Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172904 **Date: 23/11/2016**

Subject Name: Yarn Structure & Fabric Geometry

Time:10.30 AM to 1.00 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)**	Derive Retraction factor, $Ry = \tan^2(\alpha/2)$	**07**
	(b)	Describe the disturbing factors that operate in determining real yarn structures.	**07**
Q.2	**(a)**	What are the parameters to characterize the Migration?	**08**
	(b)	Write short note on: i. Hexagonal Close Packing ii. Schwarz Constant.	**06**
		OR	
	(b)	Define the terms: i. Optimum twist factor ii. Contraction factor	**06**
Q.3	**(a)**	Discuss the importance of twist in filament yarn.	**06**
	(b)	Discuss the Incidence of irregularity in yarn and its effects.	**08**
		OR	
Q.3	**(a)**	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.	**08**
	(b)	Enlist the levels of approach suggested by Hearle to study the mechanics of Spun yarns.	**06**
Q.4	**(a)**	Derive all the equations to calculate Fabric cover.	**08**
	(b)	For cotton yarn if v = 1.1, warp yarn count is 36's with 70 end/inch and weft cover factor is 9. Find out the cloth cover.	**06**
		OR	
Q.4	**(a)**	Derive generalized equation for maximum cover (reference standard for K & d/p).	**07**
	(b)	Write brief note on Tensile properties of fabric.	**07**
Q.5	**(a)**	Explain the geometry of jammed condition for Race track cross-section.	**08**
	(b)	Define with reference to fabric: i. Isotropic ii. Anisotropic.	**06**
		OR	
Q.5	**(a)**	Derive the equations for Pierce's model for the geometry of Plain woven fabric when "Neither of the yarn is straight nor it is jammed.	**10**
	(b)	Draw only diagram for load extension curve for the fabric with different zones.	**04**

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