CBCS SCHEME

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BME306B

Third Semester B.E./B.Tech. Degree Examination, June/July 2024
Smart Materials and Systems

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.	What are smart materials? Justify their need in present context with examples.	10	L1	CO1
	b.	State important characteristics of Smart Structures.	10	L1	CO1
		OR			
Q.2	a.	Explain the classification of Smart Structures.	10	L2	CO1
	b.	Explain the application areas of Smart Systems.	10	L2	CO1
		Module – 2			
Q.3	a.	List the common applications of piezo-electric materials.	10	L1	CO2
	b.	List the materials that exhibit piezo-resistive effect and state their applications.	10	L1	CO2
		OR			
Q.4	a.	With a suitable sketch, explain Piezo-electric effect.	10	L2	CO2
	b.	With a suitable sketch, explain Ferroelectricity effect and mention its applications.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain shape memory effect with a neat sketch.	10	L2	CO3
	b.	List the advantages and disadvantages of shape memory alloys.	10	L1	CO3
		OR			
Q.6	a.	Explain shape memory ceramics.	10	L2	CO3
	b.	Explain shape memory polymers.	10	L2	CO3
		Module – 4			
Q.7	a.	Explain the characteristics and applications of smart polymers.	10	L2	CO4
	b.	List the advantages and disadvantages of thermo responsive polymers.	10	L1	CO4
		OR			
Q.8	a.	Explain the properties and applications of electroactive polymers.	10	L2	CO4
	b.	List the advantages and disadvantages of electro active polymers.	10	L1	CO4
		Module – 5			
Q.9	a.	Explain any 2 optically activated polymers.	10	L2	CO5
	b.	Explain elastic memory composites.	10	L2	CO5
		OR			
Q.10		Write a note on following : i) Sensors ii) Actuators iii) Transducers iv) Chemical Gels	20	L1	CO5

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