2017

M.A.

1st Semester Examination

PHILOSOPHY

PAPER—PHI-102

Subject Code—10

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.

Illustrate the answers wherever necessary.

(Western Logic)

Unit–I

Group-A

Answer any *one* question.

1. (a) Symbolize the following prepositions using quantifier, variables etc.   4×2

    (i) If any bananas are yellow, then some bananas are ripe. (Bx : x is banana ; Yx : x is yellow ; Rx : x is ripe)

    (ii) If all officers present are either captains or majors, then either some captains are present or some majors are present. (Ox : x is an officer ; Px : x is present; Cx : x is captain ; Mx : x is a major)

(Turn Over)

(iii) If any survivors are women, then if all women are fortunate, they are fortunate. (*Sx* : *x* is a servivor ; *Wx* : *x* is a women ; *Fx* : *x* is fortunate}.

(iv) If nothing is damaged, nobody will be blamed. (*Dx* : *x* is damaged ; *Px* : *x* is a person ; *Bx* : *x* will be blamed}

(b) Identify and explain the mistakes in the following erroneous "proofs".

(i) 1. $(\exists x)\ Fx\ /\ \therefore\ (x)\ Fx$
    2. Fy
    3. $(x)\ Fx$ — 2. UG
    4. $(x)\ Fx$ — 1, 2, –3 EI

(ii) 1. $(\exists x)\ (Fx.\ Gx)\ /\ \therefore\ (\exists x)\ Fx$
    2. $Fx.\ Gx$
    3. Fx — 2. sing
    4. Fx — 1, 2 – 3 EI
    5. $(\exists x)\ Fx$ — 4. EG   4+4

2. (a) Construct formal proof of validity for the following (any *two*) :   2×4

(i) $(\exists x)\ Ax \supset (y)\ (By \supset Cy)$
$(\exists x)\ Dx \supset (\exists y)\ By\ /\ \therefore\ (\exists x)\ (Ax\ .\ Dx) \supset (\exists y)\ Cy$

(ii) $(x)\ (Lx \supset Mx)$
$(x)\ (Mx \supset Nx)\ /\ \therefore\ (\exists x)\ Lx \supset (\exists y)\ Ny$

(iii) Any car with good brakes is safe to drive and safe to ride in. So, if a car is new, then if all new cars have good brakes, it is safe to drive. (*Cx* : *x* is car ; *Bx* : *x* has good brakes ; *Dx* : *x* is safe to drive ; *Rx* : *x* is safe to ride ; *Nx* : *x* is new).

(b) Prove the invalidity each of the following :   2×4

(i) $(x)\ (Kx \supset Lx)$
$(\exists x)\ (\exists y)\ (Lx\ .\ My)\ /\ \therefore\ (y)\ (Ky \supset My)$

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

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

Group-B

Answer any *one* of the following.

3. Explain the final version of Universal Generalization.   4

4. Answer the following :

(a) Distinguish between free variable and bound variable.

(b) In what sense can a propositional function be said to follow validly from other propositional functions ?

2+2

Unit–II

Group-A

Answer any *one* question.

5. (a) What is set ?   2

(b) Explain the principle of extensionality for sets.   4

(c) Distinguish between the following three statements : 4
   (i)   Elizabeth II is the present queen of England.
   (ii) Elizabeth II is a women.
   (iii) Women are human beings.

(d) Determine truth / falsity of the following three statements :   3×2
   (i)   If $A \leq B$ and $B \leq C$, then $A \leq C$.
   (ii) If $A \in B$ and $B \subset C$, then $A \subset C$.
   (iii) If $A \subset B$ and $B \in C$ then $A \in C$.

6. (a) Prove that there is one and only one empty set.　6

(b) Translate the following statements in set-theoretic notations :

  (i) All Americans are philosophers.

  (ii) Some Indians drink both coffee and milk.

  (iii) Some Germans who drink tea do not drink either coffee or milk.　6

(c) If
A = {1, 2}
B = {1, 3, 5}
C = {2, 3, 5, 7}
then, determine the value of

  (i) A ∪ B

  (ii) C ∩ (A ∪ B)　4

Group-B

Answer any *one* question.

7. Differentiate between identity, membership and inclusion.　4

8. (a) Show that the relation of membership is not transitive.

(b) Is 2 ∈ {{1, 2}, {3, 4}} ? If not, why ?　4