Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2712407 **Date: 04/01/2016**

Subject Name: Polymer Blends and Alloys

Time:2:30 pm 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)**	Define and explain the following terms: Co-polymer, graft copolymer , Interpenetrating Polymer Networks.	**07**
	(b)	What is Polymer blend? What are the reasons for making polymer blend? How to select blend components? Discuss.	**07**
Q.2	**(a)**	Describe in detail the compatibilization mechanism of blend components by reactive compatibilization.	**07**
	(b)	Explain LCST and UCST, why most of the polymer blends exhibit LCST rather than UCST?	**07**
		OR	
	(b)	Explain in detail about the selection procedure of blend components.	**07**
Q.3	**(a)**	Differentiate between Single screw and twin screw extruder.	**07**
	(b)	Explain in details the flow behaviour of the immiscible and miscible blends.	**07**
		OR	
Q.3	**(a)**	Explain any three commercial polymer blends with its application and reason for making following blends.	**07**
	(b)	Write a short note on chemical blending methods.	**07**
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**
		OR	
Q.4	**(a)**	Which techniques are used to study the phase morphology of the blend Component? Explain any one of them.	**07**
	(b)	Write notes on: (i) Two roll mill (ii) Banbury mixer.	**07**
Q.5	**(a)**	Write short notes on (a) Light scattering and (b) X-ray scattering – spectroscopy	**07**
	(b)	Write a short note on rheology of the polymer blends.	**07**
		OR	
Q.5	**(a)**	Explain the principle and working of Differential Scanning Calorimetry (DSC). How is it useful to Characterize polymer blends?	**07**
	(b)	Describe the advantages and disadvantages of transmission electron Microscopy over scanning electron microscopy.	**07**

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