Logic (47)

Introduction

One of the important defining characteristics of 'man' is his rationality i.e. his capacity to think consistently and to draw conclusions from the information he receives.

Although this power is natural to every human being, scholars have identified the rules of reasoning which he makes use of, without being conscious of them. This is the Science of Logic. Traditionally, Logic was known and esteemed as the Queen of all Sciences as it is training of Logic, that sharpens reasoning capacity and makes one to understand arguments and detect fallacies in them if any. Logic thus happens to be the fundamental discipline useful for all branches of knowledge. With introduction of Logic at +2 Level, students will be able to understand, argue and convince with considerable amount of maturity. It will also contribute in enriching their power of critical thinking which is necessary in present situation and to save us from various irrational forces operative in society. Positively, it may also help in overcoming various crises confronted by us.

Objective

To enable the students to

1. Acquire knowledge of fundamental terms, definitions, concepts, principles and theories of Logic.
2. Understand logic as the study of inference.
3. Understand the purpose of logic and enquiry in general.
4. Differentiate between various forms of statements and arguments.
5. Apply formal techniques to arguments.
6. Develop the ability of logical thinking.
7. Appreciate logical thinking.
8. Develop interest in logic.
9. Detect fallacies involved in arguments.
10. Make use of tools and techniques in logic for solving practical problems in their life.

Std. XI

Unit	Sub -Unit	
1.	**1.**	**Nature of Logic**
	1.1	Kinds of Inference • Deductive • Inductive
	1.2	Difference between two types of inferences
	1.3	Truth & Validity
2.	**2.**	**Nature of propositions**
	2.1	Nature of propositions - modern view
	2.2	Distinction between proposition and sentence
	2.3	Distinction between simple and compound propositions
	2.4	Distinction between truth –functional and non-truth-functional compound propositions, types of truth functional compound propositions
	2.5	Symbolisation of propositions • Propositional constants • Propositional variables • Propositional connectives
	2.6	Basic truth-tables for Propositional connectives
3.	**3.**	**Decision Procedure**
	3.1	Nature of decision procedure
	3.2	Truth-table – for statement forms

3.3 Tautology, Contradiction, Contingent
3.4 Testing validity of arguments using truth-table method

4. 4. The Method of Deduction

4.1 Deductive Proof
4.2 Direct proof
4.3 Rules of Inference and Rule Of Replacement
4.4 Conditional proof
- Arguments
- Tautology

5. 5. Introduction to Traditional logic

5.1 Categorical Propositions
5.2 A, E, I, O propositions
5.3 Square of opposition of propositions
5.4 Representation of A, E, I, O using Venn diagrams

6. 6. Types of Inductive inference

6.1 Types of Inductive inference
- Ordinary inference
- Simple enumeration
- Analogy
- Hypothetico – deductive method

7. 7. Non-formal fallacies

7.1 Distinction between formal & non-formal fallacies
7.2 Various forms of non-formal fallacies
- Division and composition
- Accident and converse fallacy of accident

Ignoratio Elenchi :
- Argumentum ad baculum
- Argumentum ad hominem
- Argumentum ad populum
- Argumentum ad verecundiam
- Argumentum ad misericordiam
- Argumentum ad ignoratiam

8. 8. Difinition

8.1 Nature and purposes of definition
8.2 Kinds of definition
- Ostensive
- Extensive
- Biverbal
- Definition per genus et differentiam
- Stipulative definition
- Lexical definition

9. 9. Project work (20 marks)
Project Work has been newly introduced in the Std. XI Logic syllabus as per the new guidelines.

Std. XII

Section I :

Unit **Sub –Unit**

1. 1. Traditional Logic

Importance and relevance of logic to life.
1.1 Classification of propositions
1.1.1 Distribution of Terms
1.2 Types of inferences – Mediate and immediate
1.3 Opposition of Propositions,
1.3.1 Deciding relation of propositions on the basis of opposition of proposition
1.3.2 Deciding inter value of propositions on the basis of opposition of propositions.
1.4 Conversion, Obversion, Education

2. 2. Decision procedure

2.1 Principle of reduction ad absurdum.
2.2 Shorter Truth – table method

3. 3. Deductive proof

3.1 Indirect proof of tautology & arguments

4. 4. Predicate Logic

4.1 Need for Predicate Logic

4.2 Types of proposition

- Singular
- General (Existential universal)

4.3 Propositions, Function and deriving Propositions from propositional function and vice versa.

- Instantiation and
- Quantification / Generalization

4.4 Symbolization of propositions

4.5 Nature of quantificational deduction

4.6 Rules of quantificational deduction – U.I, U.G, E.I & E.G.(preliminary version)

4.7 Deductive proof of arguments involving quantifiers (Direct proof)

5. 5. Grounds of Induction

5.1 Material grounds of Induction

5.1.1 Observation

5.2.2 Experiment

5.2 Formal grounds of Induction

5.2.1 Notion of cause

5.2.2 Popular Notion of cause

5.2.3 Scientific Notion of cause

6. 6. Hypothesis

6.1 Definition and nature of hypothesis

6.2 Origin of hypothesis

6.3 Conditions of good hypothesis

6.4 Types of hypothesis

- Working hypothesis
- Ad Hoc hypothesis

6.5 Verification and confirmation of hypothesis

6.6 Established hypothesis as a law or theory of science.

7. 7. Project work (20 marks)

Project work has been newly introduced in the standard XII Logic Syllabus as per the new guidelines.

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