Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME Semester –I Examination Feb. - 2012

Subject code: 712407N **Date: 21/02/2012**

Subject Name: Polymer Blends & Alloys

Time: 10.30 am – 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)**	What are the main reasons to prepare polymer blends? How we can select the blend components? Explain with suitable examples.	**07**
	(b)	Define and explain the terms, (i) Polymer blend (ii) Copolymer (iii) Homologous polymer blend (iv) Compatible polymer blend	**07**
Q.2	**(a)**	Explain the various methods used for making polymer blends.	**07**
	(b)	Which are the fundamental principles to develop polymer blends and alloys?	**07**
		OR	
	(b)	Write down the various steps involved to design the polymer blends.	**07**
Q.3	**(a)**	Define and explain the terms, (i) Immiscible polymer blend (ii) Block copolymer (iii) Graft copolymer.	**07**
	(b)	Explain in detail about reactive compatibilization.	**07**
		OR	
Q.3	**(a)**	Write a short note on different types of interpenetrating polymer networks (IPNs).	**07**
	(b)	What is compatibilizer? Explain the compatibilization mechanism using specific interacting group with suitable example.	**07**
Q.4	**(a)**	Explain the mechanism of transesterification reaction with suitable examples? How it is useful in polymer blends?	**07**
	(b)	How we can study the phase morphology of polymer blends?	**07**
		OR	
Q.4	**(a)**	Write a short note on miscibility and flow behaviour of polymer blends.	**07**
	(b)	List out the different thermal analysis techniques used to characterize polymer blends. Explain in detail any one of it.	**07**
Q.5	**(a)**	Explain in detail about glass transition temperature (T_g). How it is useful to characterize polymer blends.	**07**
	(b)	Write a short note on Scanning Electron Microscope (SEM).	**07**
		OR	
Q.5	**(a)**	What are the advantages of Transmission Electron Microscopy (TEM) over Scanning Electron Microscopy (SEM)?	**07**
	(b)	What is the principle of Light Microscopy? Explain the various contrast enhancement techniques used in it.	**07**

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