U.S.N.										

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

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 19CY8IEIEM **Max Marks: 100**
Course: Industrial Engineering Materials **Date: 06.07.2023**

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.

		UNIT - I	CO	PO	Marks
1	a)	Define the following: (i) Abrasives (ii) Nano composites (iii) Biomaterials.	CO1	PO1	**6**
	b)	Outline the manufacturing of glass by Tank furnace method with relevant reactions.	CO2	PO2	**8**
	c)	Analyze the causes for devitrification of glass. Suggest any two preventive measures.	CO2	PO2	**6**
		UNIT - II			
2	a)	Describe the manufacturing of acidic refractories with relevant reactions.	CO2	PO2	**6**
	b)	What are refractories? Outline the classification of refractories with suitable examples.	CO1	PO1	**8**
	c)	Explain the classification of abrasives with suitable examples.	CO2	PO2	**6**
		OR			
3	a)	Outline the manufacturing of fireclay refractories.	CO2	PO2	**6**
	b)	Describe the properties of refractories. Explain seger cone test.	CO2	PO2	**8**
	c)	List the properties and applications of abrasives.	CO1	PO1	**6**
		UNIT - III			
4	a)	What are insulating materials? Explain the classification of insulating materials with examples.	CO1	PO1	**6**
	b)	Brief the properties and applications of Bio-composites.	CO2	PO2	**8**
	c)	Describe the properties and importance of electrical insulating materials.	CO2	PO2	**6**

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			UNIT - IV			
	5	a)	Define sensors. Outline the classification of sensors based on sensing materials.	*CO2*	*PO2*	**8**
		b)	Explain the principle and working mechanism of electrochemical sensors with a neat diagram.	*CO3*	*PO3*	**8**
		c)	Illustrate the structural hierarchy in biomaterials.	*CO1*	*PO1*	**4**
			OR			
	6	a)	Explain the mechanism of sensing in biosensors.	*CO3*	*PO3*	**6**
		b)	Define (i) Self-assembly (ii) Biocompatibility (iii) Bio-activity.	*CO1*	*PO1*	**8**
		c)	What is Proximity sensor? Discuss its applications.	*CO2*	*PO2*	**6**
			UNIT - V			
	7	a)	Explain the mechanism of Boundary Lubrication.	*CO3*	*PO3*	**6**
		b)	What are lubricants? Explain the classification of lubricants with suitable examples.	*CO2*	*PO2*	**8**
		c)	List the properties and industrial applications of synthetic lubricants.	*CO1*	*PO1*	**6**

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