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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2153602 **Date: 03/05/2017**

Subject Name: Polymer & Rubber Materials-I

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		Answer the following (One mark each)	14
	1	Define: Thermoplastic material.	
	2	Write two applications of LLDPE.	
	3	Give structure of Polyisobutylene.	
	4	Write two key properties of EVA.	
	5	Write the limitation of PVDC.	
	6	Give full name for ABS.	
	7	Write two applications of PBT.	
	8	Give structure of PET.	
	9	Write two key properties of Nylon 6,6.	
	10	Write the structure of PMMA.	
	11	How GPPS and HIPS are different?	
	12	Write two applications of PC.	
	13	Give the structure of PEK.	
	14	Write two key properties of Polyoxymethylene.	
Q.2	(a)	Write the structure and applications of polypropylene.	03
	(b)	Mention in brief the two routes of preparation of polysulphones.	04
	(c)	Explain in detail production of LDPE plastic material with flow sheet.	07
		OR	
	(c)	Compare the structure - properties of Polyethylene and Polyamides with reason in detail.	07
Q.3	(a)	Write structure and properties of PTT.	03
	(b)	Explain in detail ‘Azo method for Polyethylene cross linking’.	04
	(c)	Explain in detail production of PVC plastic material with flow sheet.	07
		OR	
Q.3	(a)	How PET is prepared? Write the reactions involved.	03
	(b)	Explain in detail ‘Sioplas method for PE cross linking’.	04
	(c)	Write the structure, properties and applications of EVOH polymer.	07
Q.4	(a)	Write the properties of ABS terpolymer.	03
	(b)	Write in brief about the properties and applications of SMA copolymer.	04
	(c)	Describe the production of Polystyrene plastic material in detail with flow sheet.	07
		OR	
Q.4	(a)	How the PAN polymer is synthesized? Mention in brief.	03
	(b)	Explain in brief the preparation of polyacrylic acid and write its properties.	04
	(c)	Write the structure, properties and applications of SAN polymer.	07

Q.5	(a)	Arrange the following in ascending order of T_g: PMMA, PS, PE, PET, PVC, PP.	03
	(b)	Mention in brief the difference in behaviour between liquid crystal polymers and conventional crystalline polymers in the melt at rest and during shear with the help of neat sketch.	04
	(c)	Explain in detail production of PMMA plastic material with flow sheet.	07

OR

Q.5	(a)	Arrange following in ascending order of Tg: PS, PE, PBT, PEEK, PC, Nylon-6.	03
	(b)	Write the structure and properties of PEEK along with the name of manufacturer.	04
	(c)	Write the phosgenation route for Polycarbonate synthesis and applications of Polycarbonate.	07