

2007

PHILOSOPHY

FIFTH PAPER

(Logic)

Full Marks : 80

Time : 3 hours

*The figures in the margin indicate full marks**For the question**Write the answers to the two Halves
in separate books***FIRST HALF**Answer any **two** questions

1. What is a logic? Explain the fundamental ideas of logic. 5+15= 20
2. What is a truth function? Explain conjunctive, disjunctive and implicative truth functions giving their respective truth tables. 5+15=20
3. (a) Symbolize the following statements (Use letters *A*, *B*, *C*, *D*): 4+4=8
 - (i) If *A* does not win the game then if *B* wins the game then either *C* will not win the game or *D* will not win the game.
 - (ii) Either *A* will win, the game or if *A* does not win the game then both *B* and *C* will win the game.

- (b) Find out which of the following are tautologies with the help of truth tables : 4x3= 12

- (i) $(p \supset q) \supset [\sim p \supset (q \cdot p)]$
- (ii) $(p \supset q) \supset [p \supset (q \cdot p)]$
- (iii) $(p \vee r) \vee [(p \supset q) \vee r]$

4. Using truth table method find out which of the following arguments are valid : 5x4= 20

- (i) $(p \supset q) \supset (\sim p \cdot q)$
 $(p \supset q)$
 $\therefore (\sim p \cdot q)$
- (ii) $(p \vee q) \supset (p \cdot q)$
 $\sim (p \cdot q)$
 $\therefore \sim (p \vee q)$
- (iii) $(p \supset q) \cdot p$
 $\therefore p \supset q$
- (iv) $(p \vee q) \vee q$
 $\sim (p \vee q)$
 $\therefore q$

SECOND HALFAnswer *any* **two** questions

5. What are singular and general propositions? Explain them mentioning the method of their symbolization. 20
6. What are the four types of traditional propositions? Explain how they are related to each other. 20

(3)

7. Define a set. Explain the following

- (a) Set inclusion
- (b) Set identity
- (c) Set membership
- (d) Set intersection
- (e) Set union.

8. Symbolize the following by means of set notation :

- a)* Socrates is a philosopher.
- b)* All flowers are beautiful.
- c)* Some Americans are philosophers.
- d)* No tigers are lions.
- e)* All fruits and vegetables are nutritious

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