

B.A Semester—III
PHLMAJ-2024
Formal Logic
Philosophy (Major)

Unit- III: Introduction to rules of inference:

Unit Structures:

1. Formal proof of validity.
2. Proving Invalidity.
3. Conditional proof.

Course Objectives:

- To understand the rules of inference.
- To give some solved examples of rules of inference.

Introduction:

This Unit introduces the rules of inference and uses of the rules in case of formal proof of validity. It also provides some solved examples of the rules of inference in order to know how the rules of inference are applied to test the validity of arguments.

Rules of Inference:

There are nine rules of inference. These rules are considered self-evident and are therefore valid without any proof. On the basis of these rules we can determine or test the validity or invalidity of arguments. As we can derive a conclusion on the basis of these self-evident rules, so the method of deriving a conclusion from the rules is called deductive method. The Rules of inference are:

1. Modus Ponens (M.P):

$p \supset q$
 p
 $\therefore q$

2. Modus Tollens :

$p \supset q$
 $\sim q$
 $\therefore \sim p$

3. Disjunctive Syllogism :

$p \vee q$
 $\sim p$
 $\therefore q$

4. Hypothetical Syllogism :

$$P \supset q$$

$$q \supset r$$

$$\therefore P \supset r$$

5. Conjunction :

$$p$$

$$q$$

$$\therefore P \cdot q$$

6. Simplification :

$$p \cdot q$$

$$\therefore P$$

7. Addition:

$$P$$

$$\therefore P \vee q$$

8. Constructive Dilemma:

$$(p \supset q) \cdot (r \supset s)$$

$$p \vee r$$

$$\therefore q \vee s$$

9. Destructive Dilemma:

$$(\sim p \supset q) \cdot (\sim r \supset s)$$

$$\sim q \vee \sim s$$

$$\therefore \sim p \vee \sim r$$

Solved Examples of rules of inference:

(A) 1. $(p \supset q)$

2. $(q \supset s)$

3. $P \therefore S$

4. $P \supset s$ ---1,2, H.S

5. S -----4,3, M.P

(B) 1. $(P \supset q) \supset r$

2. $S \vee p$

3. $\sim s \therefore r$

4. P -----2,3, D.S

5. $P \vee q$

6. r -----1,5 M.P

Let us sum up:

- Rules of inference are considered self-evident and these rules are known as deductive method.
- Modus Ponens means affirmation of the antecedent and on that basis consequent is affirmed.
- Modus Tollens means the denial of the consequent and on that basis the antecedent is denied.
- This argument holds that if one of the options or disjuncts is denied in the minor premise, the other option or disjunct is accepted in the conclusion.

Further Readings:

- (1) Copi, Cohen(1995) ; Introduction to Logic (fifth Edition); New Delhi: Prentice – Hall of Indian private Limited.
- (2) Singh, S. Shyam Kishore (2000) ; Modern Logic (Volume one); Lamyana Press.

B.A Semester—I
PHLMAJ-1014
Greek Philosophy
Major (Core Subject)

Unit 1: Ancient Greek Philosophy

Sub Title: (The Ancient Greek Philosophy)

- Thales
- Anaximander
- Anaximenes

Course Objectives:

- To explain the World as a whole with help of natural stuffs.
- To highlight the ancient three Greek free thinkers.

Introduction:

Thales, Anaximander and Anaximenes were the ancient three Greek Philosophy. They were all Philosophers of Ionia. The first thinker is said to be **Thales (C.624-C.—550 B.C.E)**.Thales asserted that the ultimate reality is water. This universe is formed with water.

Anaximander (C.610C. -547B.C.E.) Was a pupil of Thales who maintained that the fundamental stuffs must be boundless and indeterminate for which the world is constituted. Anaximander believed that the world is governed by the opposites like hot and cold, wet and dry.

Anaximenes(C.588 C.—524 B.C.E.) named air as the first principle of the universe. Anaximenes believed two opposite processes-

Rarefaction and Condensation. Rarefaction is identified with growing hot and Condensation is identified with cold. Rarefied air becomes fire and air by condensation becomes clouds.

Thales, Anaximander and Anaximenes were all materialists. They were Sophists of the world. They attempted to establish scientific enquiry.

Course Outcomes:

Completion of this course, students will be able to understand the basic knowledge of Greek philosophy along with the epistemology and metaphysical problems of the philosophy. Greek philosophy offers a foundation in thinking about fundamental questions and ethics. So that, Students should expand this foundation by developing critical thinking and practical application of knowledge.

Recommended Reading:

Stace W.T. : *A Critical History of Greek Philosophy*.

Barnet. J. : *Early Greek Philosophy*.

B.A Semester—III

PHLMAJ-2024
Formal Logic

Sub- Philosophy

Major

Unit-II: Introduction to Predicate Logic and truth function:

Unit Structures:

1. Propositional and predicate Logic, Variable & constants.
2. Truth-function, Truth-table for complex expression. Interdefinability of Logic connectives.
3. Truth-table method to test the validity of argument, indirect method.

Course Objectives:

- To understand Logical Connectives
- To acquaint with Symbols used in modern Logic.
- To acquaint with Logical reasoning and testing the validity & invalidity of the reasoning.

Introduction:

There are five Logical Connectives.

Conditional statement (Material Implication) :

The Compound statement "If p then q" is called a Conditional statement. The statement if p and q is written in Symbolic form as $p \supset q$

In the statement if p the q, P is called antecedent and q is called consequence.

Conjunctive statement:

The Compound statements are combined by the word "and" are known as Conjunctive statement. This Conjunctive statement is symbolically expressed as $p \cdot q$ The Symbol dot (.) stands for "and"

Bio conditional (Material Equivalent):

The two Compound statements are connected by "if and only if" is known as Bioconditional Statement. The constant "if and only if" is represented by the Symbol " \equiv " The Symbol " \equiv " is also called Equivalent.

Disjunctive statement:

The two Compound statements are combined is called Disjunctive statement. This disjunctive statement is Symbolically written as $p \vee q$ The Symbol " \vee " (the latin word "vel") stands for "Either ---or"

Negative statement:

The Negative statement "not" referred to as negation and the negation statement is written as $\sim P$ the Symbol \sim is called "Curl" in the Greek term.

Truth –Table Method:

The Truth Table method is an ideal example of a decision procedure. This method helps us to show that one function is equivalent to another function by analyzing the components of the truth –tables. The validity of arguments involving the truth-functional compound statements can be tested by the truth –table method. The truth –function is an important concept in the truth-table method. We can define truth –function as a compound expression which contains variables, where the truth-values are determined by the truth –values of is compound variables. The truth –table method logicians decide whether a given compound expression is tautology, contradictory and contingency.

Course Outcomes:

After Completion of the Unit –II Course Students will be able to understand clearly the concepts of logical Connectives, its uses and truth –table method help to test the validity or invalidity of arguments.

Recommended Readings:

- Copi. I.M (2008). – Symbolic Logic.
- Hurley, Patrick (2007) – Introduction to Logic.