3 (Sem–2) PHL M 1

2015

PHILOSOPHY

(Major)

Paper : 2.1

(Logic)

Full Marks : 80

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following questions :   1×10=10

(a) Why is shorter truth table method called 'Indirect Truth Table Method'?

(b) A propositional function has no truth-value. Is this statement true?

(c) Apply the rule of material implication to the following expression :

$$\sim p \supset q$$

(d) State the rule of transposition.

(e) How many 'rules of replacement' are there?

[P.T.O.

(f) Identify the following rule :

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

(g) Find out the correct answer :

A general proposition is obtained by the process of quantification / instantiation from a propositional function.

(h) State the figure of the syllogism of which FERIO is a valid mood.

(i) Symbolize the following statement in predicate logic :

"Dinosaurs do not exist."

(j) How many valid moods are there in the third figure of a syllogism?

2. Answer the following in brief : 2×5=10

(a) What is a decision procedure? Is indirect truth table method a decision procedure?

(b) State two differences of the rule of inference and the rule of replacement.

(c) State two rules of syllogism.

(d) What is the meaning of MP?

(e) What is Barbara? Give an example.

3. Give short answers for the following questions (any *four*) : 5×4=20

(a) Define formal proof of validity and state its nature.

(b) Write a short note on propositional function.

(c) Write a short note on indirect proof.

(d) Write a note on the structure of standard form of categorical syllogism with a suitable example.

(e) Represent the four-fold scheme of AEIO propositions through Venn diagram.

(f) What is a singular proposition? Symbolize the following propositions in predicate logic : 1+4=5

   (i) Sakuntala is pure.

   (ii) Russell is a mathematician.

4. Symbolize the following arguments and construct shorter truth table to determine their validity or invalidity : 5+5=10

(a) Either you are honest or corrupt.
   You are not honest.
   ∴ You are corrupt.

(b) If you do not attend the party, then you will not be happy.
   You will not attend the party.
   ∴ You will not be happy.

Or

What is shorter truth table method? Why is it called the method of 'reductio ad absurdum'? Explain the mechanism of shorter truth table method with an example.

2+2+6=10

5. Construct formal proof of validity for the following arguments :

5+5=10

(a) $E \supset F$

$E \supset G / \therefore E \supset (F \cdot G)$

(b) $F \supset (\sim H \cdot G)$

$Z \supset H$

$F / \therefore \sim Z$

Or

Explain the strategies for constructing formal proof of validity with suitable example.

10

6. Define categorical syllogism with special reference to its features.

4+6=10

Or

Prove the validity or invalidity of the following syllogistic arguments with the help of Venn diagram :

5+5=10

(a) All criminals are parasites.

Some neurotics are not parasites.

∴ Some neurotics are not criminals.

(b) All musicians are baseball fans.

No musicians are astronauts.

∴ No astronauts are baseball fans.

7. What are the rules of universal and existential quantifier? Prove the validity of the following arguments by applying the rules of quantifiers :

2+4+4=10

(a) All philosophers are wise.

Socrates is a philosopher.

∴ Socrates is wise.

(b) All animals are mortal.

All human beings are animals.

∴ All human beings are mortal.

Or

What is quantification? Explain how the following propositions are symbolized with the help of quantifiers :

2+8=10

(a) All philosophers are mathematicians. (A)

(b) No philosophers are realists. (E)

(c) Some philosophers are scientists. (I)

(d) Some philosophers are not reliable. (O)

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