

P.G. 1st Semester-2017**PHILOSOPHY****(Logic)****Paper : MPHICCT-101**

Full Marks : 40

Time : 2 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*Answer any **four** of the following questions:

10×4=40

1. a) Use the method of conditional proof to verify that the following are tautologies:
 - i) $q \supset (p \supset q)$
 - ii) $(q \supset r) \supset [(p \supset q) \supset (p \supset r)]$
- b) Use the method of indirect proof to verify that the following are tautologies:
 - i) $(p \supset q) \vee (p \supset \sim q)$
 - ii) $\sim [(p \supset \sim p) \cdot (\sim p \supset p)]$ 2.5×4=10

[Turn over]

2. Symbolize the following propositions (any **four**):
2.5×4=10

- a) No coat is waterproof unless it has been specially treated. (Cx, Wx, Sx)
- b) A professor is a good lecturer, if and only if, he is both well informed and entertaining. (Px, Gx, Wx, Ex)
- c) If there are any survivors and only women are survivors, they are fortunate. (Sx, Wx, Fx)
- d) If any husband is unsuccessful, then if all wives are ambitious, then some wives will be disappointed. (Hx, Sx, Wx, Ax, Ux)
- e) If any employees are lazy, then if some positions have no future, then they will not be successful. (Ex, Lx, Px, Fx, Sx)
- f) If nothing is damaged, nobody will be blamed. (Dx, Cx)

3. Construct a formal proof of validity of the following arguments (any **two**): 5+5=10

- i) All pets are gentle. Therefore, if any dogs are excitable and no excitable dogs are gentle, they are not pets. (Px, Gx, Dx, Ex)
- ii) If something is lost, then everyone values his possessions, it will be missed. If anyone

values his possessions, so does everyone.
Therefore, if something is lost, then someone values his possessions, then something will be missed. (Lx, Px, Vx, Mx)

iii) $(x)(\exists y)(Ex \vee Fy) / \therefore (x)Ex \vee (\exists y)Fy$

4. Construct demonstrations for any **two** of the following: 5+5

i) $(x)(Fx \supset Q) \supset [(\exists x)Fx \supset Q]$

ii) $(\exists x)(Fx \vee Q) \equiv [(\exists x)Fx \vee Q]$

iii) $[(\exists x)(Fx \supset (\exists x)Gx)] \equiv (\exists x)(Fx \supset Gx)$

5. Prove that each of the following arguments is invalid: 5+5

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

$(x)(Mx \supset Nx)$

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

ii) $(x)(\exists y)(Gx.Hy)$

$/ \therefore (x)Gx.(y)Gy$

6. Write short notes on: 5+5

a) Decision Procedure

b) U.I

7. Test the validity by tree method (any **two**):

5+5

a) Alma does not love all who love her.
She loves the Baron.

He loves her.

b) Alma loves herself.

Alma loves someone who does not love her.

c) Alma loves some who does not love her.
She loves none but Baron.

He loves her if she loves him.