B.A. (Honours) Examination, 2019

Semester–IV (CBCS)

Philosophy

Course – CC-8

Western Logic (Part-II)

Time: Three Hours **Full Marks: 60**

Questions are of value as indicated in the margin.

Answer ***any four*** questions.

1. (a) State and explain following I.M. Copi, the difference between a rule of inference and a rule of replacement. 3

(b) For each of the following arguments, construct a formal proof of validity: 4×3=12

(i) $(M v N) \supset (O.P)$

$(O v Q) \supset (\sim R.S)$

$(R v T) \supset (M.U)$

$\therefore \sim R$

(ii) $(A v B) \supset [(C v D) \supset E]$

$\therefore A \supset [(C.D) \supset E]$

(iii) $(P v Q) \supset (R.S)$

$\sim P \supset (T \supset \sim T)$

$\sim R$

$\therefore \sim T$

2. (a) Prove the invalidity of each of the following arguments by the method of assigning truth values: 4×2=8

(i) $J \supset (K \supset L)$

$K \supset (\sim L \supset M)$

$(L v M) \supset N$

$\therefore J \supset N$

(ii) $T \equiv U$

$U \equiv (V.W)$

$V \equiv (T v X)$

$T v X$

$\therefore T.X$

(b) Use the method of conditional proof to verify that the following is a tautology: 4

$[(A v B) \supset C] \supset \{[(C v D) \supset E] \supset (A \supset E)\}$

(c) Use the method of indirect proof to verify that the following is a tautology: 3

$P \equiv \sim\sim P$

P.T.O.

3. (a) State and explain following I.M. Copi, the difference between an argument and an argument form. 3

(b) Use the tree method to decide for each of the following arguments whether it is valid or invalid: 4×3=12

(i)	(ii)	(iii)
$N \supset (N \supset O)$	$(E \supset F).(G \supset H)$	$J \supset (K.L)$
$N \supset N$	$\sim Fv \sim G$	$Jv(K.L)$
$\therefore N \supset O$	$\therefore \sim Ev \sim H$	$\therefore K.L$

4. (a) Distinguish following I.M. Copi, between a propositional function and a proposition. 3

(b) Construct a formal proof of validity for each of the following arguments: 4×3=12

(i)	(ii)	(iii)
$(x)(Kx \supset Lx)$	$(x)(Fx \supset \sim Gx)$	$(x)(Ax \supset Bx)$
$(x)[(Kx.Lx) \supset Mx]$	$(\exists x)(Hx.Gx)$	$(\exists x)(Ax \text{ v } Bx)$
$\therefore (x)(Kx \supset Mx)$	$\therefore (\exists x)(Hx.\sim Fx)$	$\therefore (\exists x)Bx$

5. (a) Explain, with examples, the notion of scope of a quantifier. 3

(b) Prove that each of the following arguments is invalid. 4×3=12

(i)	(ii)	(iii)
Pb	$(x)(Ax \supset \sim Bx)$	$(x)(Ax \supset \sim Bx)$
$(\exists x)(Px.Qx)$	$\sim Ac$	$(\exists x)(Cx.\sim Bx)$
$\therefore Qb$	$\therefore Bc$	$\therefore (x)(Ax \supset Cx)$

6. (a) Explain following I.M. Copi the *Reductio-Ad-Absurdum* (shorter truth table) method for determining the validity of a truth-functional argument. 10

(b) State and explain following I.M. Copi, the rule of Universal Generalization (UG). 5