

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VIII EXAMINATION – WINTER 2016**

**Subject Code: 182906****Date: 24/10/2016****Subject Name: Modern Fiber Technology (Department Elective II)****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.

- Q.1** (a) With a neat sketch explain the construction and working of a Melt spinning line and discuss the functioning of the Extruder. **07**
- (b) Explain the following terms: Molecular orientation, Crystallinity, Thermal transitions. **07**
- Q.2** (a) Write in short on characterization of polymers at the molecular level. **07**
- (b) How measurement of density can be used for estimating crystallinity of polymers? Explain in short preparation of density gradient column. **07**
- OR**
- (b) Write a short note on Lyocel fiber. **07**
- Q.3** (a) Compare Dry spinning and Wet spinning. **07**
- (b) Discuss the role of variations of following along the spin line: **07**
- i) Effect of variable throughput
- ii) The consequence of crystallization
- OR**
- Q.3** (a) Write a short note on Gel Permeation Chromatography. **07**
- (b) Write in short on any two methods of measurement of degree of set. **07**
- Q.4** (a) With a neat sketch explain a typical Dry-spinning cell and write on Spin stretch during Dry spinning. **07**
- (b) Explain the principle of melt spinning process and discuss the types of cooling systems in melt spinning process. **07**
- OR**
- Q.4** (a) Write on three popular approaches for producing conjugated bicomponent micro filaments. **07**
- (b) Schematically represent working system of FTIR. **07**
- Q.5** (a) State the functions of Spin finish and write on the Spin finish requirements for staple fibre production. **07**
- (b) Write on manufacture of PPTA (Kevlar) fiber through dry-jet-wet spinning process. **07**
- OR**
- Q.5** (a) Write a short note on Scanning Electron microscope. **07**
- (b) With neat sketch write on fiber cross section and respective spinneret design for trilobal, hexalobal and hollow fibres. **07**

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