

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

- (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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