

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:3130506****Date:08/09/2021****Subject Name:Applied 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) Explain R and S configuration of lactic acid. **03**
 (b) Draw a neat schematic diagram of Polari meter and explain how it works? **04**
 (c) What do you understand by S_N1 and S_N2 reactions? Explain each one with Suitable illustration. **07**
- Q.2** (a) Write application of X-ray diffractometer in detail. **03**
 (b) Explain Beer-Lambert's law. **04**
 (c) With a neat diagram explain the working of scanning Electron Microscope(SEM).State its application. **07**
- OR**
- (c) Derive Bragg's equation. How is it used to determine the internal crystal structure? **07**
- Q.3** (a) Explain the following: **03**
 (i) Specific rotation (ii) Free radical (iii) Chiral carbon
 (b) Discuss the optical activity and isomerism in tartaric acid. **04**
 (c) With a neat diagram explain the working of Transmission Electron Microscope(TEM).State its application. **07**
- OR**
- Q.3** (a) What is Mass spectroscopy? State its application. **03**
 (b) Explain with the help of MO theory, the paramagnetic character of oxygen. **04**
 (c) State Hess's Law of constant heat, Explain its some important application. **07**
- Q.4** (a) What is the difference between osmosis and diffusion? **03**
 (b) Explain bond fission and its type with suitable examples. **04**
 (c) Explain the term osmotic pressure. How is the osmotic pressure of a solution is affected by concentration of a solute and by temperature? **07**
- OR**
- Q.4** (a) Explain the relative stability of primary, secondary carbon ions. **03**
 (b) Write a note on Racemization and Asymmetrical synthesis. **04**
 (c) What do you understand by reaction intermediate? Explain with suitable example. **07**
- Q.5** (a) Derive Gibbs phase rule thermodynamically. **03**
 (b) Discuss about conformational isomerism in cyclohexane. **04**
 (c) Discuss the main features of the phase diagram of water system, explaining especially why the slope of solid-liquid line is negative for water? **07**
- OR**
- Q.5** (a) What are insulating materials? **03**
 (b) What are the physical and chemical properties of refractories? **04**
 (c) State the basic raw material used in ceramics and explain how chemical conversion take place? **07**
