CBCS SCHEME

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BETCK105C

First Semester B.E./B.Tech. Degree Examination, June/July 2025
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.	Describe the synthesis of nanoparticles by solgel method.	08	L2	CO1
	b.	With the help of neat diagram, explain the synthesis of nanoparticle using ball milling technique. Mention any two advantages.	08	L2	CO1
	c.	Write a note on laser ablation.	04	L1	CO1
		OR			
Q.2	a.	Explain the confinement of elections in 0D, 1D, 2D and 3D systems.	08	L2	CO1
	b.	Explain the synthesis of ZnO nanoparticle using solution combustion method.	08	L2	CO1
	c.	Write a note on chemical bath deposition technique for the synthesis of nanomaterials.	04	L2	CO1
		Module – 2			
Q.3	a.	Explain the construction and working of scanning electron microscope.	08	L2	CO2
	b.	Explain the construction and working and any one mode of operation of atomic force microscope.	08	L2	CO2
	c.	Derive Scherrer equation.	04	L2	CO2
		OR			
Q.4	a.	Explain the construction and working of UV – visible spectrometer.	08	L2	CO2
	b.	Mention the differences between SEM and TEM	08	L2	CO2
	c.	In a X-ray diffraction experiment, peak width at half maximum is 0.6° and its corresponding Bragg's angle is 24°. Calculate the crystalline size using Debye –Scherser equation. Given wavelength used in x-ray diffraction experiment is 1.54A°.	04	L3	CO2
		Module – 3			
Q.5	a.	Describe the electrical, electronics and mechanical properties of graphene. Mention any two applications.	08	L2	CO3

	b.	Explain the synthesis, properties and applications of fullerene.	08	L2	CO3
	c.	Write a note on carbon nanocomposites.	04	L1	CO3
		OR			
Q.6	a.	Mention the types of methods of synthesis of CNTS. Discuss any one of the method with neat diagram.	08	L2	CO3
	b.	Write a note on : i) Carbon nanofibers ii) Nanodiamonds	08	L2	CO3
	c.	Mention any four differences between SWCNT and MNCNT.	04	L1	CO3
		Module – 4			
Q.7	a.	Explain the construction and working of Li –ion battery.	08	L2	CO4
	b.	Define solar cells. Explain in brief the different generation of solar cells.	08	L2	CO4
	c.	Mention the limitations of graphite anodes.	04	L1	CO4
		OR			
Q.8	a.	Describe the construction and working of Quantum dot sensitized solar cells.	08	L2	CO4
	b.	Explain the construction and working of fuel cell with a relevant diagram.	08	L2	CO4
	c.	Mention any four requirements of a good anodic materials.	04	L1	CO4
		Module – 5			
Q.9	a.	Explain the application of nanotechnology in agriculture and food industry.	08	L3	CO5
	b.	Describe the applications of nonotechnology in i) Nanocomputers ii) Chemical industry	08	L3	CO5
	c.	Write a note on nanoelectronics.	04	L1	CO5
		OR			
Q.10	a.	Explain the applications of nanotechnology in medicine and healthcare.	08	L3	CO5
	b.	List the major breakthrough in nanotechnology.	08	L2	CO5
	c.	Write a note on application of nanotechnology in diagnosis.	04	L3	CO5

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CBCS SCHEME

USN

BETCK105B

First Semester B.E./B.Tech. Degree Examination, June/July 2025
Green Buildings

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.

			M	L	C
		Module – 1			
Q.1	a.	Define the term Green Building. Explain any four green building materials.	10	L1	CO2
	b.	List down the environmental impacts of building.	10	L2	CO1
		OR			
Q.2	a.	(i) What is meant by stabilized mud block?	10	L2	CO1
		(ii) What are the environmental impact of brick manufacturing.			
	b.	(i) What is meant by fibre-reinforced polymer composite?	10	L2	CO1
		(ii) Explain the benefits of adding lime to concrete.			
		Module – 2			
Q.3	a.	Write short notes on : (i) Filler slab (ii) Composite beam and panel roof (iii) Ferro-concrete	10	L2	CO2
	b.	Explain role of Nirmithi Kendra and Habitat in developing and propagating cost-effective construction.	10	L2	CO2
		OR			
Q.4	a.	Write notes on : (i) Cavity wall construction (ii) Corner wall comprising rat trap bond	10	L2	CO2
	b.	(i) Write any five advantages of pre-engineered buildings.	10	L2	CO2
		(ii) What are the categories of building frame?			
		Module – 3			
Q.5	a.	(i) What is meant by Global Warming? Explain.	10	L2	CO3
		(ii) Explain the effect of global warming.			
	b.	Explain environmental benefits of Green buildings.	10	L2	CO3
		OR			
Q.6	a.	Compare green building with conventional building.	10	L2	CO3
	b.	Explain the environmental life cycle of building.	10	L2	CO3
		Module – 4			
Q.7	a.	Discuss green rating for integrated habitat assessment.	10	L2	CO4
	b.	Discuss fundamental principles of sustainable building design.	10	L2	CO4
		OR			
Q.8	a.	What is BREEAM certified building?	10	L2	CO4
	b.	What is the difference between BREEAM and LEED?	10	L2	CO4
		Module – 5			
Q.9	a.	Define Solar Energy. Which are the two main categories of solar power?	10	L2	CO5
	b.	Write a short note on solar heating and cooling.	10	L2	CO5
		OR			
Q.10	a.	Explain : (i) Sullage (ii) Sewage	10	L2	CO5
	b.	Explain the concept of Green composites.	10	L2	CO5

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