Seat No.

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

12609 Bachelor of Technology (NEP-2.1)

Sub. Name: Engineering Chemistry

Sub. Code: 114853

Day and Date: Wednesday,21-01-2026 **Total Marks: 60**

Time: 10:30 AM To 12:30 PM

Instructions: **1. Draw neat labelled diagrams wherever necessary**
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: **1) Question No. 1 is Compulsory.**
2) Candidate has to attempt Any Three Questions from Question No. 2 to 5

Q1) Choose the correct alternative and rewrite the sentence. **[6]**

i. What is the purpose of making an alloy....
A. to increase its hardness
B. to increase its tensile strength
C. to reduce its melting point.
D. All of above

ii. Beer Lambert's law is used to determine.....
A. Refractive index of medium
B. Concentration of colored solution
C. density of solution
D. temperature

iii. The soap consuming capacity of water is known as.....
A. TDS
B. Acidity
C. Alkalinity
D. Hardness

iv. Why is low moisture content important in a good fuel?
A. It increases the ignition temperature
B. It reduces the energy wastage during burning
C. It makes the fuel more dense
D. It increases ash residue

v. Which of the following increases the rate of corrosion?
A. Low temperature
B. Absence of oxygen
C. High humidity
D. Smooth metal surface

vi. Urea–formaldehyde resin is widely used in

A. Electrical switches and plugs
B. Plastic bags
C. Rubber tyres
D. Beverage bottles

Q2) Answer the following questions. **[18]**

a. Give composition, properties and applications of Alnico and Nichrome. **[6]**

b. Define an alloy. Discuss the purposes of making alloy. **[6]**

c. Explain construction and working of GLC With neat labeled diagram. **[6]**

Q3) Answer the following questions. **[18]**

a. Explain ion exchange process for the treatment of hard water. **[6]**

b. A sample of water on analysis was found to contain the following salts as impurities: **[6]**

	Wt.mg/lit	Mol. Wt.
$Mg(HCO_3)_2$	36.5	146
$Ca(HCO_3)_2$	40.5	162
$CaCl_2$	27.75	111
$MgSO_4$	30	120
$CaSO_4$	34	136

Calculate temporary, permanent and total hardness of water in ppm

c. Explain the terms – Calorific value, high calorific value & Low calorific value. **[6]**

Q4) Answer the following questions. **[18]**

a. Define electrochemical corrosion. Explain oxygen absorption mechanism with example. **[6]**

b. Describe any two methods to prevent corrosion . What is hot dipping and tinning? **[6]**

c. Give preparation, properties and application of Bakelite plastic. **[6]**

Q5) Answer the following questions. **[18]**

a. Discuss the causes and disadvantages of scale and sludge formation. **[6]**

b. The following observation were made in Boy's gas calorimeter experiment: volume of gas = 0.12 m3. **[6]**

weight of water heated =27 kg,
temperature of inlet water =25.7 °C,
temperature of outlet water=40.2 °C,
weight of steam condensed= 0.025kg.
Calculate higher and lower calorific value of the fuel at STP.(Heat liberated in condensing water vapours and cooling the condensate is 570 kcal/kg)

c. Describe preparation, any two properties and applications of Polyethylene. **[6]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (12609) Bachelor of Technology (NEP-2.1) (114853) Engineering Chemistry Part 1 SEM 1