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22PHU623N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)

Branch - **PHYSICS**

MATERIALS SCIENCE

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is a characheristic of crystalline structure? (i) High density (ii) Low density (iii) Range of melting point (iv) Short range of order	K1	CO1
	2	The imperfection in the crystal structure of metal is called (i) Dislocation (ii) Slip (iii) Fracture (iv) Impurities	K2	CO1
2	3	The temperature at which conductivity of a material becomes infinite is called (i) Critical Temperature (ii) Absolute Temperature (iii) Mean Temperature (iv) Crystallization Temperature	K1	CO2
	4	If the outermost energy band in a solid is completely filled the solid will be (i) Insulator (ii) Semiconductor (iii) Metal (iv) Either insulator or Semiconductor	K2	CO2
3	5	Which of the following is an example of ferromagnetic material? (i) Copper (ii) Water (iii) Allu (iv) Either insulator or Semiconductor	K1	CO3
	6	One of the characteristics of polymer is (i) High temperature stability (ii) High mechanical strength (iii) High elongation (iv) Low hardness	K2	CO3
4	7	A material with two of the three dimension are in nanorange and third dimension is large is known as (i) Micro material (ii) Quantum wire (iii) Quantum well (iv) Macro material	K1	CO4
	8	Which technique is commonly used to produce nanoparticles by mechanical grinding? (i) Chemical vapour deposition (ii) Ball milling (iii) Sol-gel (iv) Molecular condensation	K1	CO4
5	9	Which of the following is a physical thermal method? (i) Sol-gel (ii) Inert gas condensation (iii) Chemical precipitation (iv) Green synthesis	K1	CO5
	10	A piezoelectric generator converts (i) Mechanical into electrical energy (ii) Heat into electrical energy (iii) Electrical into mechanical energy (iv) Magnetic into sound energy	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain about Space Lattices and Crystal Structure.	K2	CO1
		(OR)		
	11.b.	Explain about the Properties of Dislocations.		
2	12.a.	Summarize about Free Electron Theory.	K2	CO2
		(OR)		
	12.b.	Compare Intrinsic and Extrinsic Semiconductors.		
3	13.a.	Identify the Different Types of Magnetic Material.	K3	CO3
		(OR)		
	13.b.	Construct the Classification of Plymers.		
4	14.a.	Briefly explalin about the Classification of Nanomaterials.	K2	CO4
		(OR)		
	14.b.	Demonstrate and Explain about the Liquid Phase Synthesis.		
5	15.a.	Compare Photo Elastic and Electrical Non destructive testing Method.	K2	CO5
		(OR)		
	15.b.	Explain Magnetostriction Ultrasonic Generator with neat Sketch.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Describe the different types of Point Imperfection with neat Sketch.	K2	CO1
2	17	Explain about the Temperaure and Frequency effects of Polarization.	K2	CO2
3	18	Apply the Classical theory of i) Dia Magnetic Materials and ii)Para Magnetic Materials.	K3	CO3
4	19	Explain the Construction and Working Principle of TEM with Diagram.	K2	CO4
5	20	Analyze the Construction and Working Principle of Electron Microscope.	K4	CO5

Z-Z-Z END