Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (TEXTILE PROCESSING) • EXAMINATION–SUMMER-2016

Subject code: 2162806 **Date:17/05/2016**

Subject Name: Physical Characteristics of Textile Fibres

Time: 10:30 AM to 01:00 PM d**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)**	Discuss the effect of orientation on mechanical properties of fibres.	**07**
	(b)	Explain the importance of hydrophilicity of fibres forming polymer.	**03**
	(c)	60^s count cotton yarn contains 38 fibres in its cross section. The average staple length of cotton fibre is 36 mm. Calculate the length to breadth ratio of cotton fibre. (Density of cotton= 1.52 g/cm^3)	**04**
Q.2	**(a)**	Give the significance of dielectric properties with various factors affecting it.	**07**
	(b)	Describe the technical significance of swelling with detailed swelling effect measurements.	**07**
		OR	
	(b)	Explain the importance of aspect ratio (L:D) and strength of textile fibre.	**07**
Q.3	**(a)**	Write a note on: Thermal transitions of a polymer.	**07**
	(b)	Discuss various technological aspects of fibre friction in context to various textile fibres.	**07**
		OR	
Q.3	**(a)**	Describe with sketch the working of scanning electron microscope.	**07**
	(b)	Give the thermal behaviour of different textile fibres in brief with suitable examples.	**07**
Q.4	**(a)**	Elucidate importance of birefringence value derived from refractive index of a fibre to understand optical behaviour of fibres.	**07**
	(b)	Describe the importance of specific heat in context to thermal properties of fibres.	**07**
		OR	
Q.4	**(a)**	Summarize static electricity to understand its relation with textile fibres and their properties.	**07**
	(b)	Discuss the relation of absorption with dichroism in detail to describe optical behaviour of fibres.	**07**
Q.5	**(a)**	Explain the importance of linearity and molecular rigidity of fibres forming polymer.	**07**
	(b)	Write a note on: H-bonds in fibre forming polymers	**07**
		OR	
Q.5	**(a)**	Describe with neat sketch the morphological structure of cotton fibre.	**07**
	(b)	Describe the macro and micro structures of silk fibre.	**07**

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