

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-I & II(NEW) EXAMINATION – SUMMER 2023

Subject Code:3110001

Date:01-08-2023

Subject Name:Chemistry

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
<b>Q.1</b> (a) Discuss periodic trend of Ionization enthalpy. Why $\Delta_i H_1 < \Delta_i H_2 < \Delta_i H_3$ for an atom?	<b>03</b>
(b) Write a short note on priming and foaming.	<b>04</b>
(c) Explain how corrosion control can be brought about by the cathodic protection. Explain mechanism of electrochemical corrosion.	<b>07</b>
<b>Q.2</b> (a) What do you understand by hardness of water? Discuss types of hardness.	<b>03</b>
(b) Define monomer, polymerization, oligomer and heavy polymer.	<b>04</b>
(c) Explain the suitable method to analyze the percentage of moisture, volatile matter and ash content in a coal sample.	<b>07</b>
<b>OR</b>	
(c) What are alloys? Do you think alloys are better choice than pure metal for making of various tools? Justify your answer with the help of examples.	<b>07</b>
<b>Q.3</b> (a) What are the allowed and forbidden transitions?	<b>03</b>
(b) Give labelled schematic diagram for refining of petroleum by fractional distillation.	<b>04</b>
(c) What are the characteristic of good fuels? Discuss octane and cetane number.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Distinguish between absorption and emission spectra.	<b>03</b>
(b) Discuss desalination of water.	<b>04</b>
(c) Discuss mechanism of free radical polymerization.	<b>07</b>
<b>Q.4</b> (a) Write any three applications of nanomaterial in textile industries.	<b>03</b>
(b) State Lambert and Beer's law and deduce its mathematical expression.	<b>04</b>
(c) What is fermentation? Explain the fermentation processes for preparation of Ethanol.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Discuss the applications of nanomaterial in textile industry.	<b>03</b>
(b) Write any one specific application of following polymers- a. Polyvinyl chloride      b. Glyptal      c. Low density polyethened. High density polyethene	<b>04</b>

- (c) What is fermentation? Explain the fermentation processes for preparation of Acetic acid. **07**
- Q.5 (a) Write the any three advantages of bio-fertilizers over chemical fertilizers. **03**
- (b) Write the application of nanomaterial in catalysis and medicine. **04**
- (c) How would you find the equivalence point in Acid–Base titration by conductivity meter? Explain. **07**
- OR**
- Q.5 (a) What are enzymes? Mention their general characteristics. **03**
- (b) Explain the bottom up method for synthesis of nano-materials. **04**
- (c) What is spectroscopy? Write the application of UV-Visible and infra-red (IR) spectroscopy? **07**

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