Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1722504 Date: 04-12-2014

Subject Name: Modern Fiber Technology

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)**	Which are the steps involved in the production of electro-conductive filaments?	**07**
	(b)	How molecular weight and inter molecular forces affect the melting point of the fibre?	**07**
Q.2	**(a)**	Draw flow diagrams for the manufacture of polyester fiber by DMT and PTA route.	**07**
	(b)	Which are the functional parts of the extruder? Explain each in detail.	**07**
		OR	
	(b)	Explain different fibre morphology based on their orientation.	**07**
Q.3	**(a)**	Which are the principal operations involved in fibre manufacturing process?	**07**
	(b)	How caprolactam polymerization can be conducted through different processing routes?	**07**
		OR	
Q.3	**(a)**	Describe the load extension behavior of an undrawn fibre at room temperature.	**07**
	(b)	With neat sketch explain a dry-jet-wet spinning process for PPTA fibre.	**07**
Q.4	**(a)**	Define T_g and T_m. Explain free volume theory for T_g.	**07**
	(b)	Explain the coagulation variables affecting protofibre structure.	**07**
		OR	
Q.4	**(a)**	Which are the variables affecting fibre formation and dimensions of the melt spinning process?	**07**
	(b)	Define ñNature of settingò. Describe the mechanism of temporary and permanent set of fibre.	**07**
Q.5	**(a)**	What is the effect of evaporation to diffusion rate on filament cross section in dry and wet spinning?	**07**
	(b)	Define BCF? Give the production sequence for producing BCF yarn.	**07**
		OR	
Q.5	**(a)**	Which type of glass fibre is used for textile applications? Give a chemical composition, manufacturing process and structure of glass fibre.	**07**
	(b)	Explain spin stretch process during dry spinning.	**07**

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