

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION MAY 2019  
(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 packing factor.
- 2 Name the seven crystal system.
- 3 Define energy gap in solids.
- 4 What are the dielectrics?
- 5 Write any four properties of diamagnetic materials.
- 6 Define hysteresis.
- 7 What are nanomaterials?
- 8 Write short note on “Quantum dots”.
- 9 What is meant by nondestructive testing?
- 10 What are ultrasonic waves?

SECTION - B (25 Marks)

Answer ALL Questions

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

- 11 a Explain the term symmetry in crystal system.  
OR  
b Discuss the miller indices.
- 12 a Explain about conduction by free electrons.  
OR  
b Give the potential applications of super conducting materials.
- 13 a Give an account an classical theory of paramagnetism.  
OR  
b What are ferrites? And also explain its applications.
- 14 a List the properties of nanomaterials.  
OR  
b Discuss about nanotechnology in diagnostic applications.
- 15 a Mention various equipments used in non destructing testing.  
OR  
b Explain Piezo electric ultrasonic generator.

SECTION - C (30 Marks)

Answer any THREE Questions

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

- 16 Classify crystalline imperfections based on their geometry. Write brief note on each.
- 17 Write an essay on semiconductor materials.
- 18 Explain the classification of polymers and also discuss the crystallinity of long chain polymers.
- 19 Briefly discuss the various routes for the synthesis of nanomaterials.
- 20 Explain the construction and working of electron microscope with neat