an abuse act. And such abuses are referred to as "search engine spamming". This sort of spamming is done using any of the following methods,

- (i) In the first method, the word is consecutively repeated at prescribed intervals in the keyword section.
- (ii) In the second method, the word is repeated using the same color text as background all over the page. Such words on the web page becomes invisible to the user but will be visible to search engine. This results in degrading the ranking of the site and may also results in dropping the sites from the indexes.

Depending upon certain criteria the search engines performs ranking. The criteria includes,

(a) Location of Words on Websites

The ranking is done based on the location of the words on the website. The listing of words is done in order of importance. That is the words which are highly important are placed closer to the top of the page. This way of initially locating important words prior to table increases the ranks of the sites.

(b) Popularity of Links

Popularity of links represents how popular the links are? If the links popularity is high then its ranks will also be high. Also, an ideal site is that site if its links are created from other sites. Such strategies can be improved by employing reciprocal linking agreements with other sites.

(c) Reviewing Sites

The search engines performs the task of site reviewing and after reviewing it they rank the reviewed site prior to non-reviewed sites. Therefore, sites are relevant, if they are attention gaining.

(d) Case Sensitive

The search engines can be case sensitive. So, in such cases if the words are repeated with many variations, then the search engines pulls that sites and displays in the list.

3. Banners

Banners are the most popular form of online advertising method which is used to attract visitors. A banner typically can be defined as a rectangular shape box, about 60 pixels high and 360 pixels wide. Generally banner advertisements contain texts, graphics or some times only graphics. They are meant to appear on screens of each engines, web browser software and web-sites so as to capture the attention of WWW users. These advertisements are referred to as "click-through" advertisements. They contain hypertext links corresponding to the site about which the banner is advertising.

The click-through advertising strategy is a unique kind of advertising wherein, it directly navigates the potential user to its intended transaction location. In contrast to other advertisements the click through is fastest as it enables the customer to just click the banner, perform necessary purchases and complete the purchase order instantly. The price of the banner advertisement is based on two features namely,

- (i) Cost Per thousand Impressions (CPM)
- (ii) Click Through Rate (CTR).

(i) Cost Per Thousands Impressions (CPM)

It can be defined as each time the act of viewing that page which displays the banner. Sometimes, it happens that the user doesn't wish to include graphics on the site, so he filters them out. By doing this, the banner won't be visible to the WWW user but it exists on the web page and is still considered as an impression.

(ii) Click Through Rate (CTR)

It is one of the most important feature in advertising rates. The role of the CTR is to count the number of users that visited the site.

Subsequently, also the firms keep monitoring their sites in order to track whether the visitors are interested in navigating through multiple pages on site, or whether they make any purchase from the site. Such an act is known as fulfillment. This term is used to keep track of those product or services that sold out as a result of making advertisements. To ease this task many software tracking devices were introduced, but they turned out to be imperfect and imprecise due to the following reasons,

- ❖ Sharing of computers by multiple users.
- ❖ Use of network servers and ISPs as gateways. This makes even more complex for keeping track of each individual user.
- ❖ Users disabling their cookie feature of their browsers
- ❖ Availability of intelligent agents or 'bots' and web crawlers in order to make advancements in WWW and updating indexes.

Apart from this, the advertising of banner can also be done by subscribing to a network such as double click. These firms role is to track visitors, visiting the sites within the network. It accomplishes this track by making use of cookies in the browser. Now, based on the generated reports on users, it targets specific types of banner advertisements.

4. Sponsorships

The sponsorships are one of the popular on-line advertising method. It is an ideal mechanism for generating brand recognition. They are similar to banners but there are two features that distinguishes it from banners.

- ❖ With sponsorships, the firm's banner can stay on the site for longer period of time may be a prespecified time slots or certain number of days.
- ❖ The sponsorships sends a assurance message specifying that sponsors has full trust in the company behind the website.

Besides this, firms that are interested in sponsoring the websites require minimum number of CPMs or click through or may also pay a flat rate.

5. Portals

Portals can be defined as a site that are designed to provide information to the WWW user. Apparently, they servers as "port of entry" onto the web and are meant to sell advertising space on their sites. The portal offers customized pages, customized news items, stock quotes, search indexes and engines.

6. Online Coupons

The online coupons is one of the popular method of online advertisement. Many firms employs this type of advertising. It is basically a token or ticket which is offered online to the customers. They can be re-claimed online, or can be printed for using in stores or can be mailed via postal mail. Beside this, they can be distributed through those sites that are specifically meant to distribute such coupons.

5.7 VIRTUAL REALITY AND CONSUMER EXPERIENCE

Q20. Discuss in detail virtual reality and consumer experience.

Answer :

The development of real-time www based 3D environment is one of the significant achievements for web browsers. The next generation browsers make use of 3D enabled user interfaces for navigating the web for giving visual appearances to the grouping of documents and their relationships. Complex relationships within the document collection can also be visualized by merging the virtual reality with the servers. These servers are capable of classifying and merging of documents.

Consider an example of virtual air-ticket booking counter. Apart from booking the air-tickets the customers can virtually move inside the aeroplane to locate his/her seat, can sit on the seat to know the comfort level, can know in advance the extra benefits he/she might be provided with etc.

With virtual reality taking off, the users can virtually realize their dreams like meeting the top celebrities, travelling different countries, making their favorite actors dance, sing, talk, smile etc., for them. On the otherhand the companies are striving hard to set the attention of their potential customers with attractive websites.

While creating 3D environments, designers should keep focus on customers who are diversified into various types. They include,

(i) First Category Shoppers

The first category shoppers include those who does not care the products available either in 3D or 2D but focuses only on one priority that is price.

(ii) Second Category Shoppers

The second category shoppers includes replacement shoppers who focuses to minimize the shopping time. So the virtual environment for such customer is offered with a product in the category the customer is interested in.

(iii) Third Category Shoppers

The third category shoppers are the numerous and sophisticated shoppers. They only focus on the quality rather than anything. The virtual environment is to be sophisticated enough to acquire diverse qualities of products.

Therefore, there are numerous ways of ideas for a virtual environment such as opportunity for education, experiments, story telling and exploration using 3D environment.

Q21. Explain various emerging tools that are available in e-commerce for consumer data interface.

Answer :

Most of the e-commerce applications need a complex interface between the users and the information resources, such applications make use of high-level interfaces in order to meet the customer's requirements and preference. The efforts being made for developing an efficient and effective consumer data interfaces can be classified as follows,

1. Human Computer Interface (HCI)

Different emerging technologies provides an effective interaction between the humans and computers. In near future, voice-based machines that can recognize and reproduce speech signals, the GUI's that enable quick browsing of massive amount of data user sensitive interfaces that can customize and display the available information as per the user's understanding capabilities will be available. The interaction with the machines will be through touch, facial expressions and gestures.

2. Heterogeneous Database Interface

The access methods for databases comprising of multiformated data (i.e., multiple structure databases) will be developed. In the coming years, users will be capable of generating and broadcasting and query directly to the relevant database, thereby receiving the timely response with respect to that broadcasted query. Some examples of multiformated data include plain text, spread sheet, programs, video, etc.

3. User Centered Design Tools/Systems

Different methods and models that are capable of producing interactive tools and architecture-centric software systems will be developed. The data driven capabilities and the knowledge-based capabilities are combined to form highly effective and easily implemented interactive tools such as, document-oriented computing interface.

4. Virtual Reality and Telepresence

The virtual environment creating tools and methods will be developed in order to facilitate the real time human interaction with machines and communication devices. This interaction will be via sensors, effectors and other computational resources. For e-commerce applications, efforts are being made for creating shared virtual environments that can be accessed by multiple network users.

The development of URL (Uniform Resource Locator) facilitates the users in locating different types of information in internet. In other words, URL serves as a standard addressing mechanism for obtaining desired information from the massive volume of data stored in the cyber space. It also enables merging of data obtained from different parts of the internet. Now-adays, in order to access the information the user must be capable of identifying or locating the desired information, he/she must also be capable of determining how that particular information is implemented and where can it be applied.

5. Virtual Reality and Consumer Experience

The development of real-time www based 3D environment is one of the significant achievements for web browsers. The next generation browsers make use of 3D enabled user interfaces for navigating the web for giving visual appearances to the grouping of documents and their relationships. Complex relationships within the document collection can also be visualized by merging the virtual reality with the servers. These servers are capable of classifying and merging of documents.

Consider an example of virtual air-ticket booking counter. Apart from booking the air-tickets the customers can virtually move inside the aeroplane to locate his/her seat, can sit on the seat to know the comfort level, can know in advance the extra benefits he/she might be provided with etc.

With virtual reality taking off, the users can virtually realize their dreams like meeting the top celebrities, travelling different countries, making their favorite actors dance, sing, talk, smile etc., for them. On the otherhand the companies are striving hard to set the attention of their potential customers with attractive websites.

6. Virtual Reality and Consumer Choice and Behavior

Virtual reality plays a significant role in internet advertising and marketing. In coming years, it will become the backbone for all internet advertisements. However, the users are still unaware of the distinct features that have been added to it in order to facilitate marketing strategies and consumer influencing factors. This unawareness is due to lack of communication between the developers and the marketing research teams.

The choice of the consumer is very important and research is being conducted on it since, 'convincing the customer's is the main motive of any organization. Moreover, the requirements vary from customers to customers i.e., some customers may be technologically inexperienced while the others may be technologically independent. These technologically inexperienced customers may require timely guidance when they are working in e-commerce environments but the technologically experienced customers may find these guideline to be unnecessary. If customer preferences and requirements are known in advance then, e-commerce user interfaces will be designed and implemented accordingly. The outcome of the consumer choice research suggests two significant technological enhancements.

- (i) Enhance the quality of the web pages so that they are more attractive to the customers. This can be done by improving the features of HTML (Hyper Text Markup Language) and VRML (Virtual Reality Modeling Language).
- (ii) The choice information is encapsulated into the applets for integrating domain-specific customer characteristics. These applets enable the customization of the consumer's client browser environment.

VRML will be interpreted by the web browsers of future generations like Gopher VR.

7. Virtual Reality Modeling Language (VRML)

The 3D data can be integrated into the web using VRML. In other words, VRML is the current specification for integrating 3D images into the internet. The present version of VRML 1.0 was designed to satisfy the following three requirements. They are,

- (i) Platform independence
- (ii) Extensibility
- (iii) Low-bandwidth access.

The 3D web pages created by using VRML does not require any special type of hardware or other peripherals instead, any standard 486 PC with windows as an operating system is capable of running those applications. However, the speed of the modem will be helpful.

5.8 ROLE OF DIGITAL MARKETING

Q22. What do you mean by digital marketing? State its objectives.

Answer :

Digital Marketing

Digital marketing refers to the management and execution of marketing activities by using digital electronic technologies and channels like digital TV, E-mails, web, wireless media and digital data concerning consumer behavior and its attributes. Digital marketing helps in reaching the target customers on-time without consuming much resources and in an interactive manner. Internet marketing is one of the types of digital marketing.

Digital marketing comprises various activities and these activities undergo frequent changes as per the development innovations in the digital resources. Consumer preference to digital resource, cost effectiveness, execution speed and customer experience with digital resources are the factors which are forcing the marketers to focus on 'digital marketing activities'.

Thus, it may be stated that digital marketing helps towards the integration of the markets with the consumers, which in turn would facilitate the purchase and consumption of the product or service, further the field of digital marketing also involves knowledge of traditional marketing. It performs the same role as that of traditional marketing i.e acting as a platform to connect potential customers with the market.

Objectives of Digital Marketing

The following are the major objectives of digital marketing,

1. It aims to promote new products and services by acting as a platform for potential marketers to reach their target customers.
2. To create brand awareness for the product/service.
3. To help the marketer to understand the present and potential needs of the consumers.
4. Digital marketing also facilitates engagement among the audience in relation to the business.
5. It aims to create brand awareness for a given product or service.
6. It facilitates publicity and promotion of new products and services in the market.
7. It also aims to increase the level of customers satisfaction and generate brand loyalty.
8. Its aim also involves the transfer of goods and services from the marketers to the end users.
9. It aims to create demand for products through attractive advertisements.
10. It helps the marketers to reach the customer through a variety of digital marketing tools such as social media, videos, audio chats, web blogs, web apps etc.
11. It helps in market segmentation of the marketers products.
12. It aims to help the marketer reach their target audience.

Thus it may be concluded that digital marketing is a new and evolving field which possess potential for immense growth in future.

Q23. Discuss various components of digital marketing.**Answer :**

The various digital marketing components/activities include the following,

1. Online Internet/Web Marketing

Online marketing is the achievement of marketing goals through the utilization of the internet and the web based technologies. Online marketing is also known as internet marketing or marketing on the web.

Online marketing is a part of e-business or e-commerce or electronic commerce. The internet marketing has changed the way of working, buying and living of the people. It involves the exchange of products, services, information and payments through the electronic medium of networks.

2. Internet or Online Advertising

Internet/web advertising is a form of advertising that uses internet and world wide web so as to deliver marketing information and also to gain customers attention. Banner ads, E-mail marketing, search engine result pages are some of the examples of web advertisement. The major advantage of this kind of advertising is information is not restricted to any particular geography or time. This form of advertising is also referred to as interactive advertising that uses interactive media (interactive Tv, mobile devices, internet) to promote the customer's buying decision.

3. Search Engine Marketing

Search engine marketing is one of the types of internet advertising which attempts to enhance the accessibility of websites in Search Engine Results Pages (SERPs) by using Search Engine Marketing (SEM) activities and Search Engine Optimization (SEO) strategies.

4. Mobile Marketing

Mobile marketing is one of the types of digital marketing which helps the organizations in communicating and interacting with target customers through mobile device or wireless network. For example, mobile phone/cell phone, MMS/SMS, PDA etc.

5. E-mail Marketing

E-mail marketing refers to the marketing done through electronic mail. In E-mail marketing, E-mail/messages are sent only to those people who have agreed to receive messages. E-mail marketing is a highly economical digital marketing. For digital marketers, E-mail marketing is considered as highly powerful and highly economical tool.

6. Viral Marketing

Viral marketing is also known as Electronic Word-of-Mouth (EWOM) or word-of-mouse. In viral marketing, word-of-mouth communication is done through e-mail or SMS and social networking technology is used to pass on the messages via self-replicating viral processes which affects marketing activities.

7. Social Media Marketing

Social media marketing is a type of internet marketing where social web channels and technologies or online collaborative media is used for carrying out marketing activities like sales, distribution, public relations and customer service. Social networks, online communities, blogs, Twitter, Youtube, Whatsapp and wikis are some of the examples of social web channels and technologies.

8. Blog Marketing

A major component of digital marketing is blog marketing. Many companies host their own blogs wherein they promote their new products or services. Alternatively, the company may take the help of specialized bloggers to publicize and promote its products.

Generally in case of blog marketing, it needs to be updated on a regular basis.

9. Interactive Marketing

This component/mode of digital marketing includes chat box and other types of interactive platforms wherein the customers interact with the marketers.

10. Audios and Videos

One of the most popular form of digital marketing is audio and video marketing. A good example of audio marketing is the 'podcasts'. Further, video marketing is carried out using digital videos which carry the marketers message to the target audience. B2C (Business to Consumers) and B2B (Business to Business) videos are regularly broadcasted on popular digital video platforms such as Youtube etc.

11. Digital or Online Public Relations

Most of the B2B organizations are opting for web based, digital public relations over the traditional public relation media. Organizations are opting for online contacts wherein postal mails and virtual press releases are becoming common methods of digital Public Relation (PR).

Q24. Write the need and scope of digital marketing.**Answer :**

The concept of digital marketing had gained importance in recent years. To remain competitive in the business world, organizations need to be visible to their target audience. In todays highly digitalized world, this is possible only through digital marketing.

Need for Digital Marketing

The following points highlight the need for digital marketing,

(a) To Remain Competitive

A primary reason for organizations to go for digital marketing is for it to remain competitive. Most of the firm's competitors are already employing digital marketing tools. Further a firms present and potential customers expect the firm to be visible on the digital marketing platform. Thus, it is a basic need for every organization to utilize the platform of digital marketing to remain competitive.

(b) To Improve Customer Relations

The use of digital marketing is needed for the organization to improve its relation with its customers. This is all the more true in case of B2B (Business to Business) customers where the customers are smaller and more influential. Targeted PPC advertising is an excellent way for the organization to improve its relationship with its customers.

(c) To Be Up-To-Date

Digital marketing is needed because the traditional tools of marketing are declining and more and more firms are shifting their marketing budget from traditional marketing sources to digital marketing. For example, a research study carried out by Forester Research Inc had found that by the year 2014, \$ 2.3 billion dollars would be spent towards digital marketing.

Scope of Digital Marketing

The scope of digital marketing is very wide. It encompasses all areas of marketing and has replaced traditional marketing sources, to become the top tool of marketing worldwide. Most global organizations are opting for digital marketing rather than traditional marketing.

According to a research study organizations are focusing their marketing budget towards inbound digital marketing tools such as social media marketing, company's website, popular search engines etc.

The competition for effective digital marketing has become intense. Researcher Shepra conducted a survey of potential customers and found that 71% of B2B customers look for information on the internet. Further customers are influenced by the information found on the internet, web blogs, social media posts and videos. Thus it may be stated that the influence and scope of digital marketing is very wide.

Q25. State the role/benefits and limitations of digital marketing.**Answer :**

Model Paper-III, Q13(b)

Digital marketing is a powerful and effective marketing tool which, if employed correctly would provide the organization multiple benefits in the form of increased market share and profitability.

Role/Benefits of Digital Marketing

Following are the benefits of digital marketing,

1. Easy Effective Marketing

Digital marketing is an easy and effective means for the organization to communicate its marketing message to a large number of present and potential customers. It has revolutionized marketing activities on popular social media platforms such as Facebook, Twitter, Linked In etc.

2. Enables Direct Advertising

It acts as an effective platform for the organization to advertise about its product and create brand loyalty for its product.

3. Permanent Ad Display

Unlike traditional ads, ads on digital platforms are more permanent and can be accessed by potential customers any time.

4. International Advertisement

A major benefit of digital marketing is that it provides the company a good platform to advertise its offerings to the global customers very easily.

5. Brand Promotion

It acts as an effective mode for brand promotion. Thus strengthening the organizations loyal customer base.

6. Boosts Sales

Digital marketing has made it possible for a prospective customer to shop any time (24/7) across any geographic area. Thus it boosts the overall sales figure for the company.

7. Cost Effective

It has been found that digital marketing tools are very cheap and cost effective, in comparison to traditional marketing modes such as TV, radio, magazines etc. Social media marketing platform such as Facebook, Linked In, Whatsapp, Instagram have become cost effective platform of digital marketing.

Limitations of Digital Marketing

Digital marketing suffers from the following limitations,

(a) Highly dependent upon Internet

Most modes of digital marketing are dependent upon internet facility. Thus in areas where there is no internet facility, digital marketing would not be effective.

(b) Fierce Competition

A major limitation of digital marketing is the intense competition from local, national and international brands. The customer is provided with many alternative choice.

(c) Limited to Consumer Products

A major limitation of digital marketing is that it is effective mode for marketing consumer products but is not impactful incase of industrial and pharmaceutical products.

(d) Lack of Privacy

There is no privacy on the digital marketing platform, competitor may copy the firms product, pricing strategy or may even sell the product in their own name.

INTERNAL ASSESSMENT**I. Multiple Choice**

1. _____ is the achievement of marketing goals through the utilization of the internet and the web based technologies. []
 - (a) E-mail
 - (b) E-marketing
 - (c) E-business
 - (d) E-advertising
2. A software system designed to search information on internet is _____. []
 - (a) Search Engines
 - (b) Directory services
 - (c) Chain letters
 - (d) None of the above
3. _____ are the new online advertising mechanism that helps in representing business functionalities.[]
 - (a) Banner advertising
 - (b) Off-line advertising
 - (c) Directory services
 - (d) Spam mail
4. _____ allows retailers to know the needs of different customers much earlier than they are available to the manufacturers. []
 - (a) POS system
 - (b) Direct-order marketing
 - (c) Direct-relationship marketing
 - (d) None of the above
5. Interactive form of advertising is called as _____. []
 - (a) Off-line advertising
 - (b) Banner advertising
 - (c) Online-advertising
 - (d) Nonlinear advertising
6. _____ is the process in which companies advertise their products by sending mails to different customers. []
 - (a) Direct mail advertising
 - (b) Push-based advertising
 - (c) Pull-based advertising
 - (d) None of the above

7. _____ is one of the types of digital marketing which helps the organizations in communicating and interacting with target customers through mobile device. []
- (a) Online advertising
 - (b) Web marketing
 - (c) E-mail marketing
 - (d) Mobile marketing
8. _____ are defined as a site that are designed to provide information to the www user. []
- (a) CTR
 - (b) CM
 - (c) Portals
 - (d) None of the above
9. _____ are some of the internet marketing techniques. []
- (a) Search engines
 - (b) Solicited targeted emails
 - (c) Spam mails
 - (d) All the above
10. _____ refers to the goods or services provided to the customers by a company. []
- (a) Price
 - (b) Product
 - (c) Promotion
 - (d) Place

II. Fill in the Blanks

1. E-marketing is also known as _____.
2. _____ refers to the unwanted and unrequested on-line email called 'Junk mail' which is repeatedly sent to multiple recipients at a time.
3. _____ is an aggressive advertising technique which is designed to attract the attention of the users.
4. _____ is a readily accessible, inexpensive, fastest means of bringing together various buyers and sellers all over the world.
5. In _____, market segmentation is carried out with respect to the people behaviour, way of thinking, their attitudes, etc.
6. Push-based marketing is also called as _____.
7. Pull-based marketing is also called as _____.
8. _____ is a mechanism using which price of the physical good or service is determined.
9. _____ refers to the marketing activities such as press release advertisements, word of mouth etc.
10. _____ helps in reaching the target customers on-time without consuming much resources and in an interactive manner.

KEY**I. Multiple Choice**

1. (b)
2. (a)
3. (c)
4. (a)
5. (d)
6. (a)
7. (d)
8. (c)
9. (d)
10. (b)

II. Fill in the Blanks

1. Internet marketing
2. Spam mail
3. e-mail chain letters
4. E-marketing
5. Behavioural method
6. Dynamic marketing
7. Static marketing
8. Pricing
9. Promotion
10. Digital marketing.

III. Very Short Questions and Answers**Q1. What is E-marketing?****Answer :**

E-marketing is the achievement of marketing goals through the utilization of the Internet and the web based technologies. E-marketing is also known as Internet marketing or marketing on the web or online marketing.

Q2. Define E-Advertisement.**Answer :**

Online advertising is a marketing strategy that make use of Internet to fetch website traffic and target, deliver marketing related information (in the form of messages) to the right customers.

Q3. What is Digital Marketing?**Answer :**

Digital marketing refers to the management and execution of marketing activities by using digital electronic technologies and channels like digital TV, E-mails, web, wireless media and digital data concerning consumer behavior and its attributes.

Q4. Write about Search Engine.**Answer :**

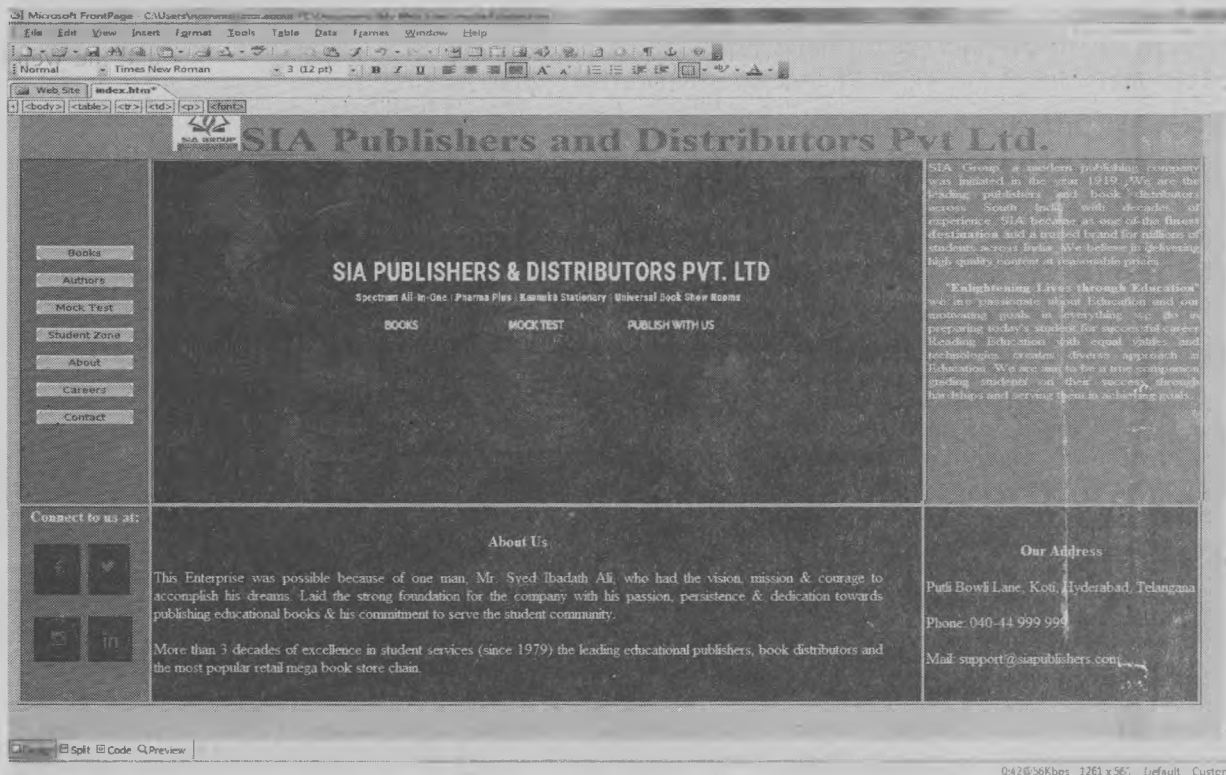
A search engine can be defined as a software system designed to search information on Internet. Unlike directories, the search engines are considered to be the most popular method in finding sites. The search engines operates by taking user-defined words and boolean expression in search bar.

Q5. What are Directory Services?**Answer :**

Directories are new online advertising mechanism that helps in representing business functionalities. These functionalities are represented in the index format that list and supplies links to the websites.

LAB PRACTICAL WITH SOLUTIONS

Q Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.



Answer :

Program

```
<html>
<head>
<meta http-equiv="Content-Language" content="en-us">
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<script language="JavaScript">
<!--
function FP_swapImg() { //v1.0
var doc=document,args=arguments,elm,n; doc.$imgSwaps=new Array(); for(n=2; n<args.length;
n+=2) { elm=FP_getObjectByID(args[n]); if(elm) { doc.$imgSwaps[doc.$imgSwaps.length]=elm;
elm.$src=elm.src; elm.src=args[n+1]; } }
}
function FP_preloadImgs()
{ //v1.0
var d=document,a=arguments; if(!d.FP_imgs) d.FP_imgs=new Array();
for(var i=0; i<a.length; i++) { d.FP_imgs[i]=new Image; d.FP_imgs[i].src=a[i]; }
}
```

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

```

function FP_getObjectByID(id,o)
{
  //v1.0
  var c,el,els,f,m,n; if(!o)o=document; if(o.getElementById) el=o.getElementById(id);
  else if(o.layers) c=o.layers; else if(o.all) el=o.all[id]; if(el) return el;
  if(o.id==id || o.name==id) return o; if(o.childNodes) c=o.childNodes; if(c)
  for(n=0; n<c.length; n++) { el=FP_getObjectByID(id,c[n]); if(el) return el; }
  f=o.forms; if(f) for(n=0; n<f.length; n++) { els=f[n].elements;
  for(m=0; m<els.length; m++){ el=FP_getObjectByID(id,els[n]); if(el) return el; } }
  return null;
}
// -->
</script>
</head>
<body bgcolor="#C0C0C0" onload="FP_preloadImgs(/*url*/'button5.jpg', /*url*/'button6.jpg', /*url*/'buttonB.
.jpg', /*url*/'buttonC.jpg', /*url*/'buttonE.jpg', /*url*/'buttonF.jpg', /*url*/'button11.jpg', /*url*/'button12.jpg',
/*url*/'button1D.jpg', /*url*/'button1E.jpg', /*url*/'button20.jpg', /*url*/'button21.jpg', /*url*/'button35.jpg',
/*url*/'button36.jpg')">
<div style="position: absolute; width: 1224px; height: 65px; z-index: 1; left: 13px; top: 15px; background-color:
#FF66FF" id="layer1">
<p align="center"><font size="7" color="#0000FF">
<b>SIA Publishers and
Distributors Pvt Ltd.</b></font></div>
<p align="center">&nbsp;</p>
<p align="center">&nbsp;</p>
<table border="1" width="99%" bordercolordark="#000080" bordercolorlight="#00FF00">
<tr>
<td width="130" bgcolor="#008080">
<p align="center">
</p>
<p align="center">
</p>
<p align="center">
</p>
<p align="center">

```

SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

</p>

<p align="center">

</p>

<p align="center">

</p>

<p align="center">

</p>

 |[illegible] <td bgcolor="#008080"> |

SIA Group, a modern publishing company was initiated in the year 1919. We are the leading publishers and book distributors across South India with decades of experience. SIA became as one of the finest destination and a trusted brand for millions of students across India. We believe in delivering high quality content at reasonable prices.

Enlightening Lives through Education " we are passionate about Education and our motivating goals in everything we do in preparing today's student for successful career Reading Education with equal values and technologies creates diverse approach in Education. We are aim to be a true companion guiding students on their success through hardships and serving them in achieving goals.

|
 |

Connect to us at:





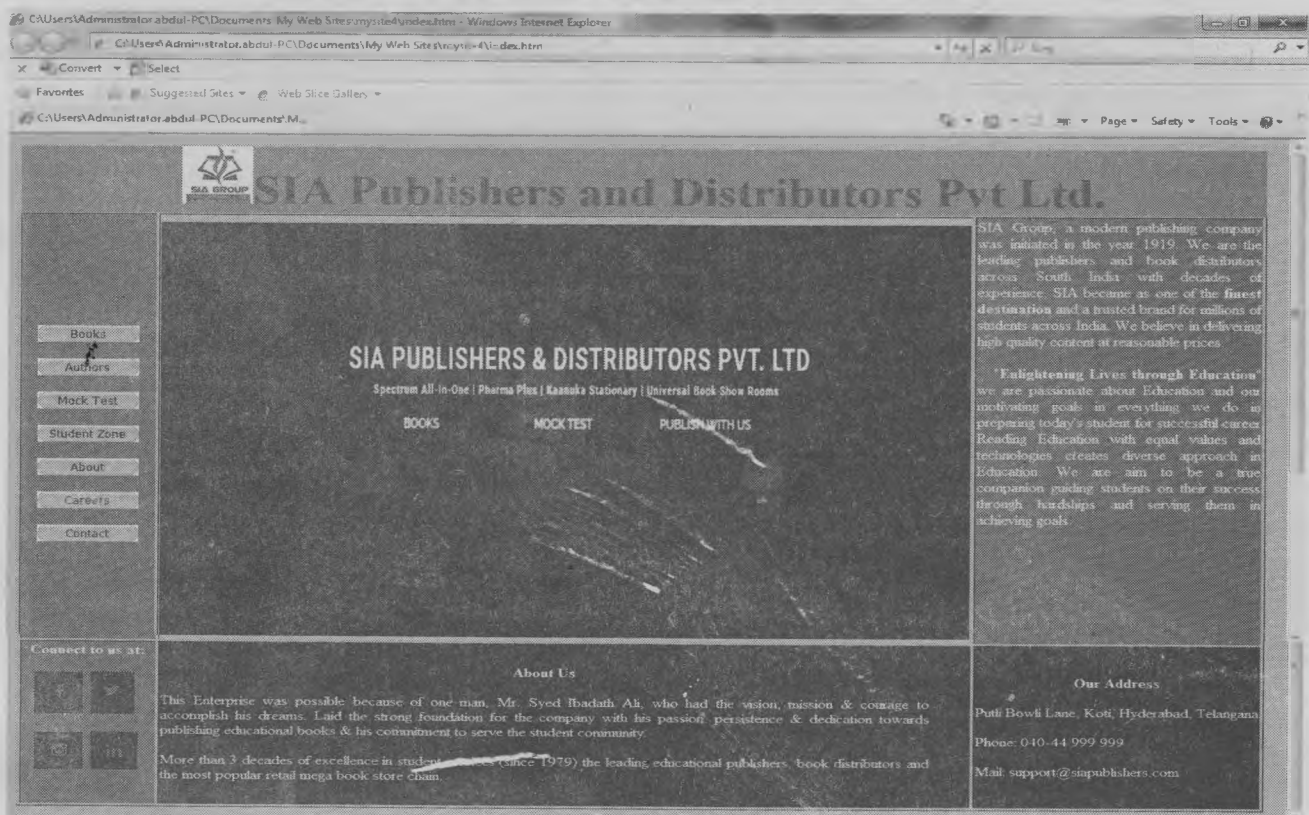
```

<p>&nbsp;</td>
<td height="137" width="757" bgcolor="#333333">
<p align="center"><b><font color="#FFFFFF">About Us</font></b></p>
<p align="justify"><font color="#FFFFFF">This Enterprise was possible because of one man, Mr. Syed Ibadath Ali,
who had the vision, mission & courage to accomplish his dreams. Laid the strong foundation for the company
with his passion, persistence & dedication towards publishing educational books & his commitment to
serve the student community.</font></p>
<p align="justify"><font color="#FFFFFF">More than 3 decades of excellence in student services (since 1979) the
leading educational publishers, book distributors and the most popular retail mega book store chain.</font></td>
<td height="137" bgcolor="#333333">
<p align="center"><b><font color="#FFFFFF">Our Address</font></b></p>
<p align="justify"><font color="#FFFFFF">Putli Bowli Lane, Koti,
Hyderabad, Telangana</font></p>
<p align="justify"><font color="#FFFFFF">Phone: 040-44 999 999</font></p>
<p align="justify"><font color="#FFFFFF">Mail: support@siapublishers.com</font></td>
</tr>
</table>
</body>
</html>

```

In the Microsoft Front Page editor, the design of the static web page will be as shown in the below figure.

Output



SIA PUBLISHERS AND DISTRIBUTORS PVT. LTD.

Unit-wise Frequently Asked Questions

Unit- 1

SHORT QUESTIONS

Q1. E-commerce

Answer : (March/April-15, Q1 | March/April-14, Q2 | Oct./Nov.-12, Q1)

For answer refer Unit-I, Page No. 2, Q.No. 1.

Q2. What is Internet?

Oct./Nov.-16, Q6

OR

Internet.

Answer :

(March/April-12, Q1 | March-11, Q1)

For answer refer Unit-I, Page No. 3, Q.No. 5.

Q3. E-banking

Answer :

(March/April-15, Q7 | March/April-13, Q1)

For answer refer Unit-I, Page No. 5, Q.No. 11.

Q4. E-Learning

Answer :

(March/April-17, Q1 | March/April-14, Q1)

For answer refer Unit-I, Page No. 5, Q.No. 12.

Q5. Online Trading

Answer :

(March/April-17, Q8 | Oct.-14, Q1)

For answer refer Unit-I, Page No. 6, Q.No. 15.

ESSAY QUESTIONS

Q6. Write about importance of E-Commerce.

Oct./Nov.-16, Q9(a)

OR

Bring out the importance of E-commerce in modern business.

Answer :

March/April-17, Q9(a)

For answer refer Unit-I, Page No. 8, Q.No. 18.

Q7. What are the three pillars of E-commerce?

March/April-15, Q9(a)

OR

Discuss the three pillars of electronic-commerce.

Answer :

March/April-14, Q9(b)

For answer refer Unit-I, Page No. 8, Q.No. 19.

Q8. What are potential benefits of E-commerce?

Sep./Oct.-15, Q9(a)

OR

What are the benefits of E-commerce to the organization, consumer and society?

Oct./Nov.-11, Q9(a)

OR

What are the advantages of Internet electronic commerce over consumers?

Answer :

Oct./Nov.-12, Q9(b)

For answer refer Unit-I, Page No. 11, Q.No. 21.

Q9. Explain about the impact of E-commerce on business model.

(Oct./Nov.-13, Q9(a) | Oct./Nov.-12, Q9(a))

OR

What is the impact of E-commerce on business models?

Oct./Nov.-16, Q9(b)

OR

Discuss in detail about the impact of E-commerce on business models.

Answer :

March/April-16, Q9(a)

For answer refer Unit-I, Page No. 20, Q.No. 30.

Q10. Explain about the E-commerce applications.

(March/April-12, Q9(a) | March-11, Q9(b))

OR

Write about E-commerce applications.

Answer :

March/April-17, Q9(b)

For answer refer Unit-I, Page No. 23, Q.No. 32.

Q11. Explain the approaches of E-learning.

Oct.-14, Q9(b)

OR

What are the different approaches of E-learning?

Answer :

Oct./Nov.-13, Q9(b)

For answer refer Unit-I, Page No. 37, Q.No. 41.

Unit-2

SHORT QUESTIONS**Q1. Application Services.****Answer :** (March/April-15, Q6 | March/April-13, Q7)

For answer refer Unit-II, Page No. 44, Q.No. 1.

Q2. What is HTML?

Oct./Nov.-16, Q7

OR**HTML**

March/April-15, Q5

Answer :

For answer refer Unit-II, Page No. 45, Q.No. 4.

Q3. TCP/IP**Answer :** (March/April-12, Q4 | March/April-17, Q2)

For answer refer Unit-II, Page No. 45, Q.No. 5.

Q4. HTTP.**Answer :** (March/April-12, Q2 | March-11, Q2)

For answer refer Unit-II, Page No. 45, Q.No. 6.

Q5. FTP**Answer :** (Oct./Nov.-13, Q2 | Sep./Oct.-15, Q6)

For answer refer Unit-II, Page No. 45, Q.No. 8.

Q6. Write about SMTP.

Oct./Nov.-16, Q8

OR**SMTP****Answer :** March/April-14, Q3

For answer refer Unit-II, Page No. 46, Q.No. 9.

Q7. NNTP**Answer :** (Oct.-14, Q2 | Sep./Oct.-15, Q2)

For answer refer Unit-II, Page No. 46, Q.No. 10.

Q8. Encryption.**Answer :** (March/April-13, Q6 | March/April-17, Q6)

For answer refer Unit-II, Page No. 46, Q.No. 11.

ESSAY QUESTIONS**Q9. Explain architecture framework of E-commerce.**

(Oct./Nov.-12, Q10(a) | March/April-17, Q10(a))

OR**Discuss about the framework of E-commerce.**

Sep./Oct.-15, Q10(a)

OR**Explain the different E-commerce application services.****Answer :** Oct.-14, Q10(a)

For answer refer Unit-II, Page No. 47, Q.No. 13.

Q10. Explain the security services of E-commerce.

Oct.-14, Q10(b)

OR**Explain the issues related to security, when using Web.**

March/April-16, Q10(b)

OR**Explain about the various issues involved in web security.****Answer :** Sep./Oct.-15, Q10(b)

For answer refer Unit-II, Page No. 49, Q.No. 16.

Q11. Explain encryption techniques.

March/April-14, Q10(b)

OR**Explain two security techniques of encryption.**

Oct./Nov.-13, Q10(b)

OR**Briefly explain the encryption techniques.**

Oct./Nov.-11, Q10(a)

OR**Explain about encryption techniques.****Answer :** Oct./Nov.-16, Q10(a)

For answer refer Unit-II, Page No. 62, Q.No. 29.

Unit-3

SHORT QUESTIONS**Q1. E-cash****Answer :** (March/April-17, Q3 | Oct.-14, Q3 | March/April-14, Q4)

For answer refer Unit-III, Page No. 72, Q.No. 1.

Q2. List out the risk involved in E-payments.

Oct./Nov.-11, Q3

OR

Risks in E-payment

(March/April-12, Q3 | March-11, Q3)

OR

What are the risks of E-payment system?**Answer :** Oct./Nov.-16, Q4

For answer refer Unit-III, Page No. 73, Q.No. 6.

Q3. Credit Card**Answer :** (March/April-16, Q7 | Sep./Oct.-15, Q7)

For answer refer Unit-III, Page No. 74, Q.No. 8.

ESSAY QUESTIONS**Q4. Discuss in detail about consumer-oriented E-commerce application and its role in E-commerce.**

March/April-15, Q11(b)

OR

Explain about consumer-oriented E-commerce applications.

Oct.-14, Q11(b)

OR

Discuss customer-oriented E-commerce applications.**Answer :** March/April-14, Q11(b)

For answer refer Unit-III, Page No. 76, Q.No. 11.

Q5. What are the mercantile process models from consumer's perspective?

March/April-12, Q11(a)

OR

Discuss about mercantile process model from consumer's perspective.**Answer :** Oct./Nov.-16, Q11(b)

For answer refer Unit-III, Page No. 81, Q.No. 13.

Q6. Explain mercantile process model.

March/April-17, Q11(a)

OR

Explain about Electronic Payment Systems.

Oct./Nov.-16, Q11(a)

OR

Discuss about merchantile process model.

March/April-16, Q11(a)

OR

Discuss in detail about mercantile process models.

March/April-13, Q11(a)

OR

What are mercantile process models from consumer's and merchant's perspective.**Answer :** March-11, Q11(b)

For answer refer Unit-III, Page No. 86, Q.No. 16.

Q7. Write about the types of E-payments.

March/April-16, Q11(b)

OR

Discuss about categories of EFT.

March/April-15, Q11(a)

OR

Discuss the different types of payment systems.**Answer :** March/April-13, Q11(b)

For answer refer Unit-III, Page No. 95, Q.No. 24.

Unit-4

SHORT QUESTIONS**Q1. What is EDI?**

(Oct./Nov.-16, Q3 | Oct./Nov.-11, Q6)

OR

Electronic Data Interchange

March/April-17, Q4

OR

EDI

Answer :

(Oct./Nov.-13, Q4 | March-11, Q4)

For answer refer Unit-IV, Page No. 108, Q.No. 1.

Q2. Write a short note on Internet based EDI.

(Oct./Nov.-11, Q7 | March-11, Q6)

OR

Internet Based EDI

Sep./Oct.-15, Q4

OR

Write a note on Internet based EDI.

March/April-14, Q5

Answer :

For answer refer Unit-IV, Page No. 108, Q.No. 2.

Q3. Explain in brief the privacy issues in EDI.

Oct./Nov.-11, Q4

OR

Privacy issues of EDI

Oct.-14, Q4

Answer :

For answer refer Unit-IV, Page No. 110, Q.No. 7.

Q4. EDI Standards**Answer :**

(March/April-16, Q8 | March/April-15, Q4)

For answer refer Unit-IV, Page No. 110, Q.No. 8.

ESSAY QUESTIONS**Q5. Explain prerequisites of EDI.**

March/April-17, Q12(a)

OR

Explain the prerequisites for EDI.

March/April-14, Q12(b)

OR

What are the prerequisites of EDI?

Answer :

Oct./Nov.-12, Q12(b)

For answer refer Unit-IV, Page No. 114, Q.No. 13.

Q6. Explain the types of EDI.

March/April-17, Q12(b)

OR

Write about,

(i) Partial EDI

(ii) Fully integrated EDI.

Oct./Nov.-16, Q12(a)

OR

Describe EDI systems.

Oct.-14, Q12(b)

Answer :

For answer refer Unit-IV, Page No. 117, Q.No. 15.

Q7. Describe about EDI applications in business.

(Sep/Oct.-15, Q12(a) | Oct./Nov.-13, Q12(a))

OR

What is an EDI? What are the various EDI applications in business?

March-11, Q12(a)

OR

Explain about EDI applications in business.

Oct.-14, Q12(a)

OR

What are the EDI applications in business?

Oct./Nov.-11, Q12(a)

OR

Explain about financial EDI and types of financial EDI.

March/April-16, Q12(b)

Answer :

For answer refer Unit-IV, Page No. 120, Q.No. 16.

Q8. Write about the various issues involved in EDI.

March/April-16, Q12(a)

OR

Write about legal, security and privacy issues in EDI.

March/April-15, Q12(a)

OR

Explain about the legal, privacy issues in EDI.

March/April-14, Q12(a)

OR

Explain about legal issues of EDI.

Oct./Nov.-13, Q12(b)

OR

What are the legal and security issues in EDI?

March/April-13, Q12(b)

OR

Explain about the security issues in EDI.

March/April-12, Q12(b)

Answer :

For answer refer Unit-IV, Page No. 128, Q.No. 21.

SHORT QUESTIONS

Q1. Spam Mail

Answer :

(March/April-17, Q7 | March/April-13, Q5 | March/April-12, Q7)

For answer refer Unit-V, Page No. 140, Q.No. 3.

Q2. Banners

Answer :

(March/April-15, Q8 | March/April-14, Q6 | March/April-13, Q8)

For answer refer Unit-V, Page No. 141, Q.No. 6.

ESSAY QUESTIONS

Q3. Explain any three E-marketing techniques in detail.

March/April-17, Q13(a)

OR

Write about E-marketing techniques.

Oct./Nov.-16, Q13(a)

OR

Explain the E-marketing techniques in detail.

Answer :

March/April-14, Q13(b)

For answer refer Unit-V, Page No. 142, Q.No. 9.

Q4. Explain the E-applications of five P's.

March/April-16, Q13(a)

OR

Discuss about applications of 5P's.

Oct./Nov.-16, Q13(b)

OR

How do you link 5P's of marketing to the Internet?

Answer :

March/April-15, Q13(b)

For answer refer Unit-V, Page No. 152, Q.No. 17.

FACULTY OF COMMERCE
B.Com (CBCS) III-Year VI-Semester Examination
E-COMMERCE

MODEL
PAPER 1

(Common Paper for Computers, Computer Applications)

Time: 3 Hours

Max. Marks: 80

PART - A (5 × 4 = 20 Marks)

Note : Answer any Five of the following questions in not exceeding 20 lines each

1. What is E-banking? (Unit-I, Page No. 5, Q11)
2. Write about interface and support services. (Unit-II, Page No. 44, Q2)
3. Define EPS. (Unit-III, Page No. 72, Q4)
4. What are the benefits of EDI? (Unit-IV, Page No. 109, Q3)
5. Write a short note on E-Mail. (Unit-V, Page No. 140, Q4)
6. Write about online trading. (Unit-I, Page No. 6, Q15)
7. Write about FTP. (Unit-II, Page No. 45, Q8)
8. List out the risk involved in E-payments. (Unit-III, Page No. 73, Q6)

PART - B (5 × 12 = 60 Marks)

Note: Answer the following questions in not exceeding four pages each.

9. (a) Explain traditional value chain and customer oriented value chain. (Unit-I, Page No. 10, Q20)
OR
(b) Discuss in brief about E-business. (Unit-I, Page No. 18, Q26)
10. (a) Discuss the security issues faced by e-commerce site. (Unit-II, Page No. 49, Q16)
OR
(b) Explain briefly about TCP/IP model. (Unit-II, Page No. 54, Q21)
11. (a) Discuss about mercantile process model from consumer's perspective. (Unit-III, Page No. 81, Q13)
OR
(b) Describe smart cards as an electronic payment system. (Unit-III, Page No. 99, Q27)
12. (a) What is EDI? Explain four layers of EDI architecture. (Unit-IV, Page No. 111, Q9)
OR
(b) What are the legal and security issues in EDI? (Unit-IV, Page No. 128, Q21)
13. (a) Explain about new age of information based marketing. (Unit-V, Page No. 147, Q14)
OR
(b) Discuss about applications of 5P's. (Unit-V, Page No. 152, Q17)

FACULTY OF COMMERCE

B.Com (CBCS) III-Year VI-Semester Examination

E-COMMERCE

(Common Paper for Computers, Computer Applications)

MODEL
PAPER 2

Time: 3 Hours

Max. Marks: 80

PART - A (5 × 4 = 20 Marks)*Note : Answer any Five of the following questions in not exceeding 20 lines each*

1. Define E-commerce. (Unit-I, Page No. 2, Q1)
2. What is the TCP/IP reference model? (Unit-II, Page No. 45, Q5)
3. What are the payment systems? (Unit-III, Page No. 73, Q7)
4. What is EDI? (Unit-IV, Page No. 108, Q1)
5. Write about Applications of 5P's in Internet. (Unit-V, Page No. 141, Q7)
6. Define E-business. (Unit-I, Page No. 3, Q6)
7. Define Encryption. (Unit-II, Page No. 46, Q11)
8. Write about E-checks. (Unit-III, Page No. 72, Q2)

PART - B (5 × 12 = 60 Marks)*Note: Answer the following questions in not exceeding four pages each.*

9. (a) Explain the global information distribution networks. (Unit-I, Page No. 13, Q22)
OR
(b) What is the impact of E-commerce on business models? (Unit-I, Page No. 20, Q30)
10. (a) Explain in detail about following protocols.
(i) FTP
(ii) HTTP
(iii) SMTP. (Unit-II, Page No. 54, Q22)
OR
(b) (i) Describe in detail about S-HTTP. (Unit-II, Page No. 58, Q23)
(ii) Explain in detail about SSL. (Unit-II, Page No. 58, Q24)
11. (a) Discuss in detail the two forms of payment used in purchase consummation phase. (Unit-III, Page No. 83, Q14)
OR
(b) Explain about consumer-oriented E-commerce applications. (Unit-III, Page No. 76 , Q11)

12. (a) Explain two major standards and structure of EDI transaction.

(Unit-IV, Page No. 116, Q14)

OR

- (b) Describe EDI systems.

(Unit-IV, Page No. 117, Q15)

13. (a) Explain the E-marketing techniques in detail.

(Unit-V, Page No. 142, Q9)

OR

- (b) Explain the impact of E-commerce on Marketing.

(Unit-V, Page No. 149, Q15)

FACULTY OF COMMERCE

B.Com (CBCS) III-Year VI-Semester Examination

E-COMMERCE

(Common Paper for Computers, Computer Applications)

**MODEL
PAPER 3**

Time: 3 Hours

Max. Marks: 80

PART - A (5 × 4 = 20 Marks)*Note : Answer any Five of the following questions in not exceeding 20 lines each*

1. What are the benefits of E-commerce to Organization, Consumers and Society? (Unit-I, Page No. 4, Q8)
2. Write about digital signatures. (Unit-II, Page No. 46, Q12)
3. What is E-cash? (Unit-III, Page No. 72, Q1)
4. List the EDI standards. (Unit-IV, Page No. 110, Q8)
5. Write about Spam Mail. (Unit-V, Page No. 140, Q3)
6. Write about World Wide Web. (Unit-I, Page No. 2, Q3)
7. What is HTTP? (Unit-II, Page No. 45, Q6)
8. Write a short note on Home Banking. (Unit-III, Page No. 73, Q5)

PART - B (5 × 12 = 60 Marks)*Note: Answer the following questions in not exceeding four pages each.*

9. (a) Define E-commerce from different perspectives along with its goal. (Unit-I, Page No. 7, Q17)
OR
(b) Write about E-commerce applications. (Unit-I, Page No. 23, Q32)
10. (a) Briefly explain the encryption techniques. (Unit-II, Page No. 62, Q29)
OR
(b) Define cryptography and classify different cryptographic attacks. (Unit-II, Page No. 64, Q30)
11. (a) Define electronic payment system. What are the advantages of electronic payment system? (Unit-III, Page No. 87, Q17)
OR
(b) Explain briefly about the digital currency or electronic cash. (Unit-III, Page No. 91, Q20)
12. (a) What is an EDI? What are the various EDI applications in business? (Unit-IV, Page No. 120, Q16)
OR
(b) Explain EDI software implementation and how much an EDI cost. (Unit-IV, Page No. 131, Q24)
13. (a) List out the advantages and disadvantages of E-marketing. (Unit-V, Page No. 144, Q11)
OR
(b) State the role/benefits and limitations of digital marketing. (Unit-V, Page No. 164, Q25)