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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 162302 **Date: 08/05/2017**

Subject Name: Plastic Structure, Property & Relationship

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.**

Q.1	**(a)**	Explain Linear Branched and Cross-linked polymers with Structure and examples. Differentiate structure of LDPE and HDPE.	**07**
	(b)	Explain (a) Copolymers with types and examples (b) Group contribution technique helpful for determination of Tg of Polystyrene? Explain How.	**07**
Q.2	**(a)**	Explain following. (i) Crazing in polymers (ii) Creep Formation (iii) Tg and Tm	**07**
	(b)	What are the Optical properties? Explain transparency, haze with examples.	**07**
		OR	
	(b)	Differentiate amorphous and crystalline polymers. Give any two factors which affect crystallinity of plastic materials.	**07**
Q.3	**(a)**	Give Factors which affects Tg and Tm for polymers.	**07**
	(b)	Explain (i) Heat capacity, specific heat, latent heat of crystallization	**07**
		OR	
Q.3	**(a)**	Explain flame Retardancy influence on the basic of structure of polymers and use of additives.	**07**
	(b)	Explain (a) Power factor (b) Dissipation factor and loss factors.	**07**
Q.4	**(a)**	Compare Nylon 6 and Nylon 66 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)**	What is tacticity? How tacticity will affect crystallinity of plastic materials? Give example.	**07**
	(b)	How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups	**07**
Q.5	**(a)**	Give any four factors which affect crystallinity of polymers.	**07**
	(b)	Explain effect of temperature on dielectric properties.	**07**
		OR	
Q.5	**(a)**	"In polyethylene Tg is Low and polyamides have high Glass transition Temperature"? Explain why by comparing structure (Draw structure).	**07**
	(b)	(i) Dissipation factor and loss factor (ii) Dielectric constant	**07**

****