16. When are two functions said to be equal ? 2

OR

17. Define a one-one function. 2

——— X ———

BACHELOR OF ARTS EXAMINATION, 2019

(2nd Year, 2nd Semester)

PHILOSOPHY

Logic (Western) - II

Course : PHIL/UG/CORE/4.1

Time : Two hours Full Marks : 30

GROUP - A

1. Construct a formal proof of validity for the following arguments (any ***one***) 4

   (a) (x) (lx ⊃ Jx)
   (∃x) (lx . ~ Jx)
   ∴ (x) (Jx ⊃ lx)

   (b) (x) (Qx ⊃ Rx)
   (∃x) (Qx ∨ Rx)
   ∴ (∃x) Rx

2. Construct a formal proof of validity for the following arguments (any ***one***) 4

   (a) All athletes are browny. Charles is not browny. Therefore, Charles is not an athlete (Ax, Bx, c)

   (b) No contractors are dependable. Some contractors are engineers. Therefore some engineers are not dependable. (Cx, Dx, Ex)

3. Symbolize the following (any *two*) 2

   (a) All that glitters is not gold

   (Gx : x glitters, Ax : x is gold)

   (b) Some students are both intelligent and hard workers.

   (Sx : x is a student, Ix : x is intelligent Hx : x is hard worker)

   (c) If any bananas are yellow, they are ripe (Bx : x is a banana, Yx : x is yellow, Rx : x is ripe)

4. Prove that the following argument is invalid (any *one*) 4

   (a) (x) $(Ex \supset Fx)$

   (x) $(Gx \supset Fx)$

   $\therefore$ (x) $(Ex \supset Gx)$

   (b) (x) $(Cx \supset \sim Dx)$

   $\sim Cj$

   $\therefore Dj$ 5

5. State the preliminary quantification rules for UG or EI with examples. 1

GROUP - B / বিভাগ - খ

6. Let A = {x, y, z}. How many subsets does A contain and what are they ? 2

OR

7. When are two sets A and B said to be equal ? 2

8. Take examples of Tabular form of a set and set builder form of a set. 2

OR

9. What is the difference between subset and proper subset ? Take examples to explain. 2

10. Prove that $A \cup B = \phi$ implies $A = \phi$ and $B = \phi$. 3

OR

11. Prove that $A \cap \phi = \phi$. 3

12. Prove :
    $A - B \subset A$ 3

OR

13. $(A - B) \cap B = \phi$. 3

14. Prove that $B - A$ is a subset of A'. 3

OR

15. $B - A' = B \cap A$. 3