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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2132301 **Date: 31/05/2017**

Subject Name: Introduction to Plastic Material Science

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Define initiators.	
	2	Draw the structure of Polystyrene and Polyvinyl chloride.	
	3	What are natural polymers? Give examples.	
	4	Write the full name of PP and PMMA.	
	5	Bulk polymerization technique gives us the purest form of polymer ----True or False.	
	6	_____ polymerization is also called Pearl polymerization.	
	7	Define Inhibitors.	
	8	List the three steps of chain polymerization process.	
	9	What is the molecular weight of PP if the no. of repeating units is 1500.	
	10	Define hetero chain polymer. Give example	
	11	Give on example of organic polymer and inorganic polymer.	
	12	Give the schematic representation of random and graft copolymers.	
	13	State the functional group and functionality of C_6H_5COOH.	
	14	Define Glass Transition Temperature.	
Q.2	**(a)**	Define homopolymers. Give at least two examples of it.	**03**
	(b)	What are thermoplastic polymers. Explain briefly giving examples.	**04**
	(c)	Differentiate chain polymerization and step polymerization.	**07**
		OR	
	(c)	Write a short note on initiators used in free radical polymerization.	**07**
Q.3	**(a)**	Explain the chain termination by chain transfer reaction.	**03**
	(b)	Explain briefly Plastics, Elastomers, Fibres & Liquid Resins.	**04**
	(c)	Write points of difference between low molecular weight compounds and polymers.	**07**
		OR	
Q.3	**(a)**	Define thermoset plastics. Give examples of thermoset plastics.	**03**
	(b)	Differentiate between crystalline and amorphous polymers.	**04**

	(c)	Explain the effect of functionality on structure of polymers.	**07**
Q.4	**(a)**	Explain homochain and heterochain polymers.	**03**
	(b)	Explain the bulk polymerization technique	**04**
	(c)	Explain free radical polymerization.	**07**
		OR	
Q.4	**(a)**	Write short note on hydrolysis and aminolysis reactions.	**03**
	(b)	Explain the suspension polymerization technique.	**04**
	(c)	Write a short note on co-ordination polymerization.	**07**
Q.5	**(a)**	Explain monodispersed and polydispersed system in polymers.	**03**
	(b)	What is the importance of Tg and its relation to HDT	**04**
	(c)	Describe effect of structure on crystallisability of polymers.	**07**
		OR	
Q.5	**(a)**	What is the practical significance of polymer molecular weight?	**03**
	(b)	Explain optical isomerism in stereo-regular polymers.	**04**
	(c)	Describe the factors influencing Tg of polymers.	**07**

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