

Seat No. **MAR_APR 2025 SUMMER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Engineering Chemistry****Sub. Code: 109838/108726****Day and Date: AUGUST ,23-08-2025****Total Marks: 60****Time: 10:30 AM To 01:00 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 1 is compulsory.
 2. Solve any three of question 2 to question 5

Q1) Solve any 3(three) of the following [15]

- a. Write constituents, properties and uses of Duralumin. [5]
- b. Explain construction and working of Gas Liquid Chromatography with neat labelled diagram. [5]
- c. Explain ion exchange technique for the treatment of hard water. [5]
- d. Calculate the permanent and temporary hardness in ppm of a sample of water contains the dissolved salts as below: [5]

Name of salt	Wt. mg/lit	Mol. wt.
Ca(HCO ₃) ₂	16.2	162
Mg(HCO ₃) ₂	18.6	146
CaSO ₄	12.1	136
CaCl ₂	14.1	111
KNO ₃	12.0	101

Also report total hardness in degree French.

Q2) Solve the following [15]

- a. Explain the terms: [5]
 i) Calorific value, ii) High calorific value iii) Low calorific value.
- b. Write in detail principle, construction and working of Bomb calorimeter with a labelled diagram. [5]
- c. Following results were recorded in a Boy's gas calorimeter experiment. [5]
 Volume of gas used= 0.8 m³
 Weight of water heated= 40.6 kg
 Temperature of inlet water= 26 °C
 Temperature of outlet water= 45 °C

Mass of steam condensed = 0.40 kg.

Calculate the gross and net calorific value of the fuel assuming that latent heat of condensation of water vapour as 587 kcal/kg.

Q3) Solve the following [15]

- a. Define electrochemical corrosion. Explain hydrogen evolution mechanism with example. [5]
- b. Write a note on Cathodic protection. [5]
- c. What is hot dipping process? Write a note on galvanization. [5]

Q4) Solve the following [15]

- a. Give preparation, properties and application of Bakelite plastic. [5]
- b. Write a short note on Polyethene. What is HDPE and LDPE? [5]
- c. Distinguish between:
Thermo-softening and Thermosetting plastic. [5]

Q5) Solve the following [15]

- a. Compare solid fuels with liquid fuels. [5]
- b. Explain four factors affecting rate of corrosion in detail. [5]
- c. Give preparation, properties and application of Polyethylene plastic. [5]

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] (11731) Bachelor of Technology (NEP-2.0) (109838) Engineering Chemistry Part 1 SEM 2

2] (11731) Bachelor of Technology (NEP-2.0) (108726) Engineering Chemistry Part 1 SEM 1