

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION MAY 2018  
(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 Bravais lattices.
- 2 What is meant by burgers vector?
- 3 Write short note on additivity rule of Mattheissen.
- 4 What is the effect of temperature on polarization?
- 5 State remenance and coercivity.
- 6 What are ferrites?
- 7 Give the properties of nanocrystals.
- 8 What are the advantages of magnetic nanoparticles in nanomedicine?
- 9 Distinguish between optical microscope and electron microscope.
- 10 What is meant by nondestructive testing (NDT)?

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

- 11 a What are Miller indices? Write the procedures for finding miller indices of a given plane.  
OR  
b Explain plane of symmetry.
- 12 a Write a note on super conducting materials.  
OR  
b Discuss the extrinsic semiconductor.
- 13 a Briefly explain the classical theory of diamagnetism.  
OR  
b Discuss the crystallinity of long chain polymers.
- 14 a Deduce the electronic structure of nanocrystals.  
OR  
b Discuss the different applications of nano materials.
- 15 a Mention various equipments used in non destructive testing.  
OR  
b Explain briefly Piezo electric ultrasonic generator.

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Write an essay on surface imperfections.
- 17 Explain with theory, the origin of different kinds of polarization.
- 18 Describe the growth of crystals from solution, melt and vapour methods.
- 19 Obtain the various routes for the synthesis of nano materials,
- 20 Explain the construction and working of scanning electron microscope (SEM).