12PHU25

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION JUNE 2014
(Sixth Semester)

Branch – **PHYSICS**

MATERIAL SCIENCE

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 Define primitive cell.
2 What are the Miller indices?
3 Define enthalpy of motion.
4 What is Frenkel imperfection?
5 Define magnetic induction.
6 Explain the term superconductor.
7 Define dielectric constant.
8 What is meant by dielectric break down?
9 What are the advantages of gamma ray radiography over X-ray radiography?
10 State about metallography.

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a Explain a two dimensional square array lattice.
OR
b Discuss with the first ionization potentials of elements.

12 a Explain the Kirkendall effect.
OR
b Discuss about carburization of steel and decarburization of steel.

13 a Explain the classical theory of diamagnetism.
OR
b Give an account of Weiss theory of ferromagnetism.

14 a Explain space charge polarization.
OR
b Distinguish between polar dielectrics and non-polar dielectrics.

15 a Explain the Photoelectric method.
OR
b Describe the working principle of scanning electron microscope with diagram.

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Explain with neat diagram Bravais lattices.

17 Describe the atomic model of diffusion.

18 Distinguish between ferromagnetic and ferromagnetic materials. Give examples.

19 What is dielectric breakdown? Summaries the various factors contributing to breakdown in dielectric.

20 Draw the schematic diagram of an ultrasonic methods of non-destructive testing and explain the test procedure.

Z-Z-Z END