

PAPER-1
UGC NTA NET
LOGICAL REASONING

- Logical Reasoning is largely about adopting complete rational approach to solve a problem, with no chance for ambiguity.
- The word 'logic' comes from the Greek word 'logos' meaning word, thought, speech, reason, energy and fire.

* Deductive Reasoning

@ ugcnet-notes

- In D.R, conclusion is guaranteed to be true if the premises are true.
- Therefore, the conclusion cannot be more general than premise.

Premise : All dogs have long ears

Premise : Tommy is a dog

Conclusion : Therefore, Tommy has long ears

Deductive Reasoning → General to Specific

→ In this eg: first they are saying that all dogs (general) have long ears, and tommy is a dog, so the conclusion will be Tommy (specific) has long ears.

→ Universal to Particular

* INDUCTIVE REASONING

- Process of making generalized decisions after observing, or witnessing, repeated specific instances of something.
- Also known as inductive logic, involves drawing a general conclusion from a set of specific observations.
- eg: All the swans I have seen are white (Premise)
Therefore all swans are white (Conclusion)
- Particular to Universal
→ Specific to General

@ugcnet-notes

* STRUCTURE OF ARGUMENTS

- An argument, in general, is a form of commⁿ that tries to persuade its audience to adopt a particular position about a topic.
- Arguments have three main parts -
 - A claim that states the position to be argued
 - Reasons that explain the claim
 - Evidence that supports the reasons.

→ Reasoning has to be systematic and logical.

Two main components of reasoning

- Arguments (also known as premises, statements or propositions)
- Conclusion.

* Validity of Arguments

- Deductive Arguments may be either valid or invalid.
- A Valid argument cannot have true premises and a false conclusion.

@ugcnet-notes

* PROPOSITIONS

A proposition is a sentence that makes a statement and gives a relation between two or more terms.

- A proposition is assumed to be true and from which a conclusion can be drawn.

Propositions are of two types:

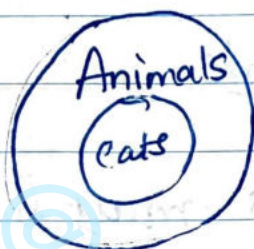
- 1) Universal positive or affirmative (A)
- 2) Universal negative (E)

Universal positive or affirmative (A)

It denotes inclusion

— All S is P, where S is the subject and P is the predicate

eg: 'All cats are animals.'



Universal Negative (E)

It denotes exclusion

— No S is P

eg: 'No fish are birds' is universal negative



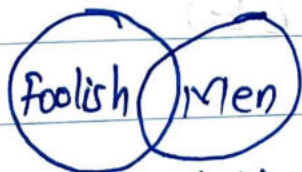
Particular Proposition

Two parts

1. Particular positive (I) — Denotes 'partial inclusion'.

— Some S is P

eg: Some men are foolish



Both are undistributed

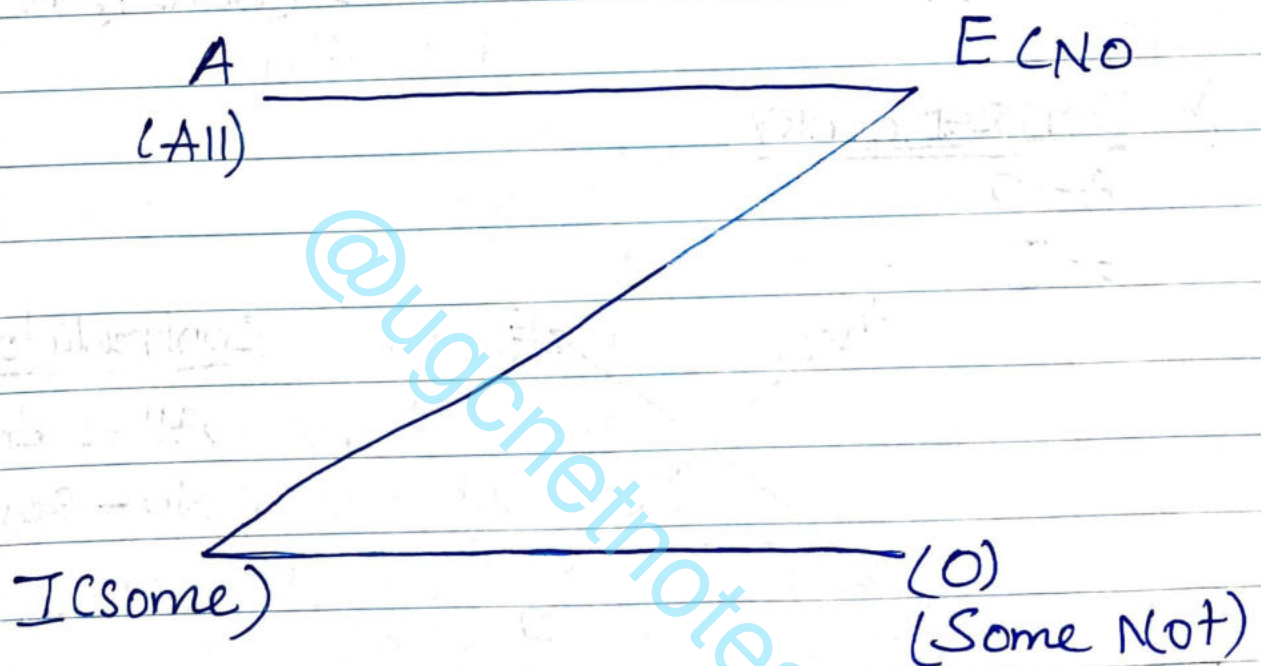
2) Particular Negative (O)

- Denotes partial exclusion
- Form: Some is not P or not every S is P.

@ugcnet-notes

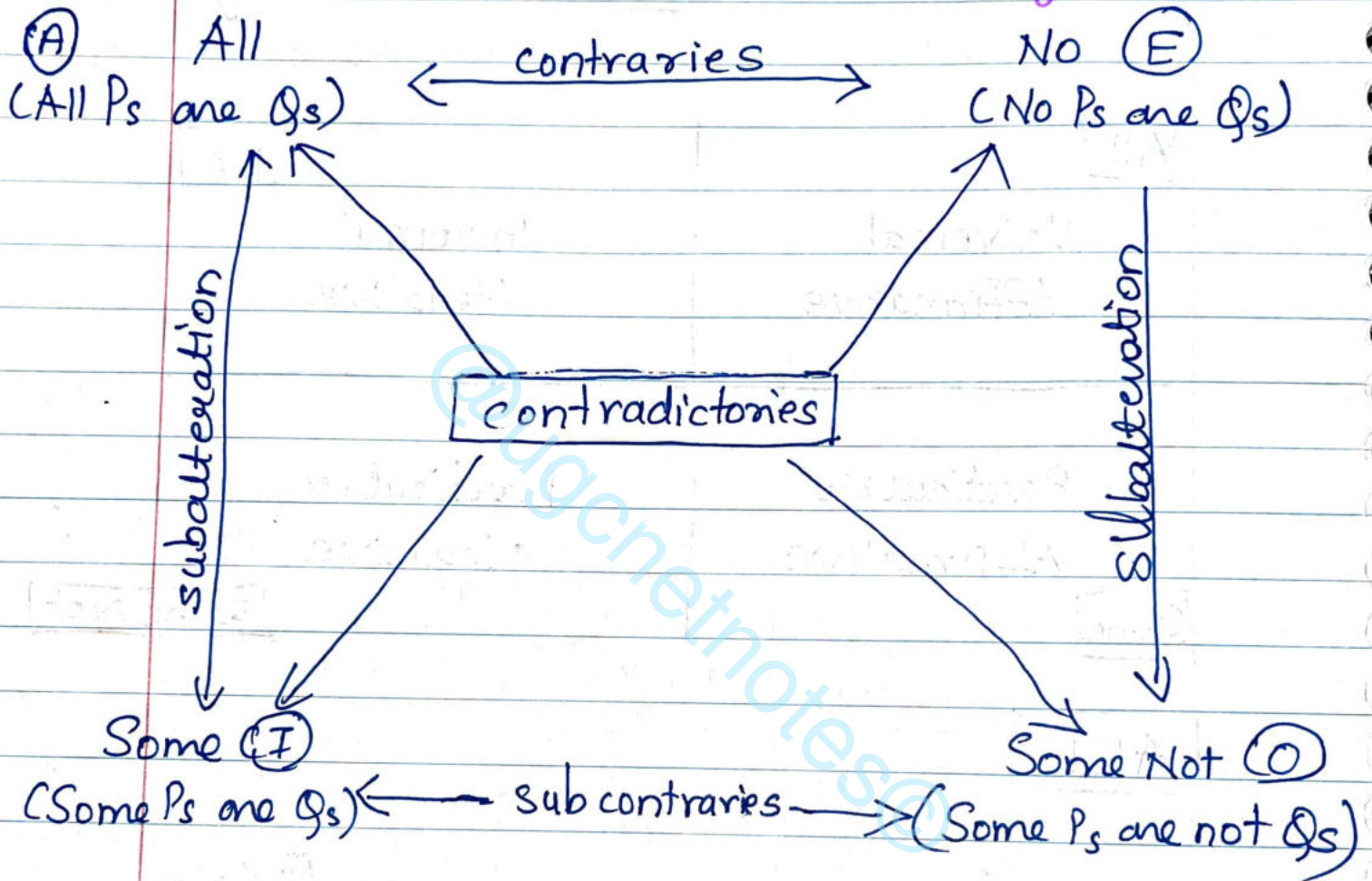
All		No
Universal Affirmative		Universal Negative
Particular Affirmative		Particular Negative
Some		Some Not

AEIO



SQUARE OF OPPOSITION

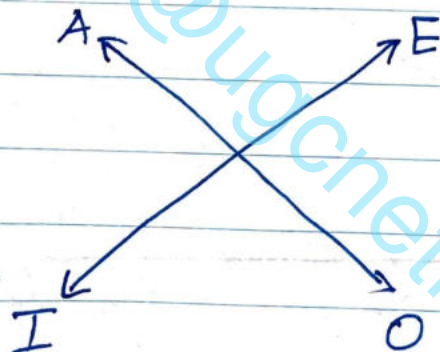
@ugcnet-notes



⇒ CONTRADICTORY

A-O

E-I



Contradictory Pair

All - some not

No - Some

Rule of Contradictory

- If one is true, the other will be false definitely
- If one is false, the other will be true definitely

Examples:

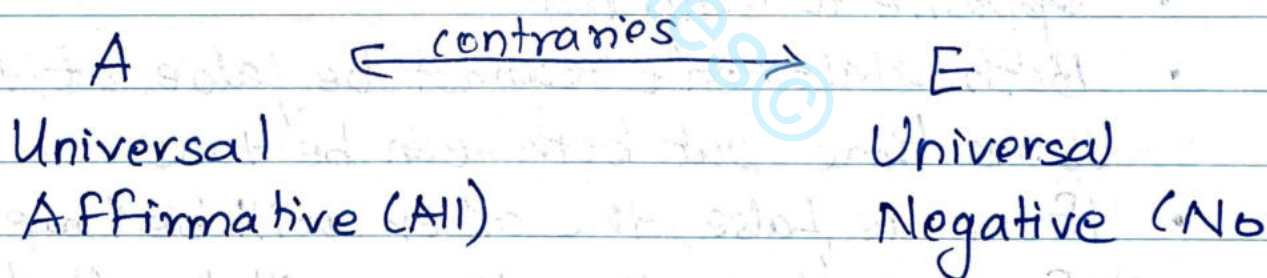
- All A are B - Some A are not B
- No A is B - Some A are B
- Some A are B - No A is B
- Some A are not B - All A are B

2)

CONTRARY

(Between Universal)

@ugcnet-notes



Rules of Contrary

- Its always between Universal
- Both statements cannot be true at the same time but both can be false.
- If one is true, the other will be false definitely
- If one is false, the other will be doubtful.

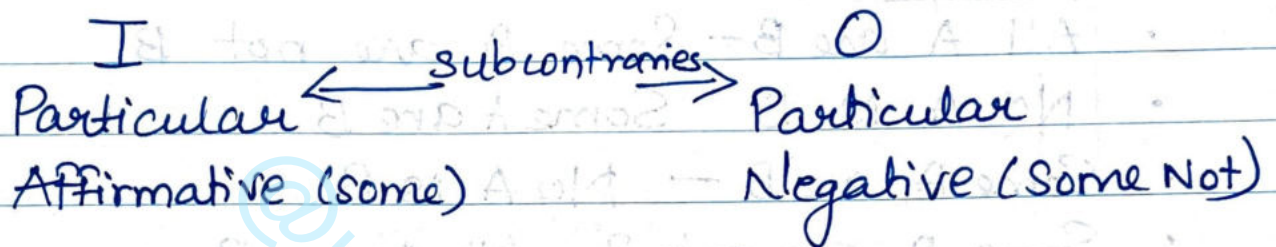
Examples:

- All A are B - No A is B

3) SUB-CONTRARY

[Between Particulars]

@ugcnet-notes



Rules of Sub-Contrary

- It's always between Particulars.
- Opposite to Contrary
- Both statements cannot be false at the same time but both can be true.
- If one is false, the other will be true definitely
- If one is true, the other will be doubtful

Examples:

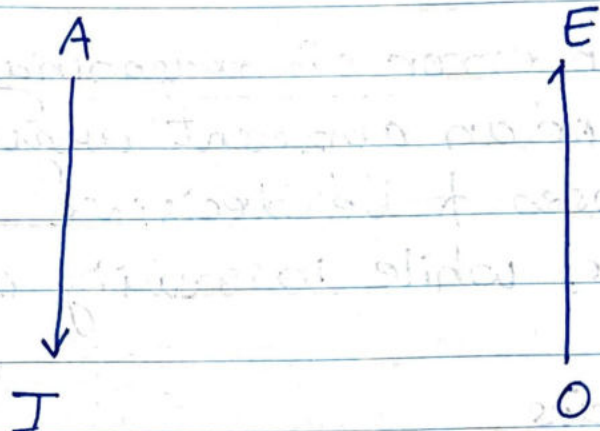
- Some A are B
- Some A are not B

Some
(A)

Some Not
(E)

Eg: I: Some judges are lawyers
O: Some judges are not lawyers

4) SUBALTERATION



A - I
E - O

@ugchek-notes

Rules of Subalternation:

- Between Universal and Particular
- IF universal is true, particular will be true definitely.
- IF U is false, particular will be doubtful
- IF P is false, U will be false definitely
- IF P is true, U will be doubtful.
- Truth downward, False upward.

Eg. A : All Indians are spiritual

I : Some Indians are spiritual

E : No Indians are spiritual

O : Some Indians are not spiritual

* Formal and Informal Fallacies

- Fallacy is an error of reasoning — an argument, or an apparent argument, which professes to be decisive of the matter at the issue, while in reality or it is not."

@ugcnet-notes

Formal Fallacies

- formal fallacies are errors of logic, where the conclusion is not supported by the premises.
- Either the premises are untrue or the argument is invalid.
- A flaw in the structure of the argument.

Informal Fallacies

- A flaw in the substances of an argument.
- Fallacy of content - what's written

Eg: The Brooklyn Bridge is made of atoms
Atoms are invisible
Therefore, the Brooklyn Bridge is invisible.

→ Formal fallacy example:

All humans are mammals
All dogs are mammals
So, all humans are dogs

Meaning of Syllogism - A form of deductive reasoning where you arrive at a specific conclusion by examining two other premises or ideas

* TYPES OF SYLLOGISM:

1) Categorical Syllogism:

- Categorical syllogism contains three components.
- It follows an 'If A is part of C, then B is part of C' logic.

eg: All cars have wheels. (Major premise)
I drive a car (Minor premise)
My car has wheels (Conclusion)

2) Conditional Syllogism

@ugcnet notes

- Conditional Syllogism follow an 'If A is true, then B is true' pattern of logic.
- Often referred to as hypothetical syllogisms because the arguments aren't always valid.

Eg: Ram is smart

Because he is smart, he will get good grades
If Ram is smart, then he will get into a good college.

3) Disjunctive Syllogism

- It follows an 'Either A or B is true, if A is false, then B is true' premise.

- It doesn't state if a major or minor premise is correct. But it's understood that one of them is correct.

Eg. either he is courageous or he is strong.

INDIAN LOGIC: MEANS OF KNOWLEDGE

- Epistemology is the study of the origin, nature and limits of human knowledge.
- Logic is the study of inference and argument.
- Philosophy basically deals with interpretation of man and nature.

@ugcnet-notes

As per Indian Logic system,
Knowledge is first received through perception (pratyaksha) or comparison (upamana), or words of sacred authority.

Indian Logic (means of knowledge)

Orthodox (Aastik)

Vedas

1. Nyaya
2. Samkhya
3. Vaisheshika
4. Mimamsa/Purva Mimamsa

Unorthodox (Naastik)

Non Vedas

1. Buddhist
2. Jainism
3. Charvaka (Materialists)

* The Nyaya School

- Formed during 4th Century BCE by Gautama.
- Here, the knowledge comes from perception, inference, comparison and verbal testimony.
- Objects of learning are self, body, sensory organs, objects, intellect, mind and activity.
- It invented a science of knowledge - (Pramanasastra)
- In the Nyaya philosophy, knowledge is termed as the manifestation of object.

@ugnet notes

* The Vaishesika Philosophy

- The word Vishesa means particularity and emphasizes the significance of individuals.
- It recognizes three real objects of experience as substance, quality and activity.
- Vaisesika recognizes Pramanas - perception and inference, comparison and verbal testimony as the valid sources of knowledge.

* Mimamsa -

- Mimamsa literally means 'revered thought'.
- Originally applied to the interpretation of the Vedic rituals.
- Here, all knowledge is valid by itself.
- Mimamsa is pluralistic realistic. It believes

in the reality of external world and of the individual souls.

— Heterodox Schools' Views of Knowledge.

1) Jainism.

- Examined the valid sources of knowledge.

Here, knowledge is of two kinds —

1. Pramana: Refers to the knowledge of a thing as it is.

2. Naya or knowledge of a thing in its reflection.

2) Buddhism.

@ugcnet-notes

- Four schools of Buddhism.

1. Vogacara

2. Madhyamika

3. Sautrantika and

4. Vaibhasika

Buddhism is centered upon the life and teachings of Gautam Buddha, where Jainism is centered on the life and teachings of Mahavira.

Jainism -

Jainism is a polytheistic religion and its goals are based on non-violence & liberation of the soul.

- Jainism suggests to respect all living things.
- Attain liberation by avoiding and shedding of bad Karma which is the cause of rebirths and sufferings.

Buddhism

- Buddhism is a polytheistic religion and its main goal is to gain enlightenment.
- Buddhism says that This life is suffering and the only way to escape from this suffering is to dispel one's cravings and ignorance by practising the Eightfold Path.

@ugcnet-notes

* PRAMANA (SOURCE OF KNOWLEDGE)

→ One of the main concept of Indian epistemology

Pramanas means 'proof' and 'means of knowledge'.

True knowledge ←

proof of knowledge.

• Knowledge can be termed as prama (valid) and Aprama (invalid).

Pramanas is derived from Sanskrit root.

Hence, pramana is valid means of knowledge.

Pramanas have four important means:

- 1) Pratyaksa (Perception)
- 2) Anumana (Inference)
- 3) Upamana (Comparison)
- 4) Shabda (Verbal testimony)

1) Perception [Pratyaksa]

• It is basically which is before one's eyes - 'aksa' means sense organ and 'prati' means the function of each sense organ.

@ugcnetnotes

Perception — Pratyaksha
(perceive) — Valid knowledge source
- Senses, feel from mind/heart.

Kinds of Pratyaksa:

1. Direct Perception (anubhava) (Experience)
2. Remembered Perception (smriti) (To remember)

Categories (Types) of Pratyaksa:

1. Ordinary (Laukika)
2. Extraordinary (Alaukika)

2) Inference (Anumana)

- The word 'Anumana' indicates after knowledge.
 - knowledge from knowledge
 - Universal truth.
- Inference is defined as the knowledge of an object (lingi) due to a previous knowledge of some sign or mark (linga).
- Second source of knowledge)
- mediate and indirect source of knowledge.

3) Shabda (Verbal testimony)

@gcnr-notes

- Statement of a trustworthy person
- Shabda literally means verbal knowledge.

4) Upamana (Comparison)

- Upamana is the knowledge derived from similarity.
- Knowledge of relation between a person and its denotation.
- Upamana is the third source of valid knowledge.
- Upamana is a distinct means of knowledge.

* Artha Patti (Presumption)

- Postulation derived from circumstances
- Using circumstances to make assumptions.
- Assumptions will change the circumstances
- Independent source of knowledge.
- Arthapatti is a method of assumption of an unknown fact to account for a known fact that is otherwise difficult.

@ugcnet-notes

* Anupalabdi (non-perception)

- cognitive proof using non-existence.
- Anupalabdi literally means non-apprehension.
- knowledge from non-existence of a thing.

* The Vedas are in Sanskrit Language

- Rigveda considered as first source of all knowledge and wisdom
- Yajurveda provides procedure for various ceremonies and rituals.
- Sama veda considered as Upasana communication with God in musical rhythm.
- Atharva veda deals with knowledge in general and medical science considered as oldest work of Indian medicine.

* In Nyaya theory of perception, we find five propositions. (Steps of Anumana)

→ These propositions are known as 'members' (avayava) of Nyaya syllogism.

→ These avayavas are:

pratijna (proposition), (hypothesis/ tentative statement)

hetu (reason), (middle term)

udharana (example), (universal example)

upanaya (application) (reaffirmation)

nigamana (deduction) (conclusion)

This five-member syllogism are:

Eg:

1) The hill is fiery (pratijna)

2) Because the hill is smoky (hetu)

3) Whatever is smoky is fiery eg. kitchen (udharana)

4) This hill is also smoky (upanaya)

5) Therefore this hill is fiery (nigamana)

* Ancient and medieval Indian texts identify 6 pramanas as correct means of accurate knowledge and to truth:

1. Perception (pratyaksha)

2. Inference (anumana)

3. Comparison and analogy (upamana)

4. word, testimony of past or present reliable experts (Sabda)
5. Postulation, derivation from circumstances (Anuthapatti)
6. Non-perception, negative cognitive proof (Anupalabdhi)

@ugcnet-notes

- Each of these are further categorized in terms of conditionality, completeness, confidence and possibility of error, by each school of Indian Philosophies.
 - The various schools of Indian Philosophies vary on how many of these six are epistemically reliable and valid means to knowledge.
- 1) Charvaka school of Hinduism holds that only one (perception) is a reliable source of knowledge.
 - 2) Buddhism holds two (perception, inference)
 - 3) Jainism holds three (perception, inference and testimony)
 - 4) Mimamsa and Advaita Vedanta schools of Hinduism hold all six are useful and can be reliable means to knowledge.

5) Nyaya's school's epistemology accepts 4 out of 6 pramanas — Pratyaksa, Anumana, Upamana and Sabda.

6) Varsheshika

accepts perception (pratyaksa) and inference (anumana) as valid sources of knowledge.

7) Sankhya

Acc. to the Sankhya school, knowledge is possible through three pramanas:

Pratyaksa, Anumana, Sabda.

UNIT 6 - LOGICAL REASONING

Date

No.

①

1. Nature of a logical argument - Valid or Invalid
2. Given below are two propositions:
All philosophers are fallible
Socrates is not fallible
In the Classical square of opposition, which of the following is the correct answer?
Answer - Contrary

All

Contrary

No

1st statement: All denoted by A
2nd " " No denoted by E
A & E are contrary to each other.
3. Vaisheshika philosophy accepts 2 valid source of knowledge : Perception (pratyaksha) and Inference (anumana)
4. ParaVidya means knowledge that transcends human experience
5. AparaVidya means knowledge based on human experience.
6. Quantity and Quality of a categorical proposition decide Mood.
7. Sruti represents the philosophical aspect of the Vedas and Upanishads, while Smriti is an application of the philosophical ideas.
8. Middle term decides the figure of a categorical proposition.

9. Ashtadhyayi was written by Panini.
10. Sequential order of a comprehensible sentence in Nyaya philosophy.
1. Akanksa (expectancy)
 2. Yogyata (competency)
 3. Sannidhi (Proximity)
 4. Tatparya (Intention)
- 11) The fallacy 'hetvabhasa' produced in the conclusion due to the repudiation of Sadhya by Hetu is known as Viruddha.
- 12) The sequential order of Sylogism in Nyaya Philosophy
1. Pratijna (required to be proved)
 2. Hetu (reason, sadhana)
 3. Udaharana (example)
 4. Upanaya (reaffirmation)
 5. Nigman (conclusion)
- 13) Nirvikalpaka Pratyaksha is beyond the ambit of perception.
- 14)
- | <u>List I</u> | <u>List II</u> |
|---------------|----------------|
| Abhaya | Nyaya |
| Anupelabdhi | Vedanta |
| Apoha | Buddhism |
| Syadavada | Jainism. |

Date _____ No. _____

15) In a proposition which is particular affirmative Neither the subject nor the predicate is distributed.

16) List I - Theories

List II - philosophers

- A. Episteme and Doxa
- B. Potential & Actual Being
- C. Vyavaharik and Pramarthik
- D. Rational and Actual

Plato
Aristotle
Sankara
Hegel

@ugcnet-notes

17) List I - Concepts

List II - Schools

- A. Nirvana
- B. Nishchreyasa
- C. Apavarga
- D. moksha

Buddhism
Upanishads
Jainism
Sankhya

18) * Deduction proceeds from Universal to particular

Deductive method: General to specific

Unknown to known

Abstract rule to concrete instance

Complex to Simple.

19) Wherever there is smoke, there is fire.

There is smoke in Mr. Verma's chamber

There must be fire in Mr. Verma's chamber.

- In according to Indian logic, this is an example of Hetvabhasa (fallacy)

It is fallacy because smoke can be because of some other reason like smoking or agarbatti etc. There are chances of mistakes hence fallacy.

20) Given below are ~~two~~ propositions:
'Mahatma Gandhi is called Father of Nation.'
What kind of classical categorical proposition is it.

- Universal Affirmative.

21) Apoha and Pratyasha are accepted in Buddhism.

22) Asidha is a fallacy when the middle term is Unproved.

23) 'Fat Krishna eats either during day or night,
Fat Krishna does not eat during day, therefore
Fat Krishna eats during night.'
Identify the type of Inference.

- Implication (Arthapatti)

@ugcnet-notes

It is an example of Arthapatti or postulation, derived from circumstances, as we are making assumptions without knowing the truth.

24) The inherent cause (Samavayi) of Indian Philosophy corresponds to Material Cause by Aristotle.

25) In Indian logic, the presence of the middle term in the minor term is called Paksha-dharmita. means presence of Hetu in Paksha.

26) Systems of Indian Philosophy antithetical to the Vedas-

- Buddhism
- Jainism
- Charvaks.

27) Valid means of knowledgeDescription

A. Perception

Non-erroneous cognition produced by the interaction of sense organs with the objects.

B. Inference

Cognition which presupposes some other cognition.

C. Comparison

Knowledge of the relation between a word and its denotation

D. Verbal testimony

Statement of a trustworthy person & consists in understanding its meaning.

@ugcnet-notes

28) Ayurveda, which deals with indigenous system of medicine, could be traced to Atharvaveda.29) Universal proposition along with an instance (example) is signified by Udharana of Anumana (Inference) in Indian Logic.30) Proposition contrary to "All poets are dreamers"
— No poets are dreamersAll $\xrightarrow{\text{contrary}}$ No31) As per the classical square of opposition, IF 'A' proposition is given as true, then 'E' proposition is false, 'I' proposition is true, and 'O' proposition is false.32) Syllogism is not a part of immediate deductive inference.33) Combination of propositions considered to be contraries in the classical square of opposition —
Universal affirmative and Universal Negative.

- 34) Assumption of an unperceived fact in order to reconcile two apparently inconsistent perceived facts is known in Indian Logic as Arthapatti (Implication)
- 35) Statement of reason is signified by the term 'hetu' in the process of Anumana (Inference) in classical Indian School of Logic.
- 36) "Fire is cold because it is a substance" — is an instance of Badhita (non-inferential contradicted middle) one of the hetvabhasa (fallacy of inference)
- 37) The Middle term is the subject of the major premise and the predicate of the minor premise.
- 38) If two propositions are related in such a way that they cannot both be true together although both may be false together, then such a relation is considered to be Contrary. @ugcnet-notes
- 39) Characteristic feature of an argument —
It is either valid or invalid.
- 40) The converse of "All cats are mammals" is Some mammals are cats.
- 41) In which of the following arguments 'the relation that exists between premises and Conclusion is that of logical necessity'?
Ans: Deductive.
- 42) Inference (anumana) in Indian Logic is rooted in invariable concomitance between middle term and major term.

43) 'All Judges are fairminded' is an example of Universal affirmative proposition.

44) The Pancha Kosh Theory of Education was elaborated by Aurobindo.

45) The second member of the Nyaya Syllogism which states the reason for the establishment of the proposition is called Hetu.

@ugcnet-notes

46) According to the law of excluded middle:
A proposition is either true or false.

47) List I (concept)

List II (Philosopher)

- | | |
|------------------------------------|-----------|
| A. Phenomenon and Noumenon | Kant |
| B. Potential and actual being | Aristotle |
| C. Mind and Body Dualism | Descartes |
| D. Primary and Secondary Qualities | Locke. |

48) Sequence of theory of causality in Aristotle's Philosophy

- A. Material cause (the stuff out of which everything is made)
- B. Formal Cause (the thing's defining characteristics)
- C. Efficient Cause (the pre-existing condition that caused the event to occur)
- D. Final Cause (the thing's final cause is its intent)

49) Charvaka accepted only one (perception) as a reliable source of knowledge.

Date _____ No _____

50) The distinction between purvavat and sesavat is made with reference to Anumana (Inference)

51) Consider the following propositions -
No television is a computer
Some televisions are not computer.

According to the square of opposition, the above opposition is called Subalternation

52) Conditions necessary for Anumana (Inference) according to classical Indian Logic -

-Cognition of the hetu (middle term) in the paksa or minor term.

-The relation of invariable concomitance between the middle and major term. @ugcnet-notes

53)

Name	Statement	Quantity	Quality
A	All S is P	Universal	Affirmative
E	No S is P	Universal	Negative
I	Some S is P	Particular	Affirmative
O	Some S is not P	Particular	Negative

54) A copula is a word used to link the subject of a sentence with a predicate.

55) Categorical propositions with the same subject and predicate are related in such a manner that if one is undertermined the other must be undetermined is case of Contradictory.

- 56) The distinction between Savikalpaka (determinate) and Nirvikalpaka (indeterminate) is made with Pratyaksa (perception).
- 57) The distinction between laukika and alaukika is made with Pratyaksa (Perception) pramanas.
- 58) Mithila University - Ancient Indian University known as the chief centre for advanced and specialized studies in Nyaya or Logic.
- 59) The term paksha according to classical Indian school of Logic refers to Minor term in the process of Inference. @ugcnet-notes
- 60) 'Some students are sincere' is an example of Particulate Affirmative.
- 61) Both can be true simultaneously but cannot be false simultaneously - Sub Contrary.
- 62) The process by which conclusion is arrived at on the basis of other proposition is termed as Inference.
- 63) The proposition which is affirmed on the basis of premises is called Conclusion.
- 64) Deduction and Induction are two main forms of Reasoning.
- 65) A reasoning where we start with certain particular statements and conclude with a universal statement is called a Inductive Reasoning.

- 66) The premises provide conclusive grounds for conclusion is Deductive Reasoning.
- 67) The defining feature of a valid deduction is its Certainty.
- 68) Inductive arguments are typically Synthetic.
- 69) In inductive reasoning, the conclusion is Probable.
- 70) Inductive arguments are properly characterized as Strong-weak.
- 71) Validity or Invalidity may be predicted of Deductive Arguments. @ugcnet-notes
- 72) To be critical, thinking must be Analytical.
- 73) A fallacy is a False argument.
- 74) Inductive reasoning is based on Uniformity in nature.
- 75) A deductive argument is sound if and only if it is Valid and all its premises are true.
- 76) In terms of nature, both the premises and conclusion of an argument are Propositions.
- 77) Structure of a logical argument is based on Formal Validity.
- 78) The Copula denotes relation between two terms.

- 79) A deductive argument is valid if —
Premises are true and conclusion is true.
- 80) Denotation is the same as Extension.
- 81) The proposition 'if you work hard you will succeed' is an example of Conditional proposition.
- 82) Affirmative or negative is the classification of propositions on the basis of Quality.
- 83) A proposition in which the predicate refers to all individual objects denoted by the subject is called Universal.
- 84) The proposition 'no men are perfect' is an example of Universal negative.
@ugcnet-notes
- 85) 'Some flowers are green' is an example of —
Particular affirmative
- 86) The relation between two particular propositions having the same subject and predicate but differing in quality is Sub Contrary.
- 87) The major term is the Predicate of the conclusion.
- 88) The minor term is the Subject of the conclusion.
- 89) If one premise is negative, then the conclusion must be Negative.
- 90) Ethos, logos and pathos can be used to strengthen argument or inappropriately to manipulate an audience through the use of fallacies.

Ethos: For ethics, authority and/or credibility
Logos: An appeal to logic
Pathos: An appeal to emotion

- 91) The post-vedic period is a systematic period which saw the development of 'orthodox systems'.
- 92) Prejudice is a half-baked opinion based on insufficient or unexamined evidence.
- 93) The denotation of a word is its explicit definition as listed in a dictionary.
- 94) Lexical definition is also termed as reportive definition.
- 95) Stipulative definition is used to assign a new meaning to a term. @ugcnet-notes
- 96) A premise is an argument that provides some basic reason or support to get the conclusion.
- 97) When in a group of propositions, one proposition is claimed to follow from the others, the group of propositions is called An ~~Valid~~ Argument.
- 98) If we want to seek new knowledge of facts about the world, we must rely on reason of the type Inductive.
- 99) When the purpose of a definition is to explain the use or to eliminate ambiguity, then the definition is called Lexical.
- 100) A definition that has a meaning that is deliberately assigned to some symbol is called Stipulative.

LOGICAL REASONING

Date

No.

1. Propositions that support the conclusion of an argument are called Premises.
2. Inductive Arguments are typically Synthetic.
3. The relationship between premises and conclusion in a deductive argument is basically of Implication-entailment.
4. Deductive argument involves Seeing logical relation.
5. A fallacy is a false argument. @ugcnet-notes
6. Proposition denotes a statement of relation between two terms.
7. Syllogistic reasoning is Deductive.
8. The two kinds of propositions are Categorical-conditional.
9. Copula denotes relation between two terms.
- connective
word.
10. The sum total of the objects to which the term can be applied is its Connotation.
11. Connotation is the same as Intension.
12. A disjunctive proposition is a type of conditional proposition.
13. Classification of propositions on the basis of —
Quality - Affirmative or negative
Universal or particular - Quantity.
14. Individual propositions are to be regarded as Universal.

15. Universal affirmative proposition distributes subject.
16. Universal negative proposition distributes both subject & predicate.
17. The process of passing directly from a single proposition to a conclusion is Immediate Inference.
@ugcnet-notes
18. Venn diagram is a kind of diagram to -
Represent and assess the validity of elementary inferences with the help of Boolean Algebra of Classes.
19. Two propositions with the same subject and predicate terms but different in quality are Subcontraries.
20. Certainty is Logical.

Unit 6 - Logical Reasoning

1. (Concepts)

A. Nirvana

B. Nihshreyasa

C. Apararga

D. moksha

(Schools)

Buddhism

Upanishads

Jainism

Sankhya

2. Deduction proceeds from Universal to particular

* Deductive method

- General rule to specific instances

- Unknown to known

- Abstract rule to concrete instance

- Complex to simple

@ugcnet.notes

3. "Fire is not warm because it is produced such as water," is an example of Badhit-vichaya fallacy.

4. Asidha is a fallacy when the middle term is Unproved.
• Asidha is unproved hetu fallacy (Paksadharmata)

5. Valid means
of knowledge

Description

A. Perception

Non-erroneous cognition produced by the interaction of sense organs with the objects.

B. Inference

Cognition which presupposes some other cognition.

C. Comparison

Knowledge of the relation between a word and its denotation.

D. Verbal testimony

Statement of a trustworthy person and consists in understanding its meaning.

6. Conditions necessary for Anumana (Inference) according to Classical Indian Logic.

- Cognition of the hetu (middle term) in the Paksa or minor term
- The relation of invariable concomitance between the middle and the major term.

7. In Universal Negative Proposition, both the terms are distributed.

8. In Universal Positive Proposition, Subject is distributed, predicate is Undistributed.

9. <u>Valid source of knowledge</u>	<u>Invalid source of knowledge</u>
• Perception (Pratyaksha)	• Arthapatti (Assumption)
• Anumana (Inference)	• Anuplabdhi (non-perception)
• Upamana (comparison)	
• Sabda (verbal testimony)	

- Valid & Invalid source of knowledge acc. to Nyaya Philosophy.

- Valid (also known as 'Prama')

Invalid (also known as 'Aparama')

10. 'Upanaya' in Indian 'Nyaya Syllogism' corresponds to minor premise in Aristotelian Syllogism.

11. Characteristics of the 'middle term' (Chetu) -

- It must be present in the minor term.
- It must be present in all positive instances in which the major term is present.
- It is drawn from the preceding propositions.

12. The knowledge of the relation between name and object denoted by that name is called Comparison (Upamana)

13. In the figure of categorical syllogism, Quantity & Quality of a proposition determine:
Mood of the Syllogism.

14. According to the law of excluded middle:
A proposition is either true or false.
@ugcnet-notes

The three laws of Rational thought: (3 laws of logic)

1) Principle of Identity - "It is what it is"

2) Principle of non-contradiction - If statement such as "It is snowing" can't be both true and false.

3) Principle of excluded middle - "It is either is or it isn't"

either A or non-A.

15.

Propositions

Categorical Proposition

(There is a relationship between the subject and the predicate without any condition)

Eg: I. All beams are logs
II. No rod is stick

Hypothetical Proposition

(There is a relationship between subject and predicate which is asserted conditionally)

Eg: "I'll only win the race, if I enter it"

Disjunctive Proposition

(It affirms that at least one of the alternative is true)

Eg: Either he is brave or he is strong

- _/_/_
16. Middle term decides the figure of categorial proposition.
 17. The second member of the Nyaya syllogism which states the reason for the establishment of the proposition is called Hetu.
 18. Paravidya, according to the vedic tradition, implies knowledge that transcends human experience.
 19. Asidha is a fallacy when the middle term is Unproved.
 20.

<u>Pairs</u>	<u>Pairs of analogies</u>
Owl: Flight	Snake: Crawl
Bell: Chime	Thunder: roar
Knife: Cut	Sword: Slaughter
Farmer: Crop	Dairy farmer: Milk

Here we have to observe type of relation among pair of analogy and then match it with similar.

- Owls fly & similarly Snake crawls
- Bell sound is Chime similarly Thunder sound is roar
- Knife is for cutting similarly Sword is for Slaughter (Kill)
- Farmer grows crop similarly dairy farmer: milk.

21. The converse of "All cats are mammals" is Some mammals are cats.

* Conversion is the inference in which the subject and predicate are interchanged.

The simplest operation is conversion where the subject and predicate terms are interchanged.

<u>Original</u>	<u>Converse</u>	<u>Valid?</u>
All S are P	All P are S	No
No S are P	No P are S	Yes
Some S are P	Some P are S	Yes
Some S are not P	Some P are not S	No

22. Vaisheshika accepts 2 valid sources of knowledge: Perception (pratyaksha) and Inference (anumana).

23) Smriti is direct knowledge.
Smriti represents the philosophical aspect of the Vedas.

Smriti is indirect knowledge, which is an application of the philosophical ideas.
 @ugcnet-notes

24) Ashtadhyayi was written by Panini.
Panini wrote a book on grammar called "Ashtadhyayi" - 8 chapters.

25) Sequential order of a comprehensible sentence in Nyaya Philosophy -

- Akanksha (expectancy)
- Yogyata (competency)
- Samidhi (proximity)
- Tatparya (intention)

26) Two of the four propositions are related in such a way that they cannot be true, although they can be false.

- All men are honest } Contrary related in such a way that they cannot be true, although they can be false.
 No men are honest }

Logical Reasoning.

Page No.:

Date:

youva

1. Two propositions are contradictories if - One is denial or negation of the other.

2. Acc. to Classical Indian Logic, the fallacies (Chetvabhasa) are not errors of inference, but rather hindrances to inference.

A fallacy is really a 'seeming reason or mark' (Chetvabhasa) which if recognized would prevent the inferential cognition from arising.

3. List I

List II:

- (A) Vyapti
- (B) Linga
- (C) Sadhya
- (D) Paksa

Universal concomitance

Sign or reason

The property being inferred

Locus of hetu and Sadhya

4. Acc. to Nyaya the argument -

'Sound is eternal because it is produced' commits which kind of fallacy?

• Viruddha (Contradicting reason)

5. List I

List II

In Square of opposition

Resultant

A. If 'Some flowers are pink' is false.

'A' is false, 'E' is true

B. If 'No girls are birds' is True

'I' is False, 'O' is True

C. If 'Some Boys are not tall' is False

'E' is false, 'I' is true

D. If 'All Chocolates are sweet' is true

'I' is True, 'O' is false

6. With reference to pramana theory both on dialogical and philosophical discourse -
- It furnishes the required grounding for the thesis to be backed up by a certain means of knowledge.
 - It provides the necessary platform to incisely analyse the proposed thesis
 - It enables us to succinctly summarise the observations that stem out of analysis, in the form of anumana or nyaya prayoga.
7. The works in Nyaya-Sastra discuss the aggregate causal conditions and the process involved in inferential cognition.
8. Conditions an inference may be categorized as Kevalanvayi - When it is based on middle term which is only positively related to the major term.
9. Which fallacy is committed in the arguement - "Sound is a quality because it is visible."
- Svarupasiddha
- Svarupasiddha occurs when the nature of paksha is not coherent for keeping hetu in it.
10. The statement 'a sense organ' that perceives a property also perceives the "propertyness" as well as the absence of that property" can be attributed to Nyaya schools of classical Indian Philosophy.
11. In Upamana sources of knowledge (pramana) in classical Indian Philosophy is based on similarity of the unobserved object with a known object.

12) Correct sequence of steps in case of inference according to Indian Logic-

- Statement of thesis (Pratijna)
- Statement of Reason (hetu)
- Giving an example of the underlying rule (udharana)
- Statement of similarity / applicability of the example to case in consideration (upanaya)
- Affirmation of the thesis as proved (nigmana)

13) Acc. to classical Indian logic, the psychological sequence also corresponds to the logical sequence.

The logical structure represents not how we ought to infer, but how, as a matter of fact, we do infer.

14) Steps of Argument

Proposition

A) Affirmation of the thesis as proven

Therefore there is fire on the hill

B) Statement of reason

Because there is smoke

C) Giving an example of underlying rule

Wherever there is smoke, there is fire as in the kitchen

b) Statement of thesis to be established

There is fire on the hill

15) Vaisesikas and Buddhists schools of Classical Indian Philosophy reduce Sabda pramana (verbal authority) to inference.

16) Two contrary propositions-

The truth of one entails the falsity of the other.

17) With reference to Nyaya philosophy-

The linga or the middle term is not the Karana or operative cause of inference

18) "Whoever thrusts a knife into another person should be arrested. Surgeons thrust a knife into another person when operating. Therefore surgeons should be arrested."

Identify the Fallacy -

Ans. Fallacy of accident.

19) A formal fallacy is one that may be identified through mere inspection of the form or structure of an argument. Formal fallacies are found only in deductive arguments that have identifiable terms.

20) Mimamsakas and Vedatins agree with the Naiyayikas that the syllogism is necessary only for parathanumana or demonstrate inference and not for svathanumana or inference for oneself.

21) Value of Universalism is related to self-transcendence.

22) Which Indian thought systems holds that universal relation in case of inference (anumana) cannot be determined because there is always room for doubt about the unobserved cases?

Ans. Lokayala.

23) Sagarika is never seen reading any Mathematics book during the day time. Yet she scored 98% marks. Therefore, she must be studying during the night. Which of the following means of knowledge is used in this argument?

Ans. Arthapatti (Implication)

24) The middle term of the inference is related to the major term neither as a cause nor as an effect but because they are uniformly related to each other in our experience, is known as Samanya todrshita.

25) List I	List II.
A) IF 'A' is True	'O' is False, 'E' is false
B) IF 'E' is true	'A' is False, 'I' is false
C) IF 'I' is False	'E' is True, 'O' is True
D) IF 'O' is False	'E' is False, 'I' is True

26) List I	List II
A. Ashrayasiddha	Sky lotus is fragrant because it belongs to the class of lotus.
B. Svarupasiddha	Sound is eternal because it is visible
C. Vyapyatvasiddha	All real are momentary; sound is real; sound is momentary
D. Anupasamhari	All objects are eternal because they are knowable.

27) In Nirvikalpaka Pratyaksha forms of knowledge there cannot be any prediction of the object in terms of the subject-predicate relation.

28) List I	List II
A. Vyapti	The universal relation between the middle and major term of inference
B. Anumana	Knowledge of an object due to previous knowledge of some sign or mark
C. Pratyaksha	An immediate valid cognition of reality due to some kind of sense-object contact
D. Upamana	A source of knowledge on the basis of the likeness of things.

29) Consider 'A' proposition as 'True' and 'False' respectively, In a square of the opposition of propositions, 'I' is true and 'E' is false.

30) List I	List II
A. Sannidhi	Propinquity between the different words in a sentence.
B. Tatparya	Meaning intended by the sentence
C. Yogyata	Mutual fitness and compatibility of the constituent words in a sentence
D. Akanksa	Expectancy between the words different in a sentence

31) Ethical Concepts	Source
A. Categorical imperatives	Immanuel Kant
B. Utilitarianism	John Stuart Mill
C. Golden mean	Aristotle
D. Theory of justice	John Rawls

32) Consider 'E' proposition as True and 'I' as False in a square of opposition, then -
'I' is False, 'E' is True.

33) Analytic Induction is a method of

- Systematic interpretation of events
- Generating hypothesis
- Testing hypothesis

34) Samsaya is not a constituent member of the Indian syllogistic argument.

35) The example 'sound is eternal because it is caused' represents Viruddha Hetvabhasa.

36) Correct sequence in the context of constituent parts of Inference:

Pratijna → Hetu → Udharana → Upanaya → Nigamana

37) Samanyalaksana Pratyaksa -

Through the perception of a whole class of objects through a generic property.

Jnana Laksana Pratyaksa -

Perception of an object which is in contact with sense through previous knowledge of itself.

Yogaj Pratyaksa -

Intuitive perception of all objects - past, distant and future due to supernatural powers generated by meditation.

Alaukika Pratyaksa -

When objects are not actually present to sense but are conveyed to it through a special medium.

28) List I (Propositions)

- A) IF 'A' is False
- B) IF 'E' is True
- C) IF 'I' is False
- D) IF 'O' is True

List II (Square of Opposition)

'E' and 'I' are Undetermined
'A' and 'I' are false
'E' and 'O' are True
'E' is False ; 'I' is True

29) List I (Steps in Inference)

- A. Thesis (Pratijna)
- B. Reason (Hetu)
- C. Example (Udaharana)
- D. Application (Upanaya)

List II (Statements)

The mountain has fire
Because of smoke
Wherever there is smoke, there is fire,
As in the kitchen.
The mountain also has smoke accompanied
by fire, like the kitchen

40) Acc. to Naiyayikas, the fallacy of Savyabhicara occurs when the middle term leads to different opposite conclusions.

41) In Samanyatodrsta - the middle term is related to the major term neither as a cause nor as an effect.

42) Acc. to Nyaya, universals are external entities which are distinct from, but inhere in many individuals.

43) Advertising "Testimonials" are frequent instances of Argumentum ad Verecundiam (authority) fallacy.

44) IF a jar is temporarily removed from its locus, the non-existence of the jar on the floor is Anuplabdhi (Non-cognition)

45) The knowing self knows objects through the instrumentality of the Indriyas and the existence of the Indriya, is proved by Anumana.

46) List I	List II
<u>Erik's Stages of Psychosocial Development</u>	<u>Approximate age</u>
A. Basic trust Vs. Basic mistrust	Birth to 12-18 months
B. Initiative versus Guilt	3 to 6 years
C. Intimacy Vs. Isolation	Young adulthood
D. Ego integrity Vs. Despair	Late adulthood

47) In the context of uses of language, Argumentum ad Hominem (circumstantial) fallacy pertains to the relationship between a person's beliefs and his circumstances.

- 48) Perception Form of knowledge is not derived through the Instrumentality of other knowledge.
- 49) The condition that there should be an absence of Contradiction in the relation of the objects denoted in the combination of words, for the sentence to be significant is known as Yogyata.
- 50) Denotation cannot be used to define words that have an empty extension. Although connotation determines denotation, denotation does not determine connotation.
- 51) Students t-statistic can yield accurate analysis of data, even if some of the assumptions of parametric statistics are violated.
- 52) A Vyapti between two terms of equal extension is called Samavyapti.
- 53) With reference to Vyapti (concomitance) according to the Nyaya System-
- It expresses the relation between the classes of individuals
 - It can be said to exist between two things if they are related as cause and effect.
 - It can be said to exist between two things if they are related.
- 54) Sound Argument describes a valid deductive argument with all the premises and the Conclusion as True.

55) Two subcontrary propositions cannot both be false.

56) In the ancient Buddhist system of education, the student after being admitted to a monastery had to renounce all the worldly and family relationships. This was termed as Pravajya.

57) In a valid categorical syllogism, the middle term must be distributed in at least one premise.

58) Asamavyapti corresponds to the Universal Affirmative Proposition.

Samavyapti corresponds to the Universal Negative proposition.

59) In the Nyaya System, Inference is made from the particular to the particular through the Universal.

60) Contexts	Examples
A. Context of discovery	Hypothesis generation
B. Inductive reasoning	From particular to general
C. Abductive reasoning	Inference based on some observations
D. Context of justification	Testing or verifying the hypothesis.

61) A proposition is a statement about observable phenomena (concepts) that may be judged true or false.

62) Anumana has been accepted as an Independent source of valid knowledge by Buddhists, Naiyayikas, Mimamsakas, and Advaitins schools.

63) When a proposition is formulated for empirical testing, it is called a hypothesis.

- 64) Prakrit languages have similarities and differences with Sanskrit in many ways. Prakrit languages when formalized for literary use their variation from conventional vedic languages was Apabhramsha.
- 65) Sesavata is the inference of what remains (sesa) by elimination of the irrelevant.
- 66) Sesavata inference corresponds to the method of residues in western inductive logic.
- 67) Naiyayikas interest in logic is for finding out the truth about the existent world, but not merely for finding out the instrument of thought for their own sake.
- 68) ~~The~~ fallacy of contradictory middle (Virudha) occurs in an argument when the middle term is found both where the major term is found and where it is not found.
- 69) Naiyayikas define upadhi (conditionality) as the necessary relation of something only with major term but not with middle term.
- 70) The formal fallacies of Aristotle are based on the violations of the formal structure of the whole syllogism.
- 71) Fallacies given by the Naiyayikas rest on the violations of the formal conditions of the valid middle term or reason.
- 72) In upanaya in the Nyaya syllogism all the three terms stand synthesized.

- 73) In Kadambari text, importance has been given to multi-disciplinary education.
- 74) The example (udaharan) is a special feature of the Nyaya syllogism and it illustrates the truth that the universal major premise is the result of a real induction.
- 75) When the middle term is related to a minor term that stands not for any definite individual or class of individuals, but indefinitely for all objects is known as Anupasamhari Savyabhichara.
- 76) Shakti is not a necessary condition for a sentence to be meaningful.
- 77) An inference when based on a middle term which is only positively related to the major term and the knowledge of Vyapti between the middle and major terms is arrived at only through the agreement in presence is Kevalanvayi.
- 78) When the middle term in some cases relates to the major and in other cases relates to the absence of the major, it is said to be the fallacy of Sadharana Vyabhichara.

79) List I	List II
A. Theory of Moral Development	Lawrence Kohlberg
B. Theory of Fluid Intelligence	Raymond Cattell
C. Theory of Crystallized Intelligence	John Horn
D. Moratorium	Erik Erikson

- 80) When a middle term does not go further than producing a state of mental oscillation between two opposite views, the case is of Fallacy of Prakaransama.
- 81) Sheshavat Anumana is taken to mean inference by elimination, in which the inferred character is the residuum of a process of elimination that excludes other characters.
- 82) An inference is called keralanvayi when it is based on a middle term, which is only positively related to the major term.
- | 83) List I. Functions of language | List II - Examples |
|-----------------------------------|-----------------------------------|
| A. Directive Function | Close the window |
| B. Expressive function | That's too bad |
| C. Informative function | New Delhi is the capital of India |
| D. Performative function | I apologize |
- 84) When an unperceived fact is supposed in order to resolve an apparent contradiction in the presented phenomenon, Arthapatti is employed according to Advaitins.
- 85) The aim of Naiyayikas in formulating the anumana theory is to obtain prama (right knowledge)
- 86) In the Nyaya system of inference, the major term (sadhya) can exist without the middle term (cheta)
- 87) In Nyaya Philosophy, subject matter of logic is mainly thought and its verbal formulation is only a matter of contingency

88) In case of anumana (inference), sequence of five steps of syllogistic argument according to Nyaya-

- The mountain has fire
- Because of smoke
- Wherever there is smoke, there is fire, as in the kitchen
- The mountain also has smoke accompanied by fire, like kitchen
- Therefore the mountain has fire.

89) There is greater stress laid on the material aspects of Inference by the exponent of Nyaya system.

90) Relationship of invariable concomitance (Vyapti) can be claimed to exist between two things if they are casually related.

Inference is mediate and indirect. That is arranged through the medium of some mark which is called 'hetu'. This may be explained with the help of the typical example of inference, the presence of fire on the perception of smoke. When one sees smoke on distant hill one remembers one's experience of the universal concomitance (Vyapti) between smoke and fire and concludes that there is fire on the distant hill.

Thus, we can say that

1. This hill has fire (*pratijsa*)
2. Because it has smoke (*hetu*)
3. Whatever has smoke has fire, for example, an oven (*udaharana*)
4. This hill has smoke which is invariably associated with fire (*upanaya*)
5. Therefore, this hill has fire (*nyamana*)

The first, the *pratijsa*, is the logical statement which is to be proved. The second is *hetu* or reason which states the reason for the establishment of the proposition. The third is *udaharana* which the universal concomitance together with example. The fourth is *upanaya* or application of the universal concomitance to the present case. The fifth is *nyamana* or conclusion drawn from the preceding propositions. These five members of Indian syllogism are called *Anvaya*.

In the Aristotelian syllogism, the character which is inferred (fire) is called *sadhyas*; the mark on the strength of which the character is inferred is the *hetu* (smoke); the subject where the character is inferred is *poksa* (hill). The three terms correspond to the major, the middle and the minor terms.

Linga-paramarsha: The Nyaya syllogism has five terms. Among them, middle term works as a bridge between the major and the minor terms. Therefore, the middle term has main responsibility to prove a syllogism valid or invalid. How a middle term is related to major term is *linga-paramarsha*. There are five characteristics of a middle term.

Vyapati (Invariable Relation)

The word 'vyapti' literally means 'the state of pervasion.' It implies a correlation between two facts, of which one is pervaded (*vydipsya*), and the other pervades (*vydipaka*). A fact is said to pervade another when it always accompanies the other. A fact is said to be pervaded by another when it is accompanied by the other. In the given example, smoke is pervaded by fire, since it is always accompanied by fire. But while all smoky objects are fiery, all fiery objects are not smoky, e. g., the red hot iron ball. Thus, *vydipi* is a relation of invariable concomitance between middle term and the major term. Without the definite knowledge of such a relation, our inference of fire is impossible in spite of the perception of smoke.

STRUCTURE AND KINDS OF ANUMANA (INFERENCE)

Knowledge that comes after perception is inferential or relational and it is called inference. *Anumana*, etymologically means 'secondary proof'. The data for inference are derived from perception and verbal testimony.

There are two main groups of inference and they are as follows.

1. **Vyapti:** It is when universal relation such as between fire and smoke is known.
2. **Paksadharmata:** Fire is inferred on the hill, where smoke is perceived in it.

A *vyapti* may be of two types and they are as follows.

1. *Samanyavyapti*
2. *Asamanyavyapti*

A *vyapti* between terms of equal extension is called *samanyavyapti* or equipollent concomitance, for example 'nameable' and 'knowable'. Whatever is nameable is knowable and again whatever is knowable is nameable. Here, we can infer either of the terms from the other.

On the other hand a *vyapti* between terms of unequal extension is called *asamanyavyapti*. Fire is present in all cases wherever smoke is present, but the reverse is not true.

The *Naiyayikas* maintain that there are five ways or methods for the establishment of *vyapti*. They are the following:

1. **Anvaya or agreement in presence:** *Vyapti* is a relation of agreement in presence (*anvaya*) between two things.
2. **Vyatireka or agreement in absence:** The *hetu* and the *sādhyo* should agree in being absent together.
3. **Vyabhicāragraha:** We do not observe any contrary instance in which one of them is present and the other is absent. That is, they must be related to each other.
4. **Upādhanirasa or elimination of condition:** *Vyapti* is an unconditional relationship which is universal and necessary. An adventitious condition may vitiate the natural and invariable relation between *hetu* and *sādhyo*.
5. **Tarka or hypothetical reasoning:** *Tarka* is an indirect method to get the *vyapti*. All the methods

mentioned above are direct methods. Ratiocination is the process of thinking about something in a logical way for the to establish the *vyapti*.

6. **Sāmānyalakṣaṇa pratyakṣa:** *Sāmānyalakṣaṇa pratyakṣa* is an extraordinary perception. They maintain that when we perceive an individual case, we also perceive all the actual and possible instances of fire and smoke.

Hetvabhāsa (Fallacies of Inference)

In Indian logic a fallacy is called *hetvabhāsa*. It means that middle term appears to be a reason but is not a valid reason. All fallacies are material fallacies. We have mentioned the five characteristics of a valid middle term. When these are violated, we have fallacies. Five kinds of fallacies are recognized and they are as follows.

1. **Asiddhā or sādhyasama:** This is the fallacy of unproved middle.
2. **Savyabhicāra:** This is the fallacy of irregular middle.
3. **Satpratipakṣa:** Here, the middle term is contradicted by another middle term.
4. **Bādhitā:** It is the non-inferentially contradicted middle.
5. **Viruddhā:** It is the contradictory middle.

Though there is a variance between the six orthodox schools regarding the sources of knowledge, it is a well-accepted fact that all schools have acknowledged *Pratyakṣa*, *Anumāna* and *Shūbda* as valid sources of knowledge. The knowledge through sense experience is considered to be the basic source even in other *pramāṇas* for further evidences and validation.