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(Pages : 3)

Name.....

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION NOVEMBER 2010

(CCSS)

Physics – Core Course

PH1 B01 – METHODOLOGY OF SCIENCE AND PHYSICS

Time : Three Hours

Total Weightage : 30

Section A

Answer **all** *questions, each has weightage ¼.*

1. The statement "Metals conduct electricity, Copper conducts electricity, therefore Copper is a "Metal" an example of :
   (a) inductive reasoning.
   (b) deductive reasoning.
   (c) practical reasoning.
   (d) scientific reasoning.
2. Scientific laws must not be :
   (a) biased.
   (b) consistent.
   (c) reliable.
   (d) correctable.
3. A scientific theory must be :
   (a) logically inconsistent.
   (b) logically consistent.
   (c) logically not falsifiable.
   (d) contradicting with real phenomenon.
4. The theory of relativity advanced by :
   (a) Einstein.
   (b) Aristotle.
   (c) Plato.
   (d) Thomas Alva Edison.
5. "Galileo discovered that earth has a spherical shape" ; It is an example of (hint-people believed that earth has a planet at the time of Galileo) :
   (a) scientific temper.
   (b) hypothesis
   (c) scientifi theory.
   (d) none of the above
6. ———— is a branch of physics which have powerful evidence theoretically and experimentally and it is arose in the 20th century.
   (a) quantum mechanics.
   (b) electrodynamics.
   (c) optics.
   (d) mechanics.

7. In the following which is not true about alpha scattering experiment :
   (a) alpha particles get deflected.
   (b) all alpha particles were deflected.
   (c) some of the alpha particles were deflected.
   (d) most of them go undeviated.
8. Neutron was discovered by :
   (a) Rongten. (b) Rutherford.
   (c) Chadwick. (d) H.A. Wilson.
9. A hypothesis should :
   (a) be logically consistent.
   (b) offer an explanation of the phenomena.
   (c) suggest consequences that are empirically testable.
   (d) all of the above.
10. Large Hadron Collider (LHC) experiment at the CERN labs is trying to stimulate the conditions of :
   (a) zero gravity.
   (b) superfluidity.
   (c) big bang.
   (d) none of the above.
11. Relativistic equations reduce to the classical equations in the limit :
   (a) v/c<<1. (b) v/c>>1.
   (c) v/c=1. (d) all of the above.
12. Which formula explains the black body spectrum?
   (a) Fitz Patrick formulae. (b) Dulong and Petit law.
   (c) Rayleigh-Jeans Formulae. (d) Max Plank formulae.

(12 × ¼ = 3 weightage

Section B

Answer all **nine** *questions.*
Each has weightage 1.

13. What do you mean by Nous?
14. With suitable example explain scientific knowledge.
15. What do you mean by information?

16. Explain black body radiation.
17. How do we define science?
18. What are the major revolutions in modern science?
19. What are the limitations of Heisenberg uncertainty principle?
20. What do you mean by radiation hazards?
21. Name the two important instruments invented in the 20th century and mention its application.

(9 × 1 = 9 weightage)

Section C

Answer any **five** *questions from seven.*

22. Explain the α-particle scattering experiment of Rutherford.
23. Explain about peer review.
24. What do you mean by scientific temper?
25. The scientific revolution was not marked by any single change. What are the new ideas contributed to what is called the scientific revolution?
26. Draw the black body radiation spectrum and explain it.
27. What do you mean by "resonance" particles?
28. Distinguish between Scanning Tunnel Microscope and Atomic Force Microscope.

(5 × 2 = 10 weightage)

Section D

Answer any **two** *questions from three.*

29. Give a brief explanation of history of science during last century.
30. Elaborate the importance of models in scientific methods.
31. Information technology will experience continued progress both in its own development and in combination with other fields. With suitable example justify the statement.

(2 × 4 = 8 weightage)