UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualifications:-

B.A. *B.Sc.(Econ)M.Sci.*

Philosophy B1: Logic

COURSE CODE : **PHILB001**

UNIT VALUE : **1.00**

DATE : **03-MAY-06**

TIME : **10.00**

TIME ALLOWED : **3 Hours**

06-C1114-3-30

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PHILOSOPHY B1: LOGIC

Answer all questions.

All questions have equal value.

PART A. BASIC LOGICAL NOTIONS

1. When is a set of propositions logically consistent?
2. If two propositions are logically indeterminate, can you conclude from this that they are logically equivalent? Can you conclude that they are not logically equivalent? Explain your answer.
3. Can a logically valid argument have a logically inconsistent set of premises?

PART B. SYMBOLIZATION IN SL

Symbolise in SL using the following key:

J: John will go to the party

M: Mary will go to the party

A: Ann will go to the party

4. If John goes to the party, neither Mary nor Ann will go.
5. Mary will go to the party only if Ann goes.
6. John and Mary won't both go to the party.

PART C. SYNTAX AND SEMANTICS OF SL

7. Show that the string of symbols $(A \supset B)\ \&\ {\sim}C$ is a sentence of SL.
8. If we symbolise two logically equivalent propositions in SL, will their symbolizations always be truth-functionally equivalent? Justify your answer.
9. Use the truth-table method to determine whether the argument

$(A \supset B) \supset C$

$A \supset ({\sim}B \vee C)$

is truth-functionally valid. Explain how you obtain your answer.

PART D. SD DERIVATIONS

10. Derive in SD the conclusion ~B from the premises $\sim A \supset (\sim A \supset (B \supset A))$ and ~A.
11. Derive in SD the conclusion B from the premises $A \vee B$ and $\sim A\ \&\ C$.
12. Derive in SD the conclusion $(A \supset \sim B) \supset (B \supset (\sim A \vee \sim C))$ from no premises.

PART E. SYMBOLIZATION IN PLE

Symbolize in PLE using the following key:

U.D.: People

Tx: x is tall

Lxy: x likes y

f(x): x's father

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13. Everyone likes at least one tall person.
14. At least one tall person likes his/her father.
15. There are at most two tall persons.

PART F. SYNTAX AND SEMANTICS OF PLE

16. Explain informally the definition of the denotation of a term in an interpretation for a variable assignment.
17. Find an interpretation in which the sentence $(\forall x)(\forall y)(Rxy \supset Rxf(y))$ is true and one in which it is false.
18. If the symbolisation of a proposition into SL is truth-functionally true, does it follow that its symbolisation into PLE is quantificationally true? Explain your answer.

PART G. PD DERIVATIONS

19. Derive in PD the conclusion $(\forall x)(Ax \supset Cx)$ from the premises $(\forall x)(Ax \supset Bx)$ and $(\forall x)(\sim Cx \supset \sim Bx)$
20. Derive in PD the conclusion $(\forall x)\sim Ax$ from the premise $\sim(\exists x)Ax$.
21. Derive in PD the conclusion $(\forall x)(\exists y)(Ay \supset Ax)$ from no premises.

END OF PAPER