Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:172905 **Date:18/05/2016**

Subject Name:Fibre Science & Elements of Textile Structure

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)**	Define: Moisture Regain. Discuss the regain-humidity relations of Textiles.	**07**
	(b)	Derive all the necessary equations to calculate Fabric Porosity.	**07**
Q.2	**(a)**	Derive Contraction Factor, $C_y = ½ (1 + \sec\alpha)$.	**07**
	(b)	Write a brief note on Hexagonal Close Packing.	**07**
		OR	
	(b)	Discuss in detail the fundamental structural features of yarn.	**07**
Q.3	**(a)**	Discuss in detail the experimental work of Morton & his associates.	**10**
	(b)	Define: a.Twist Multiplier b. Migration.	**04**
		OR	
Q.3	**(a)**	Describe Coil Winding method (Hemilton) for measuring yarn dimensions.	**08**
	(b)	In a multifilament yarn number of filaments is 40, find Schwarz's constant & the corrected surface twist angle, for: $V_y = 1.54\ cm^3/gm$ $\tau = 36$.	**06**
Q.4	**(a)**	Discuss the practical effects influenced by rate of moisture absorption.	**07**
	(b)	Discuss the Electronic microscopy techniques used for investigating Fibre Structure.	**07**
		OR	
Q.4	**(a)**	Discuss the order and disorder in the structure of fibre.	**07**
	(b)	Write a brief note on "Theories of Mechanical properties of textile".	**07**
Q.5	**(a)**	Derive the equations of Pierce's geometry of plain woven fabric for the general case where "neither of the yarn is straight nor it is jammed".	**10**
	(b)	Derive the value and equation of SDF in worsted system.	**04**
		OR	
Q.5	**(a)**	Discuss the Walen's method of crimp measurement using load elongation curve.	**07**
	(b)	Derive following equation for fabric weight: $W = 0.686\ [n_1/N_1\ (1+c_1) + n_2/N_2\ (1+c_2)]$	**07**

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