Enrolment No.

# GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER - I • EXAMINATION - WINTER • 2013

Subject code: 712407N Subject Name: Polymer Blends & Alloys Time: 10.30 am – 01.00 pm **Instructions:** 

## Date: 06-01-2014

## **Total Marks: 70**

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- 0.1 (a) What do you mean by polymer blends? How will you design cost effective 07 blends?
  - (b) Describe in detail the compatibilization mechanism of polymer blend 07 components by Reactive compatibilization.
- 0.2 Justify the importance of specific interactions on the miscibility of two 07 (a) Polymers. What are these specific interactions? Explain with suitable examples.
  - (b) Define and explain the following terms: Technological polymer Blend and 07 Compatible polymer blend.

#### OR

- (b) Write short notes on: Graft copolymer, Block copolymer and Interpenetrating 07 Polymer Networks.
- **Q.3** (a) Explain LCST and UCST. Why do most polymer blends exhibit LCST rather 07 than UCST?
  - (b) Explain in details the statement "all alloys are blends but all blends are not 07 alloys".

## OR

- (a) Explain in details the flow behavior of the immiscible and miscible blends. 0.3 07
  - (b) Explain the mechanism of transesterification reaction with suitable examples? 07 How is it useful in polymer blends?
- 0.4 (a) Explain the principle of working of Differential Scanning Calorimetry (DSC). 07 How is it useful to Characterize polymer blends?
  - compatibilization, (b) Explain the following terms: Chemical Physical 07 Comaptibilization, reactive compatibilization.

## OR

- (a) How to characterize polymer blends by using differential thermal analysis? Q.4 07
  - (b) Describe the Complex flow–processing and contraction of polymer blends. 07
- Q.5 (a) Describe the principles and applications of Transmission Electron Microcopy. 07 How is it useful in characterizing blend? With respect to polymer blends.
  - (b) What is light microscopy? What kind of information you would derive from 07 microscopic study of biodegradable blends.

OR

- (a) Describe the principles and applications of Scanning Electron Microcopy. 07 0.5
  - Write short notes on (a) Light scattering and (b) X-ray scattering -**(b)** 07 spectroscopy

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