GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V • EXAMINATION – SUMMER • 2015

Subject Code: 152302   **Date: 05/05/2015**

Subject Name: Physics of Plastics

Time: 02.30pm-05.00pm   **Total Marks: 0**

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

Q.1	**(a)**	Discuss difference between Polymers and Low molecular weight compounds. Highlight	**07**
	(b)	What are Newtonian and Non Newtonian fluids. Discuss difference between the two.	**07**
Q.2	**(a)**	Discuss Maxwell's model in detail.	**07**
	(b)	Discuss Boltzmann's superposition Principle	**07**

OR

	(b)	Draw Molecular Architectures For Linear, Branched, Crosslinked And Dendritic Conformations	**07**
Q.3	**(a)**	Explain the Flory Huggins Lattice theory	**07**
	(b)	1. What is Polymer Configuration and Polymer Conformation? 2. Discuss Amorphous v/s. Crystalline polymers.	**07**

OR

Q.3	**(a)**	What is Gel permeation Chromatography? Discuss	**07**
	(b)	What is Chain length and contour length? Calculate the chain length andcontour length of a PE molecule whose –C-C- chain is 1.54A° and bond angle is 109° 28'. Assume n=1000	**07**
Q.4	**(a)**	What is the principle of a rotational viscometer? Explain Brookfield viscometer in detail.	**07**
	(b)	Discuss Process of polymer dissolution in detail	**07**

OR

Q.4	**(a)**	Define[ANY SEVEN] : Crystallinity ; Mesogens; Rayleigh ratio; Intrinsic viscosity; entropy ; nematic phase; radius of gyration ; polymer fractionation; Spherulites	**07**
Q.4	**(b)**	Discuss Mark Houwink equation and its significance	**07**
Q.5	**(a)**	Discuss Light scattering	**07**
	(b)	Discuss Process of Polymer Dissolution in detail	**07**

OR

Q.5	**(a)**	1. What is Theta Temperature? 2. What is Radius of Gyration?	**07**
	(b)	Discuss process of polymer crystallization in detail.	**07**

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