# UNIVERSITY OF NORTH BENGAL

B.A. Honours 3rd Semester Examination, 2020

## CC7-PHILOSOPHY

## LOGIC (WESTERN)

Full Marks: 60

### ASSIGNMENT

*The figures in the margin indicate full marks.*

**Prepare Assignments on any *three* of the following within 800 words** 20×3 = 60

1. Distinguish between 'individual variable' and 'individual constant'. Explain their role in predicate logic. 20

2. Explain the reasons why the rule of UG cannot be legitimately applied on singular proposition. 20

3. State and explain the method of Agreement. 20

4. (a) Translate the following statement into Shaffer's stroke function: 4×2 = 8

   (i) $(p \cdot \sim q) \supset \sim (q \cdot \sim p)$

   (ii) $(\sim p \cdot \sim q) \supset \sim (p \vee q)$

   (b) Transform the following into both CNF and DNF: 4×3 = 12

   (i) $\sim[(p \supset q) \supset (p \cdot q)]$

   (ii) $[(p \supset q) \cdot q] \supset p$

   (iii) $(p \cdot q) \supset r$

5. Construct the formal proof of validity of the following: 5×4 = 20

   (a) $(x)[(Ax \vee Bx) \supset (Cx \cdot Dx)] / (x)(Bx \supset Cx)$

   (b) To be a swindler to be a thief. Non but the underprivileged are thieves. Therefore swindler are always underprivileged (*Sx*, *Tx*, *Ux*).

(c) $(Hx \supset \sim Px)$

$(Gx \supset Hx) / (x)$ $(Gx \supset \sim Px)$

(d) Only pacifists are quakers. There are religious quakers. Therefore, pacifists are sometimes religious. (*Px*, *Qx*, *Rx*)

6. Test the validity or invalidity of the following arguments with the help of Tree method: 5×4 = 20

(a) $A \rightarrow (B \vee C)$

$B \rightarrow C$

$\therefore A \rightarrow C$

(b) $A \rightarrow C$

$\therefore (B \rightarrow C) \rightarrow (A \rightarrow C)$

(c) $P \rightarrow (q \vee r)$

$\sim q \rightarrow \sim p$

$\therefore P \rightarrow r$

(d) If Holmes has bungled or Watson is windy, Moriarty will escape. Therefore Moriarty will escape unless Holmes bungled.

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