



SF-7901

B. E. IV (Sem. VIII) (T.T.) Examination

May / June – 2011

Yarn Structure & Fabric Geometry

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य कभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. 4 (Sem. 8) (T.T.)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Yarn Structure & Fabric Geometry"/>	<input type="text"/>
Subject Code No. : <input type="text" value="7"/> <input type="text" value="9"/> <input type="text" value="0"/> <input type="text" value="1"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&2"/>	<input type="text"/>
	Student's Signature

- (2) Answers to the two sections must be written in separate answer books.
- (3) Figures to the right indicate full marks.
- (4) Tie two sections separately.

SECTION - I

- 1 (a) Do as directed :
- (i) Calendering process reduces the warp crimp and weft crimp. (State true or false) 1
- (ii) For 100% coverage value of reference standard for d/p is_____. 1
- (iii) Dickson's weight factor considers "Effect of crimp" in his equation. (State true or false) 1
- (iv) If the load is applied in the direction of warp, then the warp crimp will_____. 1
- (v) Equation $L_s - L_c / L_c$ will give value of Take up. (State true or false) 1
- (b) Derive the equation for SDF in cotton system. 5
- (c) Derive the equations for Pierce's geometry of plain weave where "neither of the yarn is straight nor it is jammed." 10

- 2 (a) Derive all the equations related to fabric porosity i.e. fabric pore area, yarn air space and third element. 9
 (b) Discuss effect of finishing process on crimp in detail. 6

OR

- 2 (a) Derive equation related to weight in cotton system i.e. $W = 0.686[n_1/N_1 (1+C_1) + n_2/N_2 (1+C_2)]$ 7
 (b) Derive the equations for warp cover factor and weft cover factor in direct and indirect system. 8
- 3 Attempt any three of the following : 15
 (i) Actual fractional coverage (d/p)
 (ii) Direct and indirect effect of application of tensile load to a fabric in unidirection
 (iii) Fabric density and specific volume
 (iv) Crimp calculation

SECTION - II

- 4 (a) Do as directed :
 (i) Enlist the factors that tend to make the yarn geometry depart from the ideal. 2
 (ii) Why twist is essential in staple yarns ? 2
 (iii) Define : Twist. 2
 (iv) Tracer fibre technique was developed by whom ? 2
 (v) If fabric is produced by blending of 50% white viscose rayon with 50% black acetate, both with same denier and length, i.e., 3rd and 2 1/2", what will be the effect on fabric? 2
- (b) With a neat figure discuss the zonal distribution curves for triple roving yarns. 5
 (c) Give the reasons for differential migration. 5
- 5 (a) Derive : Retraction factor $R_y = \tan^2 (\alpha/2)$ 10
 (b) Hamilton geometry gave the following data : 5
 (i) Major diameter = 300 μ
 (ii) Minor diameter = 220 μ
 (iii) Ne = 30 Tex
 (iv) Fibre specific volume = 0.7 cm³/gm
 Estimate V_y / V_f .

OR

- 5 (a) What are the parameters to characterize the migration ? 10
- (b) Calculate : 5
- (i) Distance between yarn centre and yarn surface at corners.
- (ii) Distance between yarn centre and yarn surface at centre.
- In case of Hexagonal close packing for layer number seven.
- 6 Attempt any **three** of the following : 15
- (i) Analysis by correlogram
- (ii) Concentrating factors
- (iii) Schwarz constant
- (iv) Importance of twist in filament yarn.
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