Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Date: 27-05-2014

Subject Code: 182906

	Ti	me: 10:30 am - 01:00 pm Total Marks: 70  tructions:  1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.	
Q.1	(a)	Discuss the stages involved in manufacturing and application area of manufactured fibers.	06
	<b>(b)</b>	How measurement of density can be used for estimating crystallinity of polymers? Explain in short preparation of density gradient column.	08
Q.2	(a)	State and explain the internal properties important to ensure desirable mechanical properties of fibers.	07
	<b>(b)</b>	Write a short note on DSC.	07
	<b>(b)</b>	<b>OR</b> With suitable diagrams/graphs explain in short working and application of modern infrared spectroscopy.	07
Q.3	(a)	Explain the principle of melt spinning process and discuss the types of cooling systems in melt spinning process.	07
	<b>(b)</b>	Write on three popular approaches for producing conjugated bicomponent micro filaments.	07
0.1	(.)	OR	07
Q.3	(a)	Discuss the role of variations of following along the spin line:  i) Effect of variable throughput  ii) The consequence of crystallization	07
	<b>(b)</b>	Write a short note on Tencel fiber	07
Q.4	(a) (b)	Write on structure development of PET filament and Nylon 6 at high speeds. With neat sketch write on fiber cross section and respective spinneret design for trilobal, hexalobal and hollow fibres.	07 07
Q.4	(a) (b)	OR  Draw a neat sketch of dry spinning unit and write on spin stretch during dry spinning.  Write in short on following two methods of measurement of degree of set:  (i) Critical dissolution time  (ii) Recovery from bending strains.	07 07
Q.5	(a) (b)	Discuss the development of structure and morphology during solution spinning. Schematically represent working system of Gel permeation chromatography.  OR	07 07
Q.5	(a) (b)	Differntiate between dry and wet spinning. Explain in detail the mechanism of temporary and permanent set. What kinds of changes occur in crystal size and dispersion with heat treatment temperature?	06 08
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