



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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Mid - Term Examinations - March 2026

Date: 12- 03-2026

Time: 02:00pm - 03:30pm

School: SOCSE	Program: B.Tech		
Course Code: CHE3001	Course Name: Smart Materials and 3D Printing		
Semester: VI	Max Marks: 50	Weightage: 25%	

CO - Levels	C01	C02	C03	C04	C05
Marks	20	30	--	--	--

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

5Q x 2M=10M

1	What is Sol-gel method? Write any one advantage of the method.	2 Marks	L2	C02
2	Write any two methods of synthesis for NiTi.	2 Marks	L2	C02
3	Write the name of the starting materials of PVA with structural formula.	2 Marks	L1	C02
4	What are the purpose of ASTM?	2 Marks	L1	C02
5	Explain the role of reference electrode in electrochemical system. Write one example.	2 Marks	L2	C02

Part B

Answer the Questions.

Total Marks 40M

6.	a.	What is shape memory materials? Explain in details along with any two types, examples and applications.	10 Marks	L2	CO1
Or					
7.	a.	What is triboelectric materials? Explain in details with suitable types, examples and applications.	10 Marks	L2	CO1

8.	a.	Define 3 rd generation of smart materials. Explain self-healing material along with suitable types and applications.	10 Marks	L2	CO1
Or					
9.	a.	Explain the following properties of the smart materials, a) Electrical, b) Chemical and c) Mechanical	10 Marks	L2	CO1

10.	a.	What is conducting polymers? Write the method of synthesis of polyaniline with suitable equation.	10 Marks	L3	CO2
Or					
11.	a.	Write the method of synthesis of PVDF (Polyvinylidene fluoride) with equation and write their any 4 properties.	10 Marks	L3	CO2

12.	a.	Write the formula for barium titanate. Write the method of preparation of barium titanate with suitable steps.	10 Marks	L3	CO2
Or					
13.	a.	List and explain the key requirements and principle for the synthesis of CNTs using the modified CVD technique, and draw a schematic diagram of the process.	10 Marks	L3	CO2