UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualifications:-

B.A. *B.Sc.(Econon)*

Philosophy B1: Logic

COURSE CODE	:	**PHILB001**
UNIT VALUE	:	**1.00**
DATE	:	**23-MAY-03**
TIME	:	**10.00**
TIME ALLOWED	:	**3 Hours**

03-C1018-3-40

TURN OVER

B1 LOGIC

Answer all questions

All questions have equal value

PART A. BASIC LOGICAL NOTIONS

1. When is a proposition logically true? When are two propositions logically equivalent?
2. If two propositions are logically true, can you conclude that they are logically equivalent? Explain your answer.
3. If you know that an argument has a logically true premise, what, if anything, can you conclude from this about the validity of the argument? Explain your answer.

PART B. SYMBOLIZATION IN SL

Symbolize into SL, using the following key:

A: Arsenal will win the Champions League

M: Manchester United will win the Champions League

L: Liverpool will win the Premiership.

4. If Liverpool doesn't win the Premiership, then neither Arsenal nor Manchester United will win the Champions League.
5. Either Arsenal won't win the champions league or Liverpool won't win the premiership.
6. Liverpool won't win the Premiership unless Manchester United wins the Champions League.

PART C. SYNTAX AND SEMANTICS OF SL

7. Show that the string of symbols $\sim(A \supset \sim B)$ is a sentence of SL and that the string $(A \sim\supset B)$ is not a sentence of SL.
8. Suppose that we symbolize a proposition P into SL and we discover that the SL-sentence with which we have symbolized P is truth-functionally true. Can we conclude from this that P is logically true? Justify your answer.
9. Use the truth table method to determine whether the argument

   $A \supset \sim B$
   $\sim A \supset C$

   $C \vee \sim B$

   is truth-functionally valid. Explain your answer.

TURN OVER

PART D. SD DERIVATIONS

10. Derive in SD the conclusion $(A \& B) \supset \sim C$ from the premise $A \supset (D \& \sim C)$.

11. Derive in SD the conclusion A from the premise $(\sim A \supset \sim B) \& (\sim B \supset B)$.

12. Derive in SD the conclusion $((A \supset B) \& \sim B) \supset \sim A$ from no premises.

PART E. SYMBOLIZATION IN PDI

Symbolize in PDI, using the following key:

U.D.: People

Px: x plays poker

Gx: x drinks gin

Mxy: x has met y

13. No poker player drinks gin.

14. Every poker player has met at least one gin drinker.

15. There are at least two gin drinkers.

PART F. SYNTAX AND SEMANTICS OF PLI

16. Outline the definition of the set of sentences of PLI.

17. Provide an interpretation on which the sentence $(\forall x)(Px \supset \sim Rxa)$ is true, and one on which it is false.

18. If the translation of a proposition into PLI is quantificationally indeterminate, does it follow that its translation into SL is truth-functionally indeterminate? Explain your answer.

PART G. PD DERIVATIONS

19. Derive in PD the conclusion $(\exists y)By$ from the premises $(\forall x)(Ax \supset Bx)$ and Ac.

20. Derive in PD the conclusion $(\forall x)(Ax \supset Bx)$ from the premises $(\forall y)((Ay \& Cy) \supset By)$ and $(\forall z)Cz \& \sim(\forall x) Rxc$.

21. Derive in PD the conclusion $(\forall x)(Ax \supset Bx) \supset ((\forall x)Ax \supset (\forall x)Bx)$ from no premises.

END OF PAPER