

CBCS SCHEME



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BME306B

**Third Semester B.E./B.Tech Degree Supplementary 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 is meant by system intelligence? Write its components and explain it.	10	L1	CO1
	b.	Write the classification of smart structures and explain it.	10	L2	CO1
OR					
Q.2	a.	List any five common smart materials and write its associated stimulus-Response.	10	L1	CO1
	b.	List any five application areas of smart systems.	10	L1	CO1
Module – 2					
Q.3	a.	Write the difference between piezoelectricity and piezoresistivity.	10	L2	CO2
	b.	What is meant by Ferroelectricity? Write its properties and its applications.	10	L1	CO3
OR					
Q.4	a.	What is meant by Piezoelectric effect? Explain direct piezoelectric effect and inverse piezoelectric effect.	10	L1	CO2
	b.	Write the characteristics of piezoceramics and its applications.	10	L2	CO3
Module – 3					
Q.5	a.	Write a brief note on shape memory alloy and write its classification.	10	L2	CO2
	b.	Briefly explain shape memory effect.	10	L2	CO2
OR					
Q.6	a.	Write the difference between one way shape memory effect and two way shape memory effect.	10	L2	CO2
	b.	Write the applications of shape memory ceramics and shape memory polymers.	10	L2	CO3
Module – 4					
Q.7	a.	Write the characteristics of thermally responsive polymers and its applications.	10	L2	CO3
	b.	Write the characteristics of electroactive polymer microgels and its applications.	10	L2	CO3
OR					
Q.8	a.	Briefly explain pH-responsive and photo-responsive polymers.	10	L2	CO2
	b.	Write a brief note on Drug delivery using smart polymers.	10	L2	CO2
Module – 5					
Q.9	a.	Write the properties of optically activated polymers and its applications.	10	L2	CO3
	b.	Write a short note on Azobenzene liquid crystal.	10	L2	CO2
OR					
Q.10	a.	Write the key features of smart corrosion protection coatings and its applications.	10	L2	CO3