

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE – SEMESTER VIII • EXAMINATION – SUMMER - 2013****Subject code: 182906****Date: 09-05-2013****Subject Name: Modern Fibre Technology****Time: 10:30 pm 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.

- Q.1** (a) Write on the principal operations involved in the fibre manufacture and give the classification of manufactured fibres based on their characteristics. **07**
- (b) Write a short note on Tencel fiber **07**
- Q.2** (a) Explain the following terms: Molecular orientation, Crystallinity, Thermal transitions. **07**
- (b) Write on three popular approaches for producing conjugated bicomponent micro filaments. **07**
- OR**
- (b) With neat sketch write on fiber cross section and respective spinneret design for trilobal, hexalobal and hollow fibres. **07**
- Q.3** (a) With a neat sketch explain the construction and working of a Melt spinning line and discuss the functioning of the Extruder. **07**
- (b) State and explain the special features of High speed spinning. **07**
- OR**
- Q.3** (a) Explain in detail the mechanism of temporary and permanent set. What kinds of changes occur in crystal size and dispersion with heat treatment temperature? **09**
- (b) Write in short on following two methods of measurement of degree of set: **05**
- (i) Critical dissolution time
- (ii) Recovery from bending strains.
- Q.4** (a) How measurement of density can be used for estimating crystallinity of polymers? Explain in short preparation of density gradient column. **09**
- (b) Write a short note on DSC. **05**
- OR**
- Q.4** (a) Discuss the process variables for solution spinning and derive the formulae for spin stretch during Dry spinning. **07**
- (b) Write a short note on Wet spinning. **07**
- Q.5** (a) What are the various chemical components in Spin finish? Explain the Quench Duct Lubricating System. **07**
- (b) Write on the Spin finishes for filament yarn. **07**
- OR**
- Q.5** (a) Schematically represent working system of Gel permeation chromatography. **07**
- (b) Write a short note on Electron microscope. **07**

\*\*\*\*\*