

2015

M.A.

1st Semester Examination

PHILOSOPHY

PAPER—PHI-102

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

(Western Logic)

UNIT—I

Group—A

Answer any one question.

1. (a) Answer the following questions (any four) : 4×2

- (i) Distinguish between singly general and multiply general prepositions.
- (ii) Distinguish between free variable and bound variable.

(Turn Over)

- (iii) What are the characteristics of propositional functions ?
- (iv) What is vacuous quantification ?
- (v) In what sense can a propositional function be said to follow validly from propositions ?

(b) Symbolize the following prepositions :

(Use the suggested notation in each case) —

(any four) : 4×2

- (i) If something is damaged, but nobody is blamed, the tenant will not be charged for it. (Dx : x is damaged ; Px : x is a person ; Bx : x is blamed ; Cx : x will be charged to the tenant.)
- (ii) If all ripe bananas are yellow, some yellow things are ripe. (Rx : x is ripe ; Bx : x is a banana ; yx : x is yellow.)
- (iii) If there are any survivors and only women are survivors, then they are women. (Sx : x is a survivor ; wx : x is a woman.)
- (iv) If any employees are lazy and some positions have no future, then some employees will not be successful. (Ex : x is an employee, Lx : x is lazy ; Px : x is a position ; Fx : x has a future ; Sx : x will be successful.)
- (v) Any car with good brakes is safe to drive and safe to ride in. (Cx : x is a car ; Bx : x has good brakes ; Dx : x is safe to drive ; Rx : x is safe to ride.)

2. (a) Prove the invalidity of the following arguments :

2×4

(i) $(x) (y) [Ax \supset (By \vee Cy)]$.

$(z) \{[(y) By \vee (y) Cy] \supset Dz\} / \therefore (\exists x) (\exists z) (Ax \supset Dz)$

(ii) $(x) (\exists y) (Hx \supset Iy)$

$(\exists y) (z) (Iy \supset Jz) / \therefore (x) Hx \supset (z) Jz$

(b) Construct a formal proof of validity for each of the following :

2×4

(i) $(\exists x) Gx \vee (y) (Gy \supset Hy)$

$(x) (Ix \supset \sim Gx) / \therefore (x) (Gx \supset Ix) \supset (y) (Gy \supset Hy)$

(ii) $(\exists x) (y) (Ix \equiv Jy) / \therefore (y) (\exists x) (Ix \equiv Jy)$

Group—B

Answer any one question :

1×4

3. Explain, in brief, the final version of Universal Generalization (UG).

4. Identify and explain all the mistakes in the following erroneous proof :

1. $(\exists x) (Fx \cdot Gx)$

2. $(\exists x) (\sim Fx \cdot Gx) / \therefore (\exists x) (Fx \cdot \sim Fx)$

3. $Fx \cdot Gy$

4. Fx — 3, simp.

5. Fx — 1, 3-4 EI
6. $\sim Fx \cdot Gx$
7. $\sim Fx$ — 6, simp.
8. $\sim Fx$ 2, 6-7 EI.
9. $Fx \cdot \sim Gx$ — 5, 8, conj.
10. $(\exists x) (Fx \cdot \sim Fx)$ 9, EG.

UNIT—II

Group—A

Answer any *one* question.

5. Answer the following questions.
- (a) Show that identity, membership and inclusion are distinct and different notions by considering the questions of symmetry and transitivity. Give suitable examples. 6
- (b) Prove that there is just one empty set. 4
- (c) Which of the following statements are true for all sets A, B and C? 3×2
- (i) $A \subseteq B \ \& \ B \in C \rightarrow A \notin C$
- (ii) $A \notin B \ \& \ B \notin C \rightarrow A \notin C$
- (iii) $A \subset B \ \& \ B \subseteq C \rightarrow \neg (C \subset A)$

6. (a) Explain with example the following fact about the empty set : 4

$$(\exists A) (\Lambda \in A) \ \& \ (\exists A) (\Lambda \notin A)$$

- (b) Letting :

A = The set of all positive integers.

B = {3, 5} ; C = {2, 4} ; D = {1, 4}.

Find the following :

(i) $A \sim D$;

(ii) $(B \cup C) \cap (B \cup D)$

(iii) $A \sim (C \cap D)$

(iv) $(A \sim C) \cup (A \sim D)$ 4×1

- (c) Test the validity of the following argument by Venn diagrams. State in terms of the region of the diagram why the argument is valid or invalid :

- (i) All liars are prejudiced.

Some witness are not liars.

\therefore Some witness are not prejudiced. 4

- (d) Are the following assumptions mutually consistent ?

Some Americans are Virtuous.

No Virtuous people steal from the poor.

Some Americans steal from the poor. 4

Group—B

Answer any *one* question.

7. If $V = \{1, 2, 3, 4, 5\}$, $A = \{1, 2\}$, $B = \{2, 3\}$,

what are the following :

(i) $\sim (A \cap B)$

(ii) $A \sim (\sim B)$

(iii) $\sim A \sim (\sim B)$

(iv) $\sim A \cap \sim B$

4×1

8. Symbolize the following sentences by using symbols of set theory : 4×1

(i) Men are numerous.

(ii) Fools and drunk men are truth-tellers.

(iii) All French murderers drink coffee, tea, and wine.

(iv) Tyrants are mortal.
