U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2024 Semester End Main Examinations

Programme: B.E. **Semester: I**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 23CY1ETNST **Max Marks: 100**
Course: Nanoscience and Technology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	*PO*	Marks
			UNIT - I			
1	a)		Explain the classification of nanomaterials based on the dimension.	*CO1*	*PO1*	**6**
	b)		What are carbon nanotubes? Explain different types of carbon nanotubes. Mention any two applications of CNT.	*CO1*	*PO1*	**7**
	c)		Explain in detail how melting point and optical properties of nanomaterials depend on their size.	*CO1*	*PO1*	**7**
			UNIT - II			
2	a)		Discuss the principle and application of co-precipitation method.	*CO2*	*PO1, 2*	**6**
	b)		Discuss the principle of SEM for the characterization of nanoparticles. Write any two disadvantages of SEM.	*CO2*	*PO1, 2*	**7**
	c)		Explain the synthesis of nanomaterials through CVD technique. Mention any two advantages of this method.	*CO2*	*PO1, 2*	**7**
			OR			
3	a)		Explain the synthesis of metal oxide nanoparticles through solution combustion method with suitable example.	*CO2*	*PO1, 2*	**6**
	b)		Elaborate on the characterization of nanomaterials using XRD technique.	*CO2*	*PO1, 2*	**7**
	c)		Explain on the determination of surface area of the nanomaterials using BET method.	*CO2*	*PO1, 2*	**7**
			UNIT - III			
4	a)		List the applications of nanomaterials in military and aerospace technology.	*CO3*	*PO6, 7*	**6**
	b)		Explain the role of nanotechnology in renewable energy applications.	*CO3*	*PO6, 7*	**7**
	c)		How nanomaterials are useful in the field of information science? Explain	*CO3*	*PO6, 7*	**7**

			OR			
	5	a)	Explain the application of nanotechnology in food safety.	*CO3*	*PO6, 7*	**6**
		b)	Discuss the applications of nanomaterials in drug delivery and tissue engineering.	*CO3*	*PO6, 7*	**7**
		c)	Elaborate on the components and working of a nano sensor.	*CO3*	*PO6, 7*	**7**
			UNIT - IV			
	6	a)	Nanofiltration is one of the suitable methods for the waste water treatment. Justify.	*CO3*	*PO6, 7*	**6**
		b)	Mention the ill effects of fluorine contaminated water. Elaborate on the defluorination of water through nanomaterials.	*CO2*	*PO1, 2*	**7**
		c)	Discuss the steps involved in photocatalytic degradation of pollutants present in water with a suitable example.	*CO2*	*PO1, 2*	**7**
			UNIT - V			
	7	a)	Describe the effect of nanomaterials on environment.	*CO3*	*PO3, 2*	**6**
		b)	Explain the toxicity of nanomaterials on human beings.	*CO3*	*PO3, 2*	**7**
		c)	Elaborate on the future implications of nanotechnology.	*CO3*	*PO3, 2*	**7**

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