

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2172904

Date: 26/11/2018

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 the terms: Isotropic and Anisotropic. 03
 (b) Give classification of yarn. 04
 (c) What is packing factor? Derive pierce's equation, $d = \frac{1}{28\sqrt{N_s}}$ inch. 07

- Q.2 (a) What are the limitation of fabric geometrical model? 03
 (b) Define terms migration and ideal migration. 04
 (c) Derive the equations to calculate warp cover factor & weft cover factor. 07

OR

- (c) Explain packing of fibres inside the yarn with diagram. 07
 Q.3 (a) Explain role of yarn structure on yarn and fabric properties 03
 (b) Explain disturbing factors which causing deviations from ideal structure. 04
 (c) Define yarn contraction and retraction factor. Also prove that, $C_y(C_y - 1) = \frac{1}{4} \tan^2 \alpha$. 07

OR

- Q.3 (a) Explain briefly about schwarz constant, 03
 (b) Explain tracer fibre techniques with diagram. 04
 (c) What are the main characteristics measured for fibre migration? Prove that the RMS value of perfect migration is almost 0.3 07
 Q.4 (a) Discuss the importance of twist in filament yarn. 03
 (b) Draw only the diagram of load-extension curve for the woven fabric showing different zones. 04
 (c) Establish the relationship between two measures of cover: k & d/p. 07

OR

- Q.4 (a) Find the warp cover factor in worsted system, if count of yarn is 40's & ends/inch is 68. 03
 (b) Define: i. Tenacity ii. Initial Modulus 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
 Q.5 (a) Explain the terms: Poisson ratio & orthotropic. 03
 (b) Give limitation of fabric geometrical model. 04
 (c) Explain phenomenon of Crimp interchange. 07

OR

- Q.5 (a) Discuss about hook's law. 03
 (b) Find the cloth cover if warp count & epi is 40's & 90 respectively and weft count & ppi is 30's & 60 respectively. 04
 (c) Write brief note on tensile properties of fabric. 07
