2022

1st Semester Examination

PHILOSOPHY

Paper : PHI 102

(Western Logic)

(Old Syllabus)

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***four*** of the following : 5×4=20

1. Differentiate between substitution and replacement with suitable example. 5

2. State the Rule of Indirect Proof. 5

3. Construct formal proof of validity by means of CP of each of the following arguments. 2½+2½

   (a) If you plant tulips, then your garden will bloom early, and if you plant asters, then your garden will bloom late. So if you plant both tulips and asters, then your garden will bloom both early and late. (T, E, A, L).

P.T.O.

(b) $(E \vee F) \supset G$

$H \supset (I \bullet J) / \therefore (E \supset G) \bullet (H \supset I)$

4. What is singular proposition? What is general proposition? What is substitution instance? 2+2+1

5. State the rule of EI following I.M. Copi. 5

6. Determine the truth value of the following statements by means of truth tree.

(a) $\sim[(P \vee Q) \equiv \sim(\sim P \bullet \sim Q)$

(b) $[(P \supset Q) \supset P] \supset P$ 2½+2½

Group - B

Answer any *two* of the following : 10×2=20

7. State the importance of quantificational logic. Differentiate between singly general and multiply general propositions. Translate the following propositions into logical notations.

$P \supset \sim\sim p$ 4+6

8. Construct a formal proof of validity of each of the following arguments :

(a) $(x)(Lx \supset Mx)$

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

(b) 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 a car.Bx : x has good brakes. Dx : x is safe to dive. Rx : x is safe to ride in.Nx : x is new). 4+6

9. (i) Prove invalidity of the following arguments. 3+3

(a) No Kittens are large. Some mammals are large. Therefore, no kittens are mammals.

(b) $(x)(\exists y)(Fx \equiv Gy) / \therefore (\exists y)(x)(Fx \equiv Gy)$

(ii) Symbolise each of the following propositions. 2+2

(a) If any bananas are yellow, they are ripe. (Bx : x is a banana. Yx : x is yellow. Rx : x is ripe.)

(b) If anything is damaged, someone will be blamed. (Dx : x is damaged. Px : x is a person. Bx : x will be blamed.)

10. State the importane of quantification logic. What is propositional function? What are the ways to get a proposition from a propositional function? Construct demonstrations of the following statement.

(a) $(x)(Fx \supset Gx) \supset [(x)Fx \supset (x)Gx]$ 3+2+2+3
