Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2153602 Date:02/05/2018

Subject Name:Polymer & Rubber materials - I(Department Elective- III)

Time:02:30 PM to 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Write a note on thermoplastic polymers.	**03**
	(b)	Write difference between GPPS and HIPS.	**04**
	(c)	Draw chemical structure of: Nylon 6,Nylon 6,6, Nylon 6,10, PMMA, PET, PVC, PP	**07**
Q.2	**(a)**	How PET is synthesized? Write the chemistry behind its synthesis.	**03**
	(b)	Write a note on 'Sioplas Silane method for PE cross linking'.	**04**
	(c)	Distinguish various properties of polyethylene and polyamides.	**07**
		OR	
	(c)	Name plastic involved in oxygen barrier film formation. Write in detail about synthesis, and applications of suggested polymer.	**07**
Q.3	**(a)**	Write various properties of PTT.	**03**
	(b)	Write short note on 'Azo method for PE cross linking'.	**04**
	(c)	Explain in detail production of nylon 6,6 plastic material with flow sheet.	**07**
		OR	
Q.3	**(a)**	Give one method of synthesis of PAN polymer.	**03**
	(b)	Explain the preparation and properties of polyacrylic acid.	**04**
	(c)	Write the synthesis and applications of SAN polymer.	**07**
Q.4	**(a)**	Suggest polymer for housing of washing machine and give its synthesis too.	**03**
	(b)	Write in brief about the major properties and applications of SMA copolymer.	**04**
	(c)	How Polystyrene plastic can be synthesized, explain with the help of flow sheet.	**07**
		OR	
Q.4	**(a)**	Arrange the following in ascending order of T_g: PMMA, PET, PVC.	**03**
	(b)	What is the difference between liquid crystal polymers and conventional crystalline polymers in the melt at rest and during shear? Support your answer with the help of neat sketch.	**04**
	(c)	Suggest polymer for under water safe guard for aquarium. Elaborate in detail the production of suggested plastic material with the help of flow sheets.	**07**
Q.5	**(a)**	How polypropylene is prepared, support your answer with chemistry involved in it.	**03**
	(b)	What are polysulphones? Give their synthesis methods.	**04**
	(c)	Elaborate production of LDPE plastic material with the help of flow sheet.	**07**

OR

Q.5	**(a)**	Arrange the following in descending order of Tg: PS, PE, PBT.	**03**
	(b)	Write a note on PEEK.	**04**
	(c)	Explain phosgination route for Polycarbonate synthesis and also write various applications of Polycarbonate.	**07**

****