Roll No: | | | | | | | | | | | |

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 07/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CHE2505 **Course Name:** Materials Chemistry for Engineers

Semester: First Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	68	66	46

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	State one advantage and one limitation of reverse osmosis.	2	CO1	BT1
2	List the different units used for expressing the hardness of water.	2	CO1	BT1
3	State any two properties of graphene.	2	CO2	BT1
4	Define nanofiltration. Mention one application of nanofiltration.	2	CO2	BT1
5	Name one example each of a solid, liquid, and gaseous fuel.	2	CO3	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Describe the different stages involved in the sewage wastewater treatment process and explain the purpose of each stage.	10	CO1	BT2
7	Explain the causes and effects of priming, foaming, corrosion, and caustic embrittlement in boilers and describe the methods used for their prevention.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Explain the top-down and bottom-up approaches for nanomaterial synthesis with suitable examples.	10	CO2	BT2
9	Explain the health, environmental and industrial concerns associated with nanomaterials.	10	CO2	BT2

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Compare bulk and nanomaterials in terms of surface area, chemical reactivity, optical properties, and stability, with suitable engineering applications.	10	CO2	BT3
11	Compare fullerenes, carbon nanotubes, carbon nanofibres, and nanocomposites based on their properties and applications.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

PTO (Please Turn Over)

12	Apply the principle of a bomb calorimeter to identify the calorific value obtained when water vapour is completely condensed and explain the basis of its measurement.	10	CO3	BT3
13	A coal sample is tested in a bomb calorimeter. Using the following data, calculate its Gross Calorific Value (GCV) and Net Calorific Value (NCV); Given: Mass of coal = 0.45 g, Mass of water = 870 g, Water equivalent of calorimeter = 450 g, Initial temperature = 23.0°C, Final temperature = 28.2°C, Hydrogen content = 10%, Latent heat of steam = 587 × 4.187 kJ/kg, and Specific heat of water = 4.187 kJ/kg°C.	10	CO3	BT3