MASTER OF ARTS EXAMINATION, 2018

(2nd Year, 3rd Semester)

PHILOSOPHY

Logic - II

Full Marks : 30 Time : Two Hours

The figures in the margin indicate full marks.

1. Let I be an interpretation of Q with domain D. Let A be an arbitrary wff of Q. Let s and s' be two sequences such that for each variable v in A, if v is the k^{th} variable in the fixed enumeration of the variables, then s and s' have the same member of D for their k^{th} terms. Then, prove that s satisfies A iff s' does. 10

Or

2. Let A be a wff of Q, v_k a variable, *t* a term that is free for v_k in A. Let s be a sequence and let s' be the sequence that results from replacing the k^{th} term of s by t*s (i.e. the member of D assigned by I to the term t for the sequence s), i.e. $s' = s(t*s/k)$. Then, prove that s satisfies A_t/v_k iff s' satisfies A. 10

[*Turn over*]

3. If K is a consistent first order theory, then prove that the system that results from adding a denumerable set of new individual constants to K, with an effective enumeration of these constants, is a consistent first order theory that is an extension of K. 10

Or

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 $\Gamma \cup \{\sim A\}$ is an inconsistent set of QS, then prove that $\Gamma \vdash_{QS} A$. 5

Or

6. Prove that VvA is satisfiable for an interprelation I iff A is satisfiable for the same interpretation. 5

7. Let I be an interpretation with domain D. Let A be a wff with exactly one free variable v_k. If each member of D is assigned by I to some closed term or other and A_t/v_k is true for I for each closed term t, then prove that ΛvkA is true for I. 5

Or

8. Prove that A is logically valid iff A^c is logically valid. 5