

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2182302****Date:15/05/2019****Subject Name:Polymer Alloys and Blends****Time:10:30 AM TO 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.

		MARKS
Q.1	(a) What are Blends and Alloys? Differentiate between polymer alloy and blend.	03
	(b) List various steps to select the blend components.	04
	(c) Define following	07
	1. Interfacial adhesion 2. Immiscible polymer blend	
	3. Homologous Polymer blend 4. Compatible polymer blend	
	5. Compatibilizer 6. Metastable miscibility	
	7. IPN	
Q.2	(a) Explain Compatibilization method using block and graft copolymers.	03
	(b) What are the reasons for making polymer blend? Discuss.	04
	(c) Discuss various techniques for determination of polymer-polymer miscibility.	07
	OR	
	(c) Discuss with neat diagram working principal of SEM along with sample preparation and advantages.	07
Q.3	(a) Which are the properties and applications of PC/ABS Blends? Discuss.	03
	(b) Explain working of Two roll mills in polymer mixing with neat diagram.	04
	(c) Discuss thermodynamics of polymer blends. Give Phase diagram with LCST and UCST.	07
	OR	
Q.3	(a) What are composites? Give difference between alloys/blends and composites.	03
	(b) Explain the significance of Gas lattice model in blends.	04
	(c) Write a note on: Flory-Huggins theory	07
Q.4	(a) Describe the properties and application of PPO/HIPS blends.	03
	(b) Which are the techniques used for the preparation of polymer blends? Discuss.	04
	(c) Describe Differential scanning Calorimeter (DSC) with neat diagram.	07
	OR	
Q.4	(a) Write about PVC/ABS Blend.	03
	(b) List various compatibilization methods for Polymer blends. Discuss degree of compatibility.	04
	(c) Explain Twin screw extruder and its importance in preparation of polymer blends.	07

- Q.5 (a) Two miscible polymers A and B are blended in weight ratio of 30:70. If the glass transition Temperature, T_g of polymer A is -10°C and that of polymer B is 80°C , calculate the T_g of the blend. **03**
- (b) Discuss various blends used to improve barrier properties for packaging applications. **04**
- (c) Describe the working of Banbury mixture with neat diagram. **07**
- OR**
- Q.5 (a) Write about Reactive Blending. **03**
- (b) Discuss fundamental principles for development of polymer alloys and blends. **04**
- (c) What is FTIR? Discuss working of FTIR and its applications. **07**

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