Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I EXAMINATION – WINTER 2014

Subject Code: 2712407 Date:12/01/ 2015

Subject Name: Polymer Blends and Alloys

Time:2:30 to 5:00 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)**	What is Polymer blend? What are the reasons for making polymer blend? How to select blend components? Discuss.	**07**
	(b)	Define: Polymer alloys, Miscible polymer blends, Immiscible polymer blends, Partially miscible blends, interpenetrating network (IPN), compatibilizers, and compatibilization	**07**
Q.2	**(a)**	Explain Thermodynamic miscibility by phase diagram.	**07**
	(b)	List various techniques for preparation of polymer blends and explain.	**07**
		OR	
	(b)	Discuss various techniques for determination of polymer-polymer miscibility.	**07**
Q.3	**(a)**	Explain compatibilization mechanism of blend components and role of compatibilizers.	**07**
	(b)	Differentiate between Single screw and twin screw extruder.	**07**
		OR	
Q.3	**(a)**	Write notes on: (i) Two roll mill (ii) Banbury mixer.	**07**
	(b)	Describe Differential scanning Calorimeter (DSC) with neat diagram.	**07**
Q.4	**(a)**	Explain Scanning Electron Microscopy (SEM) for characterization of polymer blends with neat diagram, specimen preparation and application.	**07**
	(b)	Write application and reason for making following blends- (i) PC/ABS Blend (ii) PVC/CPE blend (iii) PP/EPDM blend	**07**
		OR	
Q.4	**(a)**	Explain light microscopy for characterization of polymer blends with neat diagram, specimen preparation and application.	**07**
	(b)	Explain flow behaviour of miscible and immiscible polymer blends.	**07**
Q.5	**(a)**	Write notes on (i) reactive blending (ii) blends containing Polystyrene.	**07**
	(b)	Explain polymer blend flow through contraction with neat diagram.	**07**
		OR	
Q.5	**(a)**	Explain Compatibilization method using block and graft copolymers.	**07**
	(b)	Explain Transmission Electron Microscopy (TEM) for characterization of polymer blends with neat diagram; also give difference between SEM and TEM.	**07**

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