

B.A. (Honours) Examination, 2018

Semester-IV

Philosophy

Course- H-8 (Core)

Western Logic (Part-II)

Time-3 Hours

Full Marks-40

Questions are of value as indicated in the margin.

Answer **any four** questions

1. (a) When is a statement contradictory? Give an example of a contradictory statement. 2
(b) Determine by constructing truth-tables whether the following forms of statement are tautological, contradictory or contingent. 3×2
(i) $q \supset (p \supset q)$ (ii) $[p \equiv (q \equiv \sim r)] \equiv [(p \equiv q) \equiv \sim r]$ (iii) $[p.(q \supset r)] \supset (r \supset p)$
(c) How can a statement form be identified as contingent? 2
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
(i) $(A.B) \supset C$
 $B \supset (A \vee D)$
 $\sim D \supset C$
 $\therefore \sim A$
(ii) $(X \supset Y).Z$
 $X \vee Y$
 $\therefore X \supset Z$
3. (a) What, according to Copi, is a Rule of Replacement? Explain how a rule of Replacement is different from Copi's rule of Inference. 1+3
(b) Construct a formal proof of validity for each of the following: 2×3
(i) $Z \supset A$
 $Z \vee A$
 $\therefore A$
(ii) $(A \supset B).(C \supset B)$
 $\therefore (A.C) \supset B$
4. (a) What is a propositional function? Explain the ways propositions can be obtained from propositional functions. 4
(b) Construct a formal proof of validity for each of the following: 2×3
(i) $(x)(Fx \supset Gx)$
 $(\exists x)(Hx. \sim Gx)$
 $\therefore (\exists x)(Hx. \sim Fx)$
(ii) $(x)[Ax \supset (Bx.Cx)]$
 $(\exists x)(Ax.Dx)$
 $\therefore (\exists x)(Cx.Dx)$
5. (a) How are individual constants and individual variables distinguished in Copi's language for quantificational logic? 2
(b) Show that the following arguments are invalid. 4×2
(i) $(x)[Ax \supset Bx]$
 $(\exists x)(Cx. \sim Ax)$
 $\therefore (\exists x)(Cx. \sim Bx)$
(ii) $(x)[Ax \supset Bx]$
 $(\exists x)(Cx. \sim Bx)$
 $\therefore (x)(Cx \supset \sim Ax)$
6. (a) State and explain the Rule of Existential Generalization. 6
(b) Can a universal statement be understood in terms of an existential statement? Explain your answer. 4