

**M.A. 1st Semester Examination**

**(Santali Version)**

**(Western Logic-III)**

**Time : Two Hours**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

### Group-A

୧. ଧନଘନ ଓ ୧୦ ଘନଘନ ୫୫୦୦୮ ଘନଘନ ଓ ୦୨୫୦ ଘନ ଘନ  
 ଘନ ୧୦୫୦୦୦୦ ୧୦୫୦୦୦୦

[illegible]

- (a) 1.  $(x)(\exists y)(Fx \equiv Gy) / \therefore (\exists y)(x)(Fx \equiv Gy)$   
 2.  $(\exists y)(Fx \equiv Gy) - 1. \text{UI.}$   
 3.  $Fx \equiv Gy$   
 4.  $(x)(Fx \equiv Gy) - 3. \text{UG.}$   
 5.  $(\exists y)(x)(Fx \equiv Gy) - 4. \text{EG.}$   
 6.  $(\exists y)(x)(Fx \equiv Gy) - 2, 3 - 5 \text{EI.}$

P.T.O.

- (b) 1.  $(\exists x)(y)[(Fx \cdot Gx) \supset Hy]$   
 $\therefore (\exists x)[(Fx \cdot Gx) \supset Hx]$

- 2.  $(y)[(Fz \cdot Gz) \supset Hy]$   
 3.  $(Fz \cdot Gz) \supset Hy$  - 2.U1.  
 4.  $(\exists x)[(Fx \cdot Gz) \supset Hy]$  - 3.EG.  
 5.  $(y)(\exists x)[(Fx \cdot Gy) \supset Hy]$  - 4.UG.

6.  $(y)(\exists x)[(Fx \cdot Gy) \supset Hy]$  - 1, 2 - 5.EI.

7.  $(\exists x)[(Fx \cdot Gy) \supset Hx]$  - 6.U1.

2. (a) ගවේශයීම (Validity) ඉතිරි වන්නේ නම්  
 ඇත්තේ නම්?

- (b) පවතින බව පෙන්වා දීමට හැකි වන්නේ නම්  
 ගවේශයීමට හැකි වන්නේ නම් :

(i)  $(\exists x)Xx \supset (y)(Yy \supset Zy)$   
 $\therefore (\exists x)(Xx \cdot Yx) \supset (\exists y)(Xy \cdot Zy)$

- (ii) any car with good brakes is safe to drive  
 and safe to ride in. so, if a car is new, then  
 if all new cars have good brakes, it is safe  
 to drive ( $Cx$ ;  $x$  is a car,  $Bx$ :  $x$  has good  
 brakes,

$Dx$  :  $x$  is safe to drive,

$Rx$  :  $x$  is safe to ride,

$Nx$  :  $x$  is new)

( 3 )

3. (a) ຂົນສົ່ງເຊື້ອພືດ ອຸ່ນ ອື່ນ ບໍ່ ປ່ຽນໃຈ-ຫຼື ?  
(b) ປັນຫາ ພຽງ ຂຸ້ນ ອື່ນ ພຽງ ບໍ່ ປ່ຽນ ພຽງ ຂົນສົ່ງເຊື້ອພືດ ພຽງ ຂຸ້ນ ພຽງ :

$$(i) \quad (x)(\exists y)(Hx \supset Ly)$$

$$(\exists y)(z) (Iy \supset Jz) / \therefore (x) Hx \supset (z) Jz$$

(ii)  $(x)(y)[Ax \supset (By \vee Cy)]$

$$(z)\{[(y)By \vee (y)Cy] \supset Dz\}$$

$$\therefore (\exists x) (\exists z) (Ax \supset Dz)$$

**2+2+4**

4. EI බැඳුම් final version (බෙබ්බුම් 42)

### Group-B

୧) ଉପରୋକ୍ତ ଗୁଣ ଉପରେ ଗୁଣିତ ହେଉଥିବା ସମସ୍ତ ଗୁଣ  
 ଗୁଣିତ ହେଉଥିବା ସମସ୍ତ ଗୁଣ ଗୁଣିତ ହେଉଥିବା ସମସ୍ତ ଗୁଣ

5. ପ୍ରାୟ ୨୫ ଟି ଶିକ୍ଷକ ଶିକ୍ଷିତ ହୋଇ ଏହି construct demonstration କରିଥିଲେ ।

$$(x)(Fx \cdot Q) \equiv [(x) Fx \cdot Q]$$

6. પશોંનાં ૐ ટુ ંબીદે ંડેઁ.૦ ે truth tree  
 ીઁઁઁઁઁ ૈઁઁઁ ઁઁઁઁઁ :

**(i)  $C \supset D$**

$$A \supset B$$

$$B \supset C / \therefore \sim A \vee \sim B$$

**P.T.O.**

- $$\begin{aligned} \text{(ii)} \quad & A \supset \sim B \\ & \sim C \supset A / \therefore B \supset \sim C \end{aligned}$$

7. පනවන ලද 24 නව නව නිලධාරීන් සහ Symboliz  
නව නිලධාරීන් 42.

- (i) If any bananas are yellow, then if all yellow bananas are ripe, they are ripe. ( $B : x$  is a banana,  $Yx : x$  is yellow.  $Rx : x$  is ripe)

- (ii) If there are survivors and only women are survivors, then they are women. ( $Sx : x$  is survivors.  $Wx : x$  is women)  $2\frac{1}{2} + 2\frac{1}{2}$

8. C.P. ସଜ୍ଜିତ strengthen rule ବଡ଼ ହୋଇଛି. ଆ  
ବନିତ ଶୁଦ୍ଧ ଧର୍ମ 5

[illegible]

- (i) Second general convention  
(ii) Reductio-ad-absurdum Method.

10. පවරනායකයාට මෙම නිවැරදි පවරායන පවරායන  
පවරායන මුදල

- (i) CP (122W812) b2102 12284812 42

$$P \supset (Q \supset P)$$

- (ii) I.P ନିର୍ଦ୍ଦେଶନା ବ୍ୟତୀତ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଗୁଡ଼ିକ

$$A \vee (A \supset B)$$

( 5 )

- (iii) What is true in connection with the scope of an assumption? Identify the correct option.

The scope of an assumption is

- (i) always limited
- (ii) always unlimited,
- (iii) extended up to the conclusion.
- (iv) extended beyond the conclusion. 2+2+1

**Internal Assessment : 10 marks**

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