Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER– 7th EXAMINATION – SUMMER 2015

Subject Code: 172905 **Date: 04/05/2015**

Subject Name: Fibre Science & Elements of Textile Structure

Time:02.30PM-05.00PM **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)**	Derive the equations to calculate warp and weft cover factor in direct and indirect system	**07**
	(b)	Derive the general equation to calculate fabric weight.	**07**
Q.2	**(a)**	Write a brief note on Heats of sorption in fibres.	**07**
	(b)	Calculate : i. Distance between yarn centre & yarn surface at corners. ii. Distance between yarn centre & yarn surface at centre. In case of Hexagonal close packing for layer number seven.	**07**
		OR	
	(b)	Give the reasons for differential migration.	**07**
Q.3	**(a)**	Derive the Retraction factor, $Ry = \tan^2 (\alpha/2)$	**07**
	(b)	With a neat figure discuss the zonal distribution curves for roving yarn.	**07**
		OR	
Q.3	**(a)**	If in multifilament yarn number of filaments are 40, Vy = 1.54, $\tau = 36$, Find Schwarz's constant and the corrected surface twist angle.	**07**
	(b)	What are the parameters to characterize the migration?	**07**
Q.4	**(a)**	Briefly explain Nuclear Magnetic Resonance Technique for investigating fibre structure	**07**
	(b)	Write a brief note on "Viscoelastic behavior in Textiles"	**07**
		OR	
Q.4	**(a)**	Write a brief note on "Theories of Mechanical Properties of Textile"	**07**
	(b)	Define Moisture Regain. Discuss the Regain-humidity relations of Textiles.	**07**
Q.5	**(a)**	Derive the equations for Pierce's geometry of plain woven fabric where "both warp and weft yarn is jammed".	**08**
	(b)	Explain effect of finishing processes on crimp.	**06**
		OR	
Q.5	**(a)**	What is fabric porosity? Derive all the necessary equations to calculate Fabric Porosity .	**08**
	(b)	Which fabric properties are affected by fabric density and specific volume? Explain in detail how fabric density and specific volume can be calculated.	**06**

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