



Second Semester B.E./B.Tech. Degree Examination, June/July 2026

Introduction to Nano Technology

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: Bloom's level, C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Define Nanotechnology and explain length scales.	08	L2	CO1
	b.	Explain Surface to Volume ratio with significance.	06	L2	CO1
	c.	Compare Bulk and Nanoscale properties.	06	L2	CO1
OR					
Q.2	a.	Explain Bottom-up synthesis methods.	08	L2	CO1
	b.	Describe Sol-gel method.	06	L2	CO1
	c.	Explain Ball Milling Technique.	06	L2	CO1
Module – 2					
Q.3	a.	Explain working of SEM with diagram.	08	L2	CO2
	b.	Compare SEM and TEM.	06	L2	CO2
	c.	Explain AFM principle.	06	L2	CO2
OR					
Q.4	a.	Explain IR Spectroscopy instrumentation.	08	L2	CO2
	b.	Briefly explain Band gap measurement using UV-Vis.	06	L2	CO2
	c.	Explain XRD applications.	06	L2	CO2
Module – 3					
Q.5	a.	Explain structure and properties of graphene.	08	L2	CO3
	b.	Compare SWCNT and MWCNT.	06	L2	CO3
	c.	Explain Applications of fullerenes.	06	L2	CO3

OR

Q.6	a.	Explain synthesis of carbon nanomaterials.	08	L2	CO3
	b.	Explain Mechanical properties of carbon materials.	06	L2	CO3
	c.	Explain the Application of nanodiscs	06	L2	CO3

Module – 4

Q.7	a.	Explain working of Dye-Sensitized solar cells.	08	L2	CO4
	b.	Explain the generation of solar cells.	06	L2	CO4
	c.	Explain the working of fuel cells.	06	L2	CO4

OR

Q.8	a.	Explain working of Lithium-ion battery.	08	L2	CO4
	b.	Explain the role of nanotechnology in batteries.	06	L2	CO4
	c.	Explain the limitations of graphite anodes.	06	L2	CO4

Module – 5

Q.9	a.	Explain the applications of Nano-Technology in Biotechnology.	08	L2	CO5
	b.	Describe the applications of Nano-Technology in Chemistry.	06	L2	CO5
	c.	Explain the optical applications of Nanotechnology.	06	L2	CO5

OR

Q.10	a.	Explain the applications of nanotechnology in computing.	08	L2	CO5
	b.	Describe superhydrophobic coatings and their applications.	06	L2	CO5
	c.	Discuss the recent research trends in nanotechnology.	06	L2	CO5
