

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII (NEW) EXAMINATION – WINTER 2017****Subject Code: 2182302****Date: 02/11/2017****Subject Name: Polymer Alloys and Blends****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) What are Blends and Alloys? Discuss.	<b>03</b>
	(b) Which are the reasons to make Polymer alloy/blends?	<b>04</b>
	(c) How scanning electron microscope (SEM) is working? Discuss with neat diagram along with sample preparation and advantages.	<b>07</b>
<b>Q.2</b>	(a) Define the followings: 1) Homologous Polymer blend 2) Compatible polymers blend 3) Immiscible polymer blends	<b>03</b>
	(b) Which are the techniques used for the preparation of polymer blends? Discuss.	<b>04</b>
	(c) Discuss techniques for determination of polymer-polymer miscibility.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(c) Explain the Huggins-Flory theory for polymer blends.	<b>07</b>
	(a) Two miscible polymers A and B are blended in weight ratio of 40:60. If the glass transition Temperature, T <sub>g</sub> of polymer A is -10°C and that of polymer B is 70°C, calculate the T <sub>g</sub> of the blend.	<b>03</b>
	(b) How to select the blend components? Explain.	<b>04</b>
	(c) Explain thermodynamics of polymer blends. Give Phase diagram with LCST and UCST.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Define: Block copolymer, graft copolymer and Interpenetrating Polymer Networks.	<b>03</b>
	(b) Explain the significance of Gas lattice model in blends.	<b>04</b>
	(c) Discuss properties and applications of PVC/NBR & PC/PBT.	<b>07</b>
<b>Q.4</b>	(a) Describe the properties and application of PPO/HIPS blends.	<b>03</b>
	(b) Describe the working of Two roll mills in polymer mixing with neat diagram.	<b>04</b>
	(c) What is compatibilizer? List various compatibilization methods and explain addition block and graft copolymerization method.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Write about PVC/ABS Blend.	<b>03</b>
	(b) Discuss various blends used to improve barrier properties for packaging applications.	<b>04</b>
	(c) Describe Differential scanning Calorimeter (DSC) with neat diagram.	<b>07</b>
<b>Q.5</b>	(a) What are composites? Give difference between alloys/blends and composites.	<b>03</b>
	(b) Discuss Interfacial Adhesion and Degree of compatibility.	<b>04</b>

- (c) Write a note on : Twin screw extruder **07**
- OR**
- Q.5** (a) Which are the properties and applications of PC/ABS Blends? **03**  
Discuss.
- (b) Explain Melt Blending in detail. **04**
- (c) Describe the working of Banbury mixture with neat diagram. **07**

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