# 2 0 1 4

## 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 as directed :     1×10=10

   *(a)* State one advantage of using shorter truth table method.

   *(b)* Is shorter truth table method a decision procedure?

   *(c)* Find out the correct answer from given options :

   Shorter truth table method is a part of propositional logic/predicate logic.

   *(d)* Name the fallacy which is involved, when both the premises of a categorical syllogism are negative.

    *( Turn Over )*

(e) Darii is a valid mood of the third figure. Is it true?

(f) What is illicit major?

(g) Name the figure of the syllogism in which Darapti is a valid mood.

(h) What is a quantifier?

(i) What is the Latin name of the rule 'Modus Ponens'?

(j) How many circles one needs to draw to test a categorical syllogism through Venn diagram?

2. Answer the following as directed :           2×5=10

(a) Why is shorter truth table method called 'indirect truth table' method?

(b) State why the procedure of formal proof of validity is called a formal proof.

(c) State the names of the two sets of rules of formal proof of validity.

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

(e) "Socrates is honest"

   (i) Identify the proposition.

   (ii) Symbolise the proposition in terms of predicate logic.

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

(a) Explain the difference between rules of inference and rules of replacement.

(b) What is a figure of a syllogism? Demonstrate the figures of syllogism with proper symbolic form.           1+4=5

(c) Name any five rules of inference with appropriate symbolic expression.

(d) Distinguish between singular and general proposition.

(e) What is conditional proof? Explain.

4. Explain shorter truth table method with a suitable example.           5+5=10

*Or*

Prove the validity or invalidity of the following arguments by shorter truth table method : 10

(a) If either Anita or Jayanta goes to the party, then Nomami does not have to pick up Amar

Anita is not going to the party

Nomami has to pick up Amar

∴ Jayanta is not going to the party

(b) If you finish the job by Friday, then you get the bonus

You do not finish the job by Friday

∴ You do not get the bonus

5. What is formal proof of validity? State ten rules of replacement. 5+5=10

*Or*

Construct a formal proof of validity for the following arguments : 10

(a) $A \supset B$

$A \lor (B \lor \sim C)$

$\sim B$

∴ $\sim C \cdot \sim B$

(b) $S \supset T$

$S \lor T$

∴ $T$

6. What is categorical syllogism? Explain the chief features of categorical syllogism. 4+6=10

*Or*

Test the following syllogistic arguments with the help of Venn diagram : 5+5=10

(a) All great scientists are college graduates

Some professional athletes are college graduates

∴ Some professional athletes are great scientists

(b) All players are men

No men are idiots

∴ No idiots are players

7. What is predicate logic? Distinguish predicate logic from propositional logic. Symbolise the following statements in terms of predicate logic : 2+3+5=10

(a) Tiger exists

(b) Only teachers are honest

*(c)* Everything is temporary

*(d)* Some people are not reliable

*(e)* All scientists and mathematicians are philosophers

*Or*

What is quantification? How it can be distinguished from instantiation? Explain the rules of universal generalisation and universal instantiation.   2+3+5=10

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