B.A. (Honours) Examination, 2019

Semester–IV

Philosophy

Course – H-8

Western Logic (Part-II)

(For Back Candidates)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin.

Answer ***any four*** questions.

1. (a) When is a statement tautologous? Give an example of a tautologous statement. 2

   (b) How can a statement form be identified as contingent? 2

   (c) Determine by constructing truth tables whether the following forms of statement are tautological, contradictory or contingent. 3×2=6

   (i) $\sim p \supset (p \supset q)$ (ii) $(p \supset q).(p.\sim q)$ (iii) $p \equiv (q.r)$

2. (a) Distinguish between an atomic (simple) and a compound statement. 2

   (b) What is a truth-functionally compound statement? 2

   (c) Use the shorter truth table technique to determine the validity or invalidity of the following arguments: 2×3=6

   (i) $J \supset (K.L)$
   $J v (K.L)$
   $\therefore K.L$

   (ii) $(E \supset F).(G \supset H)$
   $\sim F v \sim G$
   $\therefore \sim E v \sim H$

3. (a) What, according to I.M. Copi, is a Rule of Replacement? Explain how a Rule of Replacement is different from Copi's Rule of Inference. 1+3=4

   (b) Construct a formal proof of validity for each of the following arguments. 2×3=6

   (i) $(P v Q) \supset (R.S)$
   $\sim P \supset (T \supset \sim T)$
   $\sim R$
   $\therefore \sim T$

   (ii) $(P \supset Q).(R \supset Q)$
   $\therefore (P.R) \supset Q$

4. (a) What is a propositional function? Explain the ways in which propositions can be obtained from propositional function. 4

   (b) Construct a formal proof of validity for each of the following arguments: 2×3=6

   (i) $(x)(Kx \supset Lx)$
   $(x)[(Kx.Lx) \supset Mx]$
   $\therefore (x)(Kx \supset Mx)$

   (ii) $(x)(Fx \supset \sim Gx)$
   $(\exists x)(Hx.Gx)$
   $\therefore (\exists x)(Hx.\sim Fx)$

5. (a) How are individual constants and individual variables distinguished in Copi's language for quantificational logic? 2

P.T.O.

(b) Show that the following arguments are invalid: 4×2=8

(i) Pb

$(\exists x)(px.Qx)$

$\therefore Qb$

(ii) $(x)(Ax \supset\sim Bx)$

$(\exists x)(Cx.\sim Bx)$

$\therefore (x)(Ax \supset Cx)$

6. (a) State and explain the rule of Universal Generalization (UG). 6

(b) Can an existential statement be understood in terms of an universal statement? Explain your answer. 4