# BACHELOR OF ARTS EXAMINATION, 2018

## (2nd Year, 3rd Semester)

## PHILOSOPHY

### Logic (Western) - II

### [Old Syllabus]

Full Marks : 30                                    Time : Two Hours

*The figures in the margin indicate full marks.*

Use a separate Answer-Script for each group.

### Group - A / বিভাগ - ক

1. Construct a formal proof of validity for *one* of the following :

4

বৈধতার প্রমাণ গঠন কর ( যে কোন **একটি**)

(a) $(x) \left[ Ax \supset (Bx \supset Cx) \right]$

$(x) \left[ Cx \supset (Dx \cdot Ex) \right]$

$/ \therefore (x) \left[ Ax \supset (Bx \supset Dx) \right]$

(b) $(\exists x) Ux \supset (y) \left[ (Uy \vee Vy) \supset Wy \right]$

$(\exists x) Ux \cdot (\exists x) Wx$

$/ \therefore (\exists x) (Ux \cdot Wx)$

[*Turn over*]

2. Prove the invalidity of the following arguments (any *one*) :

4

নিম্নলিখিত যে কোন **একটি** অনমানের অবৈধতা প্রমাণ ক  :

  (a) $(\exists x)(Kx \cdot Lx)$
     $(\exists x)(\sim Kx \cdot \sim Lx)$
        $/\therefore (\exists x)(Lx \cdot \sim Kx)$

  (b) $(x)\ (Ax \supset \sim Bx)$
      $\sim Ac/\therefore Bc$

3. Symbolize any *two* of the following propositions :    2

নিম্নলিখিত যে কোন **দুটি** বচনকে সাংকেতিক আকারে প্রকাশ কর

  (a) If anything is wrong, then it should be rectified. $(Wx,\ Rx)$.

  (b) If any bananas are yellow, then if all yellow bananas are ripe, they are ripe. $(Bx, Yx, Rx)$

  (c) Bees and Wasps sting if they are either angry or frightened $(Bx, Wx, Sx, Ax, Fx)$.

4. Use the strengthened method of conditional proof to prove the validity of the following arguments (any *one*)    5

নিম্নলিখিত যুক্তিগুলির বৈধতা প্রমাণ ২   S.C.P. পদ্ধতি ব্যবহার করে ( যে কোন **একটি**)    ৫

$(E \lor F) \supset G$

$H \supset (I.J)$

$/ \therefore (E \supset G) \cdot (H \supset I)$

<p align="center">*Or /* অথবা</p>

$A \supset B$

$B \supset [(C \supset \sim\sim C) \supset D]$

$/ \therefore A \supset D$

### Group - B / বিভাগ - খ

5. Test the validity of the following arguments by using the method of Venn diagram :    5+5=10

(i) $A \cap B \subseteq \sim C$
$A \cup C \subseteq B$ $/ \therefore A \cap C = \Lambda$

(ii) All liars are prejudiced. Some witnesses are not liars.
$\therefore$ Some witnesses are not prejudiced.

<p align="right">[*Turn over*]</p>

*Or*

6. Test the consistency or inconsistency of the following assumptions by using the method of Venn Diagram :

5+5=10

  (i) $A \cap B = \Lambda$

     $A \cup B \neq \Lambda$

     $A \cup \sim B \neq \Lambda$

  (ii) $C \neq \Lambda$

     $A \cap B \neq \Lambda$

     $A \cap C = \Lambda$

     $(A \cap B) \sim C = \Lambda$

7. Translate the following statements into set-theoretic form : 5

  (i) Fools and drunk men are honest.

  (ii) Freshmen are ignorant but not enthusiastic.

  (iii) No Frenchman is an American.

  (iv) Some American wine-drinkers are philosophers.

  (v) Some Indians take both rice and bread but not tea.

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