

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. - SEMESTER – I • EXAMINATION – WINTER 2012****Subject code: 712407N****Date: 16-01-2013****Subject Name: Polymer Blends & Alloys****Time: 02.30 pm – 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) What are the main reasons to prepare polymer blends? How we can select the blend components? **07**
- (b) Define and explain the following terms: Miscible polymer Blend, Immiscible Polymer Blend, Reactive compatibilization. **07**

- Q.2** (a) Define and explain the following terms: Co-polymer, graft copolymer , Interpenetrating Polymer Networks. **07**
- (b) Describe in detail the compatibilization mechanism of blend components by reactive compatibilization. **07**

**OR**

- (b) Explain in details the importance of specific interactions on the miscibility of two polymers. support your statement with suitable examples **07**

- Q.3** (a) Which are the fundamental principles to develop polymer blends and alloys? **07**
- (b) Explain LCST and UCST, why most of the polymer blends exhibit LCST rather than UCST? **07**

**OR**

- Q.3** (a) Describe in detail the advantages and disadvantages of blends. **07**
- (b) Describe in details the principles and applications of Scanning Electron Microscopy with respect to polymer blends. **07**

- Q.4** (a) Describe in details the light microscopy and its application in polymer blends. **07**
- (b) List out the different thermal analysis techniques used to characterize polymer blends. Explain in detail any one of it. **07**

**OR**

- Q.4** (a) Define glass transition temperature? What are the factors influences in glass transition temperature? How it is useful to characterize polymer blends. **07**
- (b) Describe the principles and applications of Transmission Electron Microscopy with respect to blends. **07**

- Q.5** (a) Describe the principles and applications of differential scanning calorimetry with respect to polymer blends. **07**
- (b) Write short note on miscibility and flow behaviour of polymer blends. **07**

**OR**

- Q.5** (a) How can we study the phase morphology of polymer blends? **07**
- (b) Describe the advantages and disadvantages of transmission electron microscopy over scanning electron microscopy. **07**

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