Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER 2014

Subject Code: 152302 Date: 13-06-2014

Subject Name: Physics of Plastics

Time:10.30 am - 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.**

Q.1	**(a)**	Define [any seven] : polymer Melts; Polymer solutions; Mesogens; Nematic phase; Rayleigh ratio; radius of gyration ; Crystallites; crystallizability.	**07**
	(b)	Discuss In Detail , the factors affecting crystallinity	**07**
Q.2	**(a)**	Draw Molecular Architectures For Linear, Branched, Crosslinked And Dendritic Conformations	**07**
	(b)	Discuss In Detail, The Gel Permeation Chromatography	**07**
		OR	
	(b)	Discuss Fox- flory equation and its significance	**07**
Q.3	**(a)**	Discuss Voigt-Kelvin Model in detail	**07**
	(b)	Discuss Mark Houwink equation and its significance	**07**
		OR	
Q.3	**(a)**	Explain in brief the osmotic pressure of polymer solution	**07**
	(b)	What are Gaussian chain, freely jointed chain and worm like chain?	**07**
Q.4	**(a)**	Write note on liquid lattice theory.	**07**
	(b)	What is the principle of a rotational viscometer? Explain Brookfield Viscometer in detail.	**07**
		OR	
Q.4	**(a)**	Write note on structure factor.	**07**
	(b)	What is Polymer Configuration and Polymer conformation discuss citing examples	**07**
Q.5	**(a)**	Discuss Avrami's equation with its significance	**07**
	(b)	Write note on lamellac and spherlites morphology of polymer	**07**
		OR	
Q.5	**(a)**	Discuss the process of polymer dissolution in detail	**07**
	(b)	Give classification of non-Newtonian fluids and explain in detail with example	**07**

****