Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–I&II EXAMINATION – SUMMER 2025

Subject Code:BE01000031 Date:04-06-2025

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)**	What do you understand by biodegradable polymer?	**03**
	(b)	Distinguish between chemical and electrochemical corrosion.	**04**
	(c)	Describe with neat diagram of zeolite process and write its advantages and disadvantages.	**07**
Q.2	**(a)**	Write the short note on caustic embrittlement.	**03**
	(b)	Explain Top down and Bottom up approaches for synthesis of nanomaterial.	**04**
	(c)	Discuss about pitting corrosion with neat diagram and mechanism.	**07**
		OR	
	(c)	What is NMR spectroscopy? Explain with instrumentation and applications.	**07**
Q.3	**(a)**	Write the applications of IR spectroscopy.	**03**
	(b)	Explain properties and uses of copper, aluminum and nickel alloys.	**04**
	(c)	Describe types of hybridization with suitable example of each type.	**07**
		OR	
Q.3	**(a)**	What do you meant by biomass briquettes?	**03**
	(b)	State Lambert and Beer's law and deduce its mathematical expression.	**04**
	(c)	What is ferrous alloy? Explain heat treatments and applications of steel alloy.	**07**
Q.4	**(a)**	Explain types of inhibitors with example.	**03**
	(b)	Define and write Schrodinger's wave equation.	**04**
	(c)	Describe with neat diagram of fractional distillation of crude petroleum.	**07**
		OR	
Q.4	**(a)**	Write the properties and applications of fullerenes.	**03**
	(b)	Distinguish between sludge and scale formation with examples.	**04**
	(c)	What is chromatography? Explain principle and instrumentation of gas chromatography.	**07**
Q.5	**(a)**	Define and write Heisenberg's Uncertainity principle.	**03**
	(b)	Differentiate between proximate and ultimate analysis of coal.	**04**
	(c)	Describe with suitable diagram to determination of calorific value by bomb calorimeter.	**07**
		OR	
Q.5	**(a)**	Write the uses of carbon nanotubes and nanowires.	**03**
	(b)	Explain the fermentation process for preparation of acetic acid.	**04**
	(c)	Discuss about construction, working and uses of lithium batteries.	**07**