Theory of Textile Structure (TXL 371)

(Yarn part)

Tushar Bansal

1. Use of fiber volume per unit length is more logical to express the fineness of the fibres. Justify. (2)

2. A cotton shirt is made of 1.7dtex fineness and 28 mm length. Calculate the total length of the fibre in a shirt of 0.2 Kg. (2)

3. Derive the formula for yarn diameter made on different spinning systems and fibres in terms of yarn fineness and twist factor (4)

4. Explain the significance of factor K_n and K_s to understand the mechanics of yarn structure. (2)

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TXL 371 : Theory of Textile Structure

Part 2 : Fabric — Max. Marks - 20

1. Answer following questions with explanation and diagram wherever necessary.

i. What is the geometrical condition for a plain woven fabric thickness to be minimum ?

ii. In a jammed fabric, if weft weave angle is 41^0, what will be warp weave angle ?

iii. What is the geometrical condition for maximum cover of a woven fabric and how much is the value with out any distortion of yarn cross section.

iv. Draw and explain a typical plot between warp and weft crimp when fabric is under tension.

v. Show that, for a square and jammed cloth, weave angle is 60^0 .

[2 x 5]

2. A fabric is made from 38 tex yarn , ends and picks per cm are 30 and 25 respectively,

Assume , fibre density 1.54 g/cm^3 and yarn packing density = 0.65 , then :

i) Calculate the crimp in warp and weft, if the warp is jammed.

ii) Fabric thickness.

[10]