

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– I & II EXAMINATION – SUMMER 2026

Subject Code:3110001

Date:02-07-2026

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) Explain the periodic trends of a. Electron negativity b. Ionization enthalpy **03**

(b) Explain the hard soft acid base concept with example. **04**

(c) Explain the proximate analysis of a coal sample. **07**

Q.2 (a) What do you understand by permanent and temporary hardness of water? **03**

(b) What are the biodegradable polymers? Give two examples. **04**

(c) What is corrosion? Explain the electrochemical process of corrosion? **07**

OR

(c) What are alloys? Give few examples and their applications. Explain how the alloys are better choice than pure metal for making of various tools? **07**

Q.3 (a) Explain the allowed and forbidden electronic transitions. **03**

(b) What are fibers? Give the reaction for preparation of nylon-66. **04**

(c) Give labelled schematic diagram for refining of petroleum by fractional distillation. **07**

OR

Q.3 (a) Give applications of UV-Vis spectroscopy. **03**

(b) Give detailed process for treatment of domestic waste water. **04**

(c) What are rubbers? Give reaction for preparation of chloroprene rubber and its applications. **07**

Q.4 (a) Write any three applications of nanomaterial in catalysis. **03**

(b) Give the structure of the monomer/s of following polymers;
1. PVC 2. PMMA **04**

(c) Explain the fermentation processes for preparation of acetic acid. **07**

OR

Q.4 (a) Discuss the applications of nanomaterial in medicine. **03**

(b) What is vulcanization of rubber? Explain. **04**

(c) Explain the fermentation processes for preparation of Ethanol. **07**

- Q.5 (a)** Write the any three advantages of bio-fertilizers over chemical fertilizers. **03**
- (b)** Explain the bottom up method for synthesis of nano-materials. **04**
- (c)** Explain the working of pH-meter and give its applications? **07**
- OR**
- Q.5 (a)** Write any six characteristic of good fuel. **03**
- (b)** Give the applications of carbon based nanomaterials. **04**
- (c)** What is infra-red (IR) spectroscopy? Explain the working of IR spectrometer and give its applications. **07**
