Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2172904 **Date: 04/05/2017**

Subject Name: Yarn Structure & Fabric Geometry

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)**	Derive the equations to calculate warp cover factor & weft cover factor.	**08**
	(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.	**06**
Q.2	**(a)**	Define the terms; i. Twist Multiplier ii. Ideal Migration iii. Twist iv. Migration	**08**
	(b)	Discuss the factors that influence yarn tensile properties.	**06**
		OR	
	(b)	Define the terms: i. Work of Rupture ii. Work factor	**06**
Q.3	**(a)**	Derive the Retraction factor, $Ry = \tan^2 (\alpha/2)$	**07**
	(b)	Discuss in detail about fundamental structural features of yarn.	**07**
		OR	
Q.3	**(a)**	Describe Coil winding method for measuring yarn dimensions.	**08**
	(b)	Write in brief about Concentrating factors.	**06**
Q.4	**(a)**	Derive the equations for Pierce's geometry of plain woven fabric for the special case when "weft yarn is straight & warp is not jammed".	**07**
	(b)	Calculate fabric cover & yarn balance β for the following fabric data: End/inch & picks/inch: 80 & 70 respectively. Warp count = 64's & weft count= 49's.	**07**
		OR	
Q.4	**(a)**	Explain the geometry of jammed condition for Race track cross-section.	**07**
	(b)	Describe with equation cover factor of square jammed fabric.	**07**
Q.5	**(a)**	Establish the relationship between two measures of cover: k & d/p.	**08**
	(b)	Draw only the diagram of load-extension curve for the woven fabric showing different zones.	**06**
		OR	
Q.5	**(a)**	Explain the terms: Poisson ratio, Anisotropic, isotropic, & orthotropic.	**08**
	(b)	Explain phenomenon of Crimp interchange.	**06**

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