

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD  
UNIVERSITY OF MALTA, MSIDA  
MATRICULATION EXAMINATION  
INTERMEDIATE LEVEL  
MAY 2015

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**SUBJECT:** PHILOSOPHY  
**DATE:** 13<sup>th</sup> May 2015  
**TIME:** 4.00 p.m. to 7.00 p.m.

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**Directions to Candidates**

Answer **THREE** questions in all, **ONE** from **EACH** section. Questions carry equal marks.

**Section A: Logic**

1. (a) In not more than 10 lines explain and give an example of what is meant by ‘virtual bi-location’.
- (b) Express the following propositions symbolically:
- (i) Shaun and Karla went to pottery classes.
  - (ii) If Shaun went to pottery classes, Karla did not go.
  - (iii) It is not the case that both Shaun and Karla went to pottery classes.
  - (iv) Neither Shaun nor Karla went to pottery classes.
- (c) Translate symbolically the following argument and, by using truth-tables, check whether the implication involved is valid.  
If it is sunny then we will go for a swim or go for a walk.  
Therefore if we do not go for a walk, we go for a swim or it is not sunny.
- (d) (i) Fill in the blanks:  $A \rightarrow (B \vee C) \gg \underline{\hspace{2cm}}$  ( $\rightarrow$  is distributive over  $\vee$ )  
 $A \rightarrow (B \vee C) \gg \underline{\hspace{2cm}}$  (transportation)
- (ii) Use one of the above equivalences to simplify the proposition:  
If Bettina has a holiday then she will play badminton, or if Bettina has a holiday, she will go horse-riding.  
(An English sentence which does not contain logical symbols is expected.)
- (e) The truth-tables of the formulae P, Q, R, S are given underneath.

a	b	c	P	Q	R	S
T	T	T	T	T	T	T
T	T	F	T	F	T	T
T	F	T	F	F	T	F
T	F	F	F	F	T	T
F	T	T	F	F	T	F
F	T	F	T	F	T	T
F	F	T	F	F	F	F
F	F	F	T	T	T	T

Arrange the four formulae in order, such that moving from left to right each formula would imply the next.

*Please turn the page.*

- (f) Write down a **formula** constructed **only** out of the primary formulae  $a$  and  $b$ , the junctors  $\neg$  and  $\wedge$ , and whose truth-table is:

a	b	formula
T	T	F
T	F	T
F	T	F
F	F	F

2. (a) How would you introduce the *conjunct* ( $\wedge$ ) ?
- (b) Fill in the blanks:
- \_\_\_\_\_  $\times$  \_\_\_\_\_ is valid (commutativity of  $\vee$ ).
  - \_\_\_\_\_  $\times$  \_\_\_\_\_ is valid (associativity of  $\wedge$ ).
  - \_\_\_\_\_ ( $B \vee C$ )  $\times$  \_\_\_\_\_ is valid (distributivity of  $\wedge$  over  $\vee$ ).
  - \_\_\_\_\_,  $B \rightarrow C$   $\times$  \_\_\_\_\_ is valid (transitivity of  $\rightarrow$ ).
- (c) (i) Complete the following implication:  
 $\neg(\neg A \wedge \neg B) <$  \_\_\_\_\_ (de Morgan).  
 (ii) State the duality principle.  
 (iii) Dualise the implication in (c)(i) above.  
 (iv) Use the duality principle only to find out whether the answer to (c)(iii) is valid.
- (d) (i) Write down the truth-tables of the formulae which correspond to:  
 (I) either  $x$  or  $y$  is true.  
 (II)  $x$  and  $y$  are either both true or both false.  
 (ii) For each of the truth-tables in (d)(i) above, write down a formula which contains only one junctor.  
 (iii) What must be done to either one of the formulae in (d)(ii) above so that they will become equivalent to each other?
- (e) Translate symbolically the following argument and, by using truth tables, check whether the implication involved is valid.  
 If Daniel went to the party, Elena went too.  
 Elena did not go to the party.  
 Therefore Daniel did not go.
- (f) For each of the following formulae write down one interpretation which is a model:
- $\neg(x \rightarrow y) \vee (x \rightarrow z)$
  - $\neg(x \vee y) \vee z$

**Section B: Ethics**

- “Human beings communicate not only verbally, but also by means of gestures and actions.”  
 Discuss this statement in the context of human sexuality.
- Discuss the ethical issues related to sustainable development.

**Section C: History of Philosophy**

- What role does Socrates play in the history of philosophy?  
*X'sehem ghandu Sokrate fl-istorja tal-filosofija?*
- How does Plato view the ideal State?  
*Kif ihares Platun lejn l-Istat ideali?*