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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: 22ME8OEPST **Max Marks: 100**
Course: Polymer Science and Technology **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.
3. Draw relevant diagrams/graphs and give equations wherever necessary.

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)	How polymers are classified based on the polymer structure with respect to its functionality? Explain with an example.	*CO1*	*PO1*	**08**
	b)	What is chain reaction polymerization? Describe its step with an example.	*CO1*	*PO1*	**08**
	c)	Write a note on polymer nomenclature.	*CO1*	*PO1*	**04**
		OR			
2	a)	What is the effect of crystallinity on mechanical properties? Draw the sketch which shows crystalline and amorphous region.	*CO1*	*PO1*	**04**
	b)	Describe any four factors that influence the crystallinity in polymers. Mention an example for each.	*CO1*	*PO1*	**08**
	c)	Elucidate different preparative polymerization techniques with an example for each.	*CO1*	*PO1*	**08**
		UNIT - II			
3	a)	Explain its structure, synthesis technique, property, and application for commodity thermoplastic and engineering thermoplastic with a suitable example.	*CO3*	*PO1*	**10**
	b)	Distinguish between thermoplastics and thermosets by highlighting their structure, synthesis technique, property, and applications.	*CO3*	*PO1*	**10**
		UNIT - III			
4	a)	Explain one general purpose and one specialty elastomer with respect to its structure, synthesis, properties, and applications.	*CO3*	*PO1*	**10**
	b)	Write a short note on (i) Natural rubber and (ii) Polymer blend. Highlight the structure, property, and application of each.	*CO3*	*PO1*	**10**

			UNIT - IV			
	5	a)	What is viscoelastic behavior? Explain the viscoelastic behavior in plastics.	*CO2*	*PO1*	**08**
		b)	Write a note on hardness and wear resistance of polymer.	*CO2*	*PO1*	**08**
		c)	Discuss polymer creep with a neat sketch.	*CO2*	*PO1*	**04**
			OR			
	6	a)	Explain any four methods to improve mechanical properties in polymers with an example for each.	*CO2*	*PO1*	**08**
		b)	Write a note on (i) Optical properties, (ii) Flammability and (iii) Permeability of polymers.	*CO2*	*PO1*	**08**
		c)	What is the effect of crystallinity on permeability and optical properties in polymers?	*CO2*	*PO1*	**04**
			UNIT - V			
	7	a)	Explain the plastic processing techniques with schematic diagrams for following: (i) Blow molding and (ii) Reaction injection molding.	*CO4*	*PO1*	**10**
		b)	Write a note on following elastomer technology: (i) Fillers for elastomers and (ii) Compounding.	*CO4*	*PO1*	**10**

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