Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172309 Date:23/11/2016

Subject Name:Plastic Structure property relationship

Time:10.30 AM to 1.00 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)**	Explain Linear Branched and Cross-linked polymers with Structure and examples. Differentiate structure of LDPE and HDPE.	**07**
	(b)	Compare (a) Homo chain & hetero chain plastics (b) Thermoset and thermoplastic	**07**
Q.2	**(a)**	Explain following. (i) Crazing in polymers (ii) Creep Formation (iii) Co-polymers (iv) Tacticity	**07**
	(b)	Explain effect of intra and intermolecular hydrogen bonding on thermal and Processibility of polymers.	**07**
		OR	
	(b)	How structure of Nylons and PE related with properties and their applications. Give examples.	**07**
Q.3	**(a)**	What are the Optical properties? List any four. Explain transparency, haze with examples.	**07**
	(b)	How structure of Poly Propylene related with properties and their applications. Give example.	**07**
		OR	
Q.3	**(a)**	Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration	**07**
	(b)	What are the factors which affect Tm? Give Relation between Tg and Tm.	**07**
Q.4	**(a)**	Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties.	**07**
	(b)	How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.	**07**
		OR	
Q.4	**(a)**	Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties	**07**
	(b)	How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups	**07**
Q.5	**(a)**	Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 ^{o}C. but PE appears to be solid at room temperature	**07**
	(b)	Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.	**07**
		OR	
Q.5	**(a)**	Explain why PTFE and polyamides are suitable for manufacture of gears.	**07**
	(b)	What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm	**07**

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