3 (Sem-2) PHL M 1

2013

PHILOSOPHY

(Major)

Paper : 2.1

(Logic—II)

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) State the logical form of the rule of inference, called disjunctive syllogism.

(b) Can formal proof of validity proof the invalidity of an argument?

(c) State the position of the middle term in the Third figure of a syllogism.

(d) Find out the correct answer :

'The fallacy of ambiguous middle' is a form of the fallacy of four terms/undistributed middle/none of them.

(e) What is BRAMANTIP?

(f) What is the meaning of the Latin phrase 'Reductio ad absurdum'?

(g) Name the logician who is credited for the discovery of quantification.

(h) Do you think that predicate logic includes propositional logic?

(i) State True or False :

A singular proposition is a substitution instance of a propositional function.

(j) What is Venn diagram?

2. Answer the following questions : $2 \times 5 = 10$

(a) What is constructive dilemma (CD)?

(b) State the definition of formal proof of validity as given by I. M. Copi.

(c) Which one of the following forms of material equivalence is correct?

(i) $(p \equiv q) \equiv [(p \cdot q) \vee (\sim p \cdot \sim q)]$

(ii) $(p \equiv q) \equiv [(p \vee q) \cdot (\sim p \cdot \sim q)]$

(d) State the definition of syllogism as given by Aristotle.

(e) Symbolise the following statement in predicate logic :

Only children are honest.

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

(a) Distinguish between instantiation and quantification.

(b) State two differences between rules of inference and rules of replacement.

(c) Describe how to symbolise a singular proposition.

(d) Symbolise the traditional A, E, I and O proposition through Venn diagram.

(e) State the distinction between a propositional function and proposition.

(f) What is predicate logic? State one special utility of predicate logic over propositional logic.

4. Explain shorter truth table method along with the mechanism behind the formation of shorter truth table method. 3+7=10

Or

Symbolise the following arguments and prove their validity or invalidity by shorter truth table method : 10

(a) Either Sanjib is guilty or Bipul and Madhab.

If Sanjib is guilty then Madhab is guilty.

∴ Madhab is guilty.

(Using p, q and r for Sanjib, Bipul and Madhab respectively.)

(b) If Gandhi is honest then Nehru is intelligent.

Gandhi is honest.

∴ Nehru is intelligent.

(Using p and q for Gandhi and Nehru respectively.)

5. How many sets of rules are there in formal proof of validity? State the rules of inference in their logical form. 1+9=10

Or

Construct a formal proof of validity for the following arguments : 5×2=10

(a) 1. $(F \supset G) \cdot (H \supset I)$

2. $F \vee H$

3. $(F \supset \sim I) \cdot (H \supset \sim G) \quad / \therefore G \equiv \sim I$

(b) 1. $(A \cdot B) \supset [A \supset (D \cdot E)]$

2. $(A \cdot B) \cdot C \ / \therefore D \vee E$

6. Define categorical syllogism indicating its features. State the structure of a categorical syllogism. 5+5=10

Or

Prove the validity or invalidity of the following syllogistic arguments with the help of Venn diagram : 10

(a) All meritorious students are students who enjoy their study.

No students who enjoy their studies are fickle minded.

$\therefore$ No fickle minded students are meritorious students.

(b) No poor man are happy.

Some honest persons are poor man.

$\therefore$ Some honest persons are not happy.

7. Explain universal and existential quantifiers. Symbolise different forms of general proposition by using quantifiers. 4+6=10

Or

What are the rules of quantifiers? Prove the validity of the following arguments in predicate logic :

2+4+4=10

(a) All philosophers are honest.

Socrates is a Philosopher.

∴ Socrates is honest.

(b) All men are wise.

All scientists are men.

∴ All scientists are wise.

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