Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2712407 **Date: 19/05/2016**

Subject Name: Polymer Blends & Alloys

Time:02:30 pm to 05:00 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)**	Describe Differential scanning Calorimeter (DSC) with neat diagram.	**07**
	(b)	(a)Two miscible polymers A and B are blended in weight ratio of 40:60. If the glass transition Temperature, Tg of polymer A is -10°C and that of polymer B is 70°C, calculate the Tg of the blend. (b) Reasons to make Polymer alloy/blends.	**03** **04**
Q.2	**(a)**	List various techniques for preparation of polymer blends. Explain melt blending process in detail.	**07**
	(b)	Define the followings: 1. Compatibilizer 2. Interfacial adhesion 3. Homologous Polymer blend 4. Compatible polymer blend 5. Immiscible polymer blends 6. Metastable miscibility 7. IPN	**07**
		OR	
	(b)	Explain the Huggins-Flory theory for polymer blends.	**07**
Q.3	**(a)**	Explain Transmission Electron Microscopy (TEM) for characterization of polymer blends with neat diagram along with advantages.	**07**
	(b)	Explain thermodynamics of polymer blends. Give Phase diagram with LCST and UCST.	**07**
		OR	
Q.3	**(a)**	Explain the difference in flow behavior of miscible and immiscible blends.	**07**
	(b)	Explain compatibilization mechanism of blend components and role of compatibilizers.	**07**
Q.4	**(a)**	Discuss properties and applications of PVC/NBR & PC/PBT.	**07**
	(b)	Explain light microscopy for characterization of polymer blends with neat diagram, specimen preparation and application.	**07**
		OR	
Q.4	**(a)**	Discuss properties and applications of PVC/EVA & PP/EPDM Blends.	**07**
	(b)	What is degree of compatibility? List various compatibilization methods and explain addition block and graft copolymerization method.	**07**
Q.5	**(a)**	How scanning electron microscope (SEM) is working? Discuss with neat diagram along with sample preparation and advantages.	**07**
	(b)	Describe the properties and application of styrene based blends.	**07**
		OR	
Q.5	**(a)**	Write about: (i) Difference between SEM and TEM (ii) Light scattering	**07**
	(b)	Write a note on : Reactive Blending	**07**

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