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අප්‍රේල් 2017
முதலாம் வருட கலைத்தேர்வு பரீட்சை (வெளிவாரி - புதிய பாடத்திட்டம்)
ஏப்ரல் 2017

1st YEAR (100 LEVEL) EXAMINATION IN BACHELOR OF ARTS (EXTERNAL -
NEW SYLLABUS) APRIL 2017

PHILOSOPHY (SUPE – 011)
Logic & Scientific Method

**Answer FIVE (05) Questions only, selecting at least TWO Questions
from Part I and ONE from Part II.**

Time allowed: Three (03) Hours.

PART I

01. Symbolize the following arguments and show that they are valid by the method of derivation.

- i. If she is married then she is not a teacher. Either she is a teacher or she is divorced. If she is divorced then she is alone. Therefore, if she is married then either she is divorced or she is alone.
- ii. If neither Rama nor Laksmana is Sri Lankan then Ravana is the Sri Lankan King. Therefore, if Ravana is not Sri Lankan King then either Rama or Laksmana is a Sri Lankan.
- iii. Either there is national unity or good governance. There is no national unity or there is religious harmony. Therefore, either there is good governance or religious harmony.
- iv. It is not the case that if only birds have feathers then birds can fly. Birds have feathers. Therefore, crows can fly.

02. Prove the following theorems by the method of derivation.

- i. $[(P \wedge Q) \rightarrow (P \leftrightarrow Q)]$
- ii. $(P \vee Q) \rightarrow [(\sim Q \wedge R) \rightarrow (P \wedge R)]$
- iii. $[(\sim P \vee Q) \wedge (\sim Q \vee P)] \rightarrow (P \leftrightarrow Q)$
- iv. $[(P \wedge Q) \rightarrow (P \rightarrow Q)]$ (05x4=20)

03. (a) Symbolize following arguments by giving your scheme of abbreviation and test for the validity by the indirect method of truth table.

- (i) If A is clever than B is intelligent. If B is intelligent then C is fluent in English. C is not fluent in English. Therefore, either A is not clever or D is best student in the class.

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(ii) If both Jhon and Martin are archeologists, then Cristina is a doctor. If either Donald or Russel are teachers then Cristina is not a doctor. Therefore, either Jhon is an archeologist or Russel is a teacher.

(iii) If father does not buy a car then mother will not go abroad. If mother will not go abroad then either elder brother or elder sister will pass the examination. Either father buys a car or elder brother will pass the examination. Therefore, it is not the case that mother goes abroad and elder sister pass the examination.

(04x3=12)

(b) If it is given that P is false and Q is true, determine whether the following symbolic sentences are true, false or that their truth value cannot be determined without using truth tables (make your answers as brief as possible stating only the essential steps).

i. $[(P \wedge Q) \leftrightarrow ((\sim P) \wedge R)]$

ii. $(\sim(P \leftrightarrow Q) \rightarrow (Q \rightarrow (R \vee S)))$

iii. $(\sim(P \vee Q) \vee (Q \vee R))$

iv. $[(\sim P \rightarrow \sim Q) \wedge (\sim P \wedge \sim Q)]$

(02x4=08)

04. Symbolize the following arguments in terms of classes and determine their validity by using Venn diagrams.

i. Some students are clever and some students are tall. Therefore some of tall ones are clever.

ii. Sri Lanka is a country as well as Australia. Therefore, there are countries.

iii. All crows are not white, All white ones are not birds. Therefore some birds are crows.

iv. This dog is an animal. Some animals are tall. Therefore this dog is tall.

(05x4=20)

05. Write brief notes on any four of the following with examples.

- i. Class complement
- ii. Indirect method of derivation
- iii. Fallacy of existence
- v. Weak and strong disjunction
- vi. Theorems
- vii. Deductive and Inductive reasoning

06. (a) Explain salient features of a scientific knowledge. (04 marks)
- (b) 'Ethics and Aesthetics are non-sciences'. Write briefly your comments on this statement. (04 marks)
- (c) Write the differences of following sciences.
i. Empirical and non-empirical sciences
ii. Applied and Pure Sciences
iii. Natural and social sciences (04x3=12)
07. (a) "The data collected by experiments are reliable than by observations". Give reasonable facts to justify above statement. (10 marks)
- (b) "Crucial tests are supportive for making ends to some scientific debates". Explain with suitable examples. (10 marks)
08. (a) Define what is "probability" with examples. (05 marks)
- (b) Explain why scientists engage with probability in their research projects. (05 marks)
- (c) Explain followings with examples.
i. Sample space
ii. Event (10 marks)
09. (a) "Social scientists unlike natural scientists face with many practical, methodological and ethical difficulties in their research fields". Do you agree with this statement? Give reasons for your answer. (10 marks)
- (b) Make a short notes on advantages and disadvantages of "Interview method" in a data collecting. (05 marks)
- (c) Explain why "Participative Observational Method" is one of best research method for the studies of covert societies. (05 marks)
10. Write short notes on any four of the following.
i. Copernican revolution
ii. Covering law theory of explanation
iii. Paradigms and High Level Theories
iv. Statistical Generalization
v. Science and religion
vi. Dark side of Science (05x4=20)
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