PG/IS/PHIL-103/10

M.A. 1st Semester Examination, 2010

PHILOSOPHY

(*Western Logic*)

COURSE—PHI- 103

Full Marks : 40

Time : 2 hours

Answer any **two** from Group—A and
one from Group—B

The figures in the right-hand margin indicate marks

*Candidates are required to give their answers in their
own words as far as practicable*

Illustrate the answers wherever necessary

GROUP—A

Answer any *two* of the following

1. Symbolize each of the following proposition. In each
   case use the suggested notations.   2 x 8

   (*i*) If all dogs are carnivorus, then some animals are
   carnivours. (*Dx* , *Cx* , *Ax*)

(*ii*) If something is missing, then if nobody calls the police, someone will be unhappy.

  (*Mx* , *Px* , *Cx* , *Ux*)

(*iii*) If any husband is unsuccessful, then if all wives are ambitious, then some wives will be disappointed.

  (*Hx* ; *x* is a husband, *Sx*: *x* is successful, *Wx*: *x* is a wife, *Ax*: *x* is ambitious, *Dx*: *x* will be disappointed)

(*iv*) If any employees are lazy and some positions have no future, then some employees will not be successful.

  (*Ex*: *x* is an employee, *Lx*: *x* is lazy, *Px*: *x* is a position, *Fx*: *x* has a future, *Sx*: *x* will be successful)

(*v*) If any survivors are women, then if all women are fortunate, they are fortunate.

  (*Sx*: *x* is a Survivors, *Wx*: *x* is a woman, *Fx*: *x* is fortunate)

(*Continued*)

(*vi*) If anything is damaged, the tenant will be charged for it.

(Dx : x is damaged, Cx : x will be charged to the tenant)

(*vii*) If all survivors are fortunate and only women are survivors, then if there are any survivors, then some women are fortunate.

{Sx : x is a survivor, Fx : x is fortunate, Wx : x is a woman}

(*viii*) If any bananas are yellow, then if all yellow bananas are ripe, they are ripe.

{Bx : x is a banana, Yx : x is yellow, Rx : x is ripe).

2. Construct a formal proof of validity for each of the following arguments : 4 x 4

(*i*) $(x)(\exists y)(Kx \cdot Ly) \mid \therefore (\exists y)(x)(Kx \cdot Ly)$

(*ii*) $(x)(\exists y)(Ex \lor Fy) \mid \therefore (x)Ex \lor (\exists y)Fy$

(*iii*) All radioactive substances either have a very short life or have medical value. No uranium isotope that is radioactive has a very short life. Therefore, if all Uranium isotopes are radioactive, then all uranium isotopes have medical value.

(Rx: x is radioactive, Sx: x has very short life, Mx: x has medical value, Ux: x is a uranium isotope).

(*iv*) Any businessman who is a poet must be a Wealthyman. Wealthy men are all conservatives. If some conservatives does not like poetry, then no poets are conservatives. Therefore, if there is a wealthy man who does not like poetry, then no businessmen are poets. (Bx: x is a businessman, Px: x is a poet, Wx: x is a wealthyman, Cx: x is a conservative, Lx: x likes poetry).

3. Prove the invalidity of the following arguments. 4 × 4

(*i*) $(x)(y)[Ax \supset (By \lor Cy)]$

$(z)\{[(y)By \lor (y)Cy] \supset Dz\} \mid \therefore (\exists x)(\exists z)$
$(Ax \supset Dz)$.

(ii) $(\exists x)(\exists y)\{Ux \supset [Vy \cdot (\exists y) Wy]\}$

$(y)(z)[(Vy \cdot Wy) \supset Xz] \mid \therefore (x)(\exists z)$
$(Ux \supset Xz)$

(iii) $(x)(\exists y)(Fx \equiv Gy) \mid \therefore (\exists y)(x)(Fx \equiv Gy)$

(iv) $(x)(\exists y)(\exists x \supset Fy)$ ·

$(\exists y)(z)(Fy \supset \sim Gz) \mid \therefore (x)(z)(\sim Ex \supset Gz)$

4. Construct demonstration for each of the following : $\qquad$ 4 × 4

(i) $[(x) Fx \cdot (x) Gx] \equiv (x)(Fx \cdot Gx)$

(ii) $[(\exists x) Fx \supset (y) Gy] \equiv (x)(y)(Fx \supset Gy)$

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

(iv) $(x)(Q \supset Fx) \equiv [Q \supset (x) Fx]$

GROUP—B

Answer any *one* of the following

5. (a) What is logical truth ?

(b) Give demonstration of the following :

(i) $(Y) [(x) Fx \supset Fy]$

(ii) $(Y) [Fy \supset (\exists x) Fx]$. $4 + (2 + 2)$

6. (a) What are the ways of obtaining propositions from propositional functions ?

(b) 1. $(\exists x) (Y)(Fx \supset \sim Fy) | \therefore (x) (Fx \supset \sim Fx)$

→ 2. $(Y) (Fx \supset \sim Fy)$

3. $Fx \supset \sim Fy$ — 2.U.I.

4. $(x) (Fx \supset \sim Fx)$ — 3.U.G.

5. $(x) (Fx \supset \sim Fx)$ — 1,2 — 4 E.I.

Why is the application of U.G. wrong here ? Explain. $4 + 4$

7. Explain with illustration the final verson of Existential Instantiation.   8

_____