

C 43505

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Name.....

Reg. No.....

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION, JULY 2013**

(CCSS)

Core Course

PH IB 01—METHODOLOGY OF SCIENCE AND PHYSICS

Time : Three Hours

Maximum : 30 Weightage

I. Objective Type Questions : Answer all *twelve* questions :

- 1 Which one of the following is not a characteristic of a scientific theory ?
  - (a) Rationality.
  - (b) Relevance.
  - (c) Brevity.
  - (d) Extensibility.
- 2 Falsification was introduced by :
  - (a) Newton.
  - (b) Ziman.
  - (c) Darwin.
  - (d) Karl Popper.
- 3 Which among these is not science ?
  - (a) Pointing out areas which might be hit by Tsunami.
  - (b) Finding out the most beautiful girl in the world.
  - (c) Finding acceleration of a car.
  - (d) Differentiating gold and impurity.
- 4 Who invented calculus ?
  - (a) Pythagorus.
  - (b) Issac Newton.
  - (c) Rutherford.
  - (d) Einstein.
- 5 The format of deductive reasoning is \_\_\_\_\_.
- 6 \_\_\_\_\_ provides a framework for a discipline in terms of what to study and how to study.
- 7 \_\_\_\_\_ is the Greek word for "I have found it".
- 8 \_\_\_\_\_ is a simulation of a real thing.
- 9 The discoverer of X-ray.
- 10 A group of variables considered for experimentation is called.
- 11 A collection of facts or data of knowledge is called.
- 12 Which subject is referred to as the language of science ?

(12 × ¼ = 3 weightage)

Turn over

II. Short Answer Type Questions : Answer all *nine* questions :

- 13 Distinguish between Auxiliary and ad-hoc hypothesis.
- 14 What are the factors to be considered in experimentation ?
- 15 Define positivism.
- 16 Discuss the main limitation of science.
- 17 What is a hypothesis ?
- 18 What are the different aspects of scientific temper ?
- 19 What are the three criteria that theories should meet, according to John Ziman ?
- 20 Explain Corroboration.
- 21 Who invented the following ?
  - (a) Telescope.
  - (b) Steam Engine.
  - (c) Chaos
  - (d) Memory program theory for computers.

(9 × 1 = 9 weightage)

III. Short essay or paragraph questions. Answer any *five* questions from seven :

- 22 Scientific knowledge may be imperfect. Why ?
- 23 Define and distinguish between induction and deduction.
- 24 Discuss the role of Mathematics in Physics.
- 25 In the context of scientific knowledge analyse the Rutherford experiment.
- 26 Explain the importance of models in scientific method.
- 27 Briefly discuss about the scientific revolution in between 1543 and 1687.
- 28 What are the steps involved in scientific method ?

(5 × 2 = 10 weightage)

IV. Essay Questions. Answer *two* questions from three :

- 29 Discuss the framework on which quantum theory was developed.
- 30 Explain the necessity of experimental design. Also explain the details of experimental protocol.
- 31 Discuss the interaction between physics and technology. Also discuss the new generation scientific instruments.

(2 × 4 = 8 weightage)