MASTER OF ARTS EXAMINATION, 2017

(2nd Year, 3rd Semester)

PHILOSOPHY

(Logic - II)

Full Marks : 30   Time : Two Hours

The figures in the margin indicate full marks.

1. Let t and u be terms. Let t' be the result of replacing each occurrence of v_k in t by u. Let s be a sequence and let $u*s = d$. Let s' be $s(d/k)$, i.e. let s' be the sequence that results from substituting d for the kth term of s. Then, prove that $t'*s = t*s'$.   10

Or

2. If Δ is a set of closed wffs, then if $\Delta \vdash_{QS} A$, then prove that $\Delta \vdash_{QS} \Lambda \vee A$.   10

3. If $\Gamma \vdash_{QS} A$, then prove that $\Gamma \models_Q A$.   10

Or

[*Turn over*]

4. If K is a consistent first order theory, then prove that there is a first order theory K' that is a consistent negation - complete extension of K with the same formulas as K.   10

5. If A and B are closed wffs, then prove that $A \supset B$ is true for I iff A is false for I or B is true for I.   5

Or

6. If v_k does not occur free in A, then prove that $A \supset \Lambda \vee_R A$ is logically valid, where A is an arbitrary wff.   5

7. If A is an instance of a tautological schema of Q, then prove that $\vdash_{QS} A$.   5

Or

8. Prove that $\vdash_K A$ iff $\vdash_K A^C$.   5

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