

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2172904****Date: 28/11/2019****Subject Name: Yarn Structure & Fabric Geometry****Time: 10:30 AM TO 01:00 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) Explain terms: twist multiplier and twist factor. **03**
(b) Defined twist contraction and retraction factor & find their relationship. **04**
(c) What are main assumptions of idealized twist geometry? Derive five basic equations. **07**

- Q.2** (a) Explain hook's law with diagram. **03**
(b) Explain different form of yarn twisting with diagram. **04**
(c) What are factors causing deviations from ideal structure? Explain briefly. **07**

OR

- (c) Derive the equations to calculate warp cover factor & weft cover factor. **07**
Q.3 (a) Discuss about packing factor and specific yarn volume. **03**
(b) Explains Hamilton – Coil winding method of measuring yarn diameter. **04**
(c) Derive equation of retraction factor, $R_y = \tan^2\left(\frac{\alpha}{2}\right)$. **07**

OR

- Q.3** (a) Explain relation between filament extension with yarn extension with suitable equation. **03**
(b) What are the parameters of migration? Describe any two parameters in short. **04**
(c) Write short note on modes of propagation of breaks. **07**
Q.4 (a) What is use of tracer fibre techniques? **03**
(b) Give limitation of fabric geometrical model. **04**
(c) Establish the relationship between k & d/p for maximum cover. **07**

OR

- Q.4** (a) Define the terms: i. Initial modulus & ii. Work of rupture **03**
(b) Draw typical load extension curve for the fabric with different zones. **04**
(c) Described the factors that influence yarn tensile properties. **07**
Q.5 (a) Discuss about isotropic and anisotropic properties of material. **03**
(b) Describe phenomenon of crimp interchange. **04**
(c) 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**

OR

- Q.5** (a) Discuss about poison's ratio. **03**
(b) Find the cloth cover if warp count & epi is 36's & 72 respectively and weft count & ppi is 40's & 56 respectively. **04**
(c) Explain the geometry of jammed condition for Race track cross-section. **07**
