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**PRESIDENCY
UNIVERSITY
BENGALURU**

School of Engineering

Mid-Term Examinations - November 2024

Semester: VII

Date: 06-11-2024

Course Code: MEC3014

Time: 11:45am – 01:15pm

Course Name: Smart Materials

Max Marks: 50

Program: B.Tech.

Weightage: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than the roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

5Qx2M =10M

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|---|----------------------------------|---------|----|-----|
| 1 | Define thermoelectricity? | 2 Marks | L1 | CO1 |
| 2 | What are piezochromic materials? | 2 Marks | L1 | CO2 |
| 3 | Name any four smart materials. | 2 Marks | L1 | CO2 |
| 4 | Define shape memory effect. | 2 Marks | L1 | CO1 |
| 5 | What are chromic materials | 2 Marks | L1 | CO1 |

Part B

Answer ALL Questions. Each question carries 10 marks.

4QX10M=40M

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|---|----|--|---------|----|-----|
| 6 | 6a | Explain briefly the piezoelectric materials | 5 Marks | L2 | CO1 |
| | 6b | Mention the application areas of piezoelectric materials | 5 Marks | L2 | CO1 |

or

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|---|----|---|---------|----|-----|
| 7 | 7a | Explain magnetostrictive materials? Write working principle behind this effect. | 5 Marks | L2 | CO1 |
| | 7b | List the applications of the magnetostrictive properties | 5 Marks | L2 | CO1 |

	8a	Explain pseudoelasticity in shape memory alloys.	5 Marks	L2	C02
8	8b	Mention all the possible transformation occurring in the shape memory alloys.	5 Marks	L2	C02
		or			
	9a	Explain the chromic materials.	5 Marks	L2	C02
9	9b	List all the chromic materials with their respective stimuli	5 Marks	L2	C02
10		Explain the resin transfer method used in the synthesis of composite materials.	10 Marks	L3	C02
		or			
11		Explain the process of Resin film Infusion method. Mention at least 3 advantages and disadvantages of the method.	10 Marks	L3	C02
12		Magnetostriction has some effects that are related to its interaction with mechanical stress or torque. Explain the three effects related to magnetostriction.	10 Marks	L3	C01
		or			
13	13a	List all the applications of Magnetostrictive materials	5 Marks	L2	C01
	13b	List all the applications of the shape memory alloys	5 Marks	L2	C01

