

පේරාදෙණිය විශ්වවිද්‍යාලය  
பேராதனைப் பல்கலைக் கழகம்  
UNIVERSITY OF PERADENIYA

දුරස්ථ හා අඛණ්ඩ අධ්‍යාපන කේන්ද්‍රය  
தொலை தொடர் கல்வி நிலையம்  
CENTRE FOR DISTANCE AND CONTINUING EDUCATION

පළමු වසර ශාස්ත්‍රවේදී උපාධි පරීක්ෂණය (බාහිර - නව නිර්දේශය)  
අගෝස්තු 2018  
முதலாம் வருட கலைத்தேர்வு பரீட்சை (வெளிவாரி - புதிய பாடத்திட்டம்)  
ஆகஸ்ட் - 2018  
1<sup>st</sup> YEAR (100 LEVEL) EXAMINATION IN BACHELOR OF ARTS (EXTERNAL - NEW SYLLABUS) AUGUST 2018

Philosophy - SUPE -011  
**Logic and 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  
The total number of questions in this paper is 10

**PART I**

01. Symbolize the following arguments by giving your scheme of abbreviation and show that they are valid arguments by the method of derivation.
- Both Aristacus and Copernicus were not Sri Lankens. Aristacus was a Sri Lanken and he represented heliocentrism. Therefore, Aristacus represented heliocentrism and Copernicus was not a Sri Lanken.
  - If the king Ravana was supported by his brother Vibhishana, then Rama would be defeated the war against Ravana. If Rama was defeated the war against Ravana then Seeta could stay at Sri Lanka until her death. But Seeta did not stay at Sri Lanka until her death. Therefore, the king Ravana was not supported by his brother Vibhishana.
  - Either Plato was the teacher of Aristotle or it is not the case that either Aristotle or Plato was the father of Western Logic. If Socrates was not the teacher of Plato then Aristotle was the father of Western Logic. Therefore, if Socrates was not the teacher of Plato, then Plato was the teacher of Aristotle.
  - If citizen live in harmony then there is good governance. If Either there is good governance or freedom for get to know information, then it is a communist country or capitalist country. It is not the case that it is a communist country or capitalist country. Therefore, it is false that citizen live in harmony while it is a capitalist country.

(05x04 = 20 Marks)

P.T.O.

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

- i.  $[(P \leftrightarrow P) \wedge (Q \leftrightarrow Q)]$
- ii.  $(\sim (P \wedge Q) \leftrightarrow (\sim P \vee \sim Q))$
- iii.  $(P \rightarrow Q) \leftrightarrow \sim (P \wedge \sim Q)$
- iv.  $(\sim P \rightarrow Q) \rightarrow (\sim Q \rightarrow P)$

(05x04=20 Marks)

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

- i. If Dikthala is a tall woman then Kālagōla is a short man. Kālagōla is a short man and he is not a handsome one. Therefore if Kālagōla is not a short man then he is a handsome one.
- ii. Either the world is made of Atoms or Forms. Both Atoms and Forms can not be perceived directly. Therefore, the world is made of Atoms if Atoms can be perceived directly while the world is made of Forms if only Forms can be perceived directly.
- iii. If the government supplies the water and instruction for farmers then farmers will be encouraged in cultivation. Either Farmers are not encouraged in cultivation or government supplies neither water nor instructions for farmers. Therefore, If and only if farmers will be encouraged in cultivation the government will offer a certified price for productions of farmers.

(04x03= 12 Marks)

(b) If it is given that  $\sim P$  is False and  $Q$  is False, 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.  $[\sim (P \wedge Q) \rightarrow Q]$                       ii.  $(\sim P \rightarrow Q) \leftrightarrow (\sim Q \rightarrow R)$  )  
iii.  $(P \vee \sim Q) \vee (\sim P \vee Q)$                       iv.  $[(P \leftrightarrow R) \vee (Q \leftrightarrow R)]$

(04x02 = 08 Marks)

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

- i. Both Kant and Hegal are Philosophers. All Philosophers are idealists. Therefore Hegal is an idealist.  
ii. Fox is an animal and no parrot is an animal. Therefore no parrot is a fox.  
iii. Some of women are teachers. Mrs. Fernando is not a teacher. Therefore, she is not a woman.  
iv. All country do not have Kings. Kandy is not a country. Therefore, Kandy does not have a king.

(04x05 = 20 Marks)

05. Write brief notes on **any four** of the followings:

- i. Two fold and multifold logical systems  
ii. Sub derivations                      iii. Logic and Language.  
iv. Class product and class sum                      v. Truth and Validity  
vi. Sound arguments

(05x04 = 20 Marks)

P.T.O.

## PART II

06. (a) Determine whether the following statements are Scientific or non Scientific.
1. The earth rotates around the moon.
  2.  $02+02 = 04$ .
  3. He will become a leader one day in future.
  4. Red roses are the most beautiful flowers in the universe.
  5. Helping poor people is good.
- (05 Marks)
- (b) Briefly explain Karl Popper's demarcation principle, giving examples.  
(10 Marks)
- (c) Write brief accounts on followings:
- i) Formal Sciences.
  - ii) Normative Sciences.
- (05 Marks)
07. (a) What is a Scientific Explanation?  
(10 Marks)
- (b) "Scientific laws are not explanations". Do you agree with this? Give reasons for your answer.  
(10 marks)
08. (a) Examine the differences between "Experiments" and "Observations"  
(10 marks)
- (b) Describe any two observational methods used in social sciences.  
(10 Marks)

P.T.O.

09. (a) Briefly explain followings with examples.

- i. Hypothetical Deductive Method
- ii. Francis Bacon's Inductive Method

(05x02=10 Marks)

(b) Examine the structure of scientific revolution as Thomas Khun illustrated.  
(10 Marks)

10. Write notes on **any four** of followings:

- i. Probability in Scientific Method.
- ii. Use of Measurement.
- iii. Standard Deviation.
- iv. Jhon Stuert Mill's Methods.
- v. Covering law Method of Karl Hemple.
- vi. Science and environmental pollutant

(05x04 = 20 Marks)

