

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2021

Subject Code:3133609

Date:25-02-2022

Subject Name:Chemistry & Technology of Polymers

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 are Initiators? Give its examples.	03
	(b) What are different steps in the polymer dissolution process?	04
	(c) Write down the detailed classification of polymers with suitable examples of each.	07
Q.2	(a) Mention the essential conditions for polymerization reaction to occur.	03
	(b) What do you mean by bifunctional monomers? Write down minimum four examples of it.	04
	(c) What are the major types of polymerization? Explain it in detail.	07
OR		
	(c) Explain the solution technique and state advantages of the technique over other techniques of polymerization.	07
Q.3	(a) Explain in short about the industrial importance of inhibitors.	03
	(b) Explain in detail about free radical polymerization with suitable examples.	04
	(c) Write down the difference between Cationic and Anionic polymerization.	07
OR		
Q.3	(a) Give two examples each with chemical reaction of chain and step growth polymerization.	03
	(b) How does a free radical carry forward the polymerization reaction? Explain with a specific example.	04
	(c) Explain in detail about manufacturing method for butadiene along with suitable diagram.	07
Q.4	(a) Name two processes for manufacturing ethylene and propylene on a large scale.	03
	(b) Draw a diagram showing a conventional distillation tray column equipped with condenser, reboiler, reflux, side streams, trays, etc., and write importance of each.	04
	(c) Explain in detail about the concept of number average and weight average molecular weight of polymers.	07

OR

- Q.4** (a) How you will decide whether the process is feasible or not? **03**
- (b) Compare and contrast cryoscopy and ebulliometry methods for mol. wt determination. **04**
- (c) List out the various polymerization techniques. Explain in detail about bulk polymerization along with its engineering features. **07**

- Q.5** (a) What do you mean by auto-acceleration? **03**
- (b) How to synthesis ethylene glycol? Give its detailed information with diagram. **04**
- (c) Discuss in detail advantages and disadvantages of emulsion polymerization technique. **07**

OR

- Q.5** (a) Explain steam cracking of hydrocarbons (HC) in short. **03**
- (b) Why dissolution of polymers in solvents is very slow? **04**
- (c) Why does polydispersity exist? Explain with respect to chain growth and step growth polymerization reactions. Give pertinent examples with values. **07**
