Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– I (New course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 2712407 **Date:16/05/2015**

Subject Name: Polymer Blends and Alloys

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)**	What are the main reasons to prepare polymer blends? How we can select the blend components?	**07**
	(b)	Define and explain the following terms: Co-polymer, graft copolymer , Interpenetrating Polymer Networks.	**07**
Q.2	**(a)**	Explain in detail about the various types of blending methods	**07**
	(b)	Describe in detail the compatibilization mechanism of polymer blend components by Reactive compatibilization.	**07**
		OR	
	(b)	Explain LCST and UCST. Why do most polymer blends exhibit LCST rather than UCST?	**07**
Q.3	**(a)**	Explain any three commercial polymer blends with its application and reason for making following blends.	**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)	Explain in details the flow behavior of the immiscible and miscible blends.	**07**
Q.4	**(a)**	Explain the following terms: Chemical compatibilization, Physical Comaptibilization, reactive compatibilization	**07**
	(b)	Write a short note on rheology of the polymer blends.	**07**
		OR	
Q.4	**(a)**	Explain in detail about glass transition temperature (Tg). How it is useful to characterize polymer blends	**07**
	(b)	Explain Transmission Electron Microscopy (TEM) for characterization of polymer blends with neat diagram; also give difference between SEM and TEM.	**07**
Q.5	**(a)**	List out the different thermal analysis techniques used to characterize polymer blends. Explain in detail about Differential Scanning Calorimetry technique	**07**
	(b)	How we can study the phase morphology of polymer blends?	**07**
		OR	
Q.5	**(a)**	Describe in details the principles and applications of Scanning Electron Microcopy with respect to polymer blends.	**07**
	(b)	Write short notes on (a) Light scattering and (b) X-ray scattering ï spectroscopy	**07**

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