

Dec.-22-0289

TE-605 (Theory of Textile Structure)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : There are five Sections A, B, C, D and E. Attempt any one question each from Section A, B, C and D. Section E is compulsory. Attempt all the questions in this Section.

SECTION - A

1. What is limit of twist? When the number of turns of twist is inserted in a given length of zero twist yarn, as supplied, show that the resulting equation is a quadratic with two solutions. (10)
2. Find out the relationship between $\tan \alpha$ and TM (Ne) keeping the same specific volume. (10)

SECTION - B

3. Define fibre migration. What are the factors which affect migration behaviour? (10)
4. State the prediction of breakage and explain the behaviour of yarns during rupture. (10)

SECTION - C

5. Give a brief overview on the history of various theoretical models and their assumptions associated with woven fabrics. (10)
6. Elaborate the concept of Jammed Structure and Derive relation for Pierce's Cloth Geometry in jammed condition. (10)

SECTION - D

7. Explain the blended yarn structure. State the applications of blended yarn. (10)

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8. Define bending, shear, compression of woven fabrics and their measuring methods. (10)

SECTION - E

9. (i) The following expression is valid for one cotton yarn whose packaging density is

$$\text{Yarn diameter (inch)} = \frac{1}{28\sqrt{\text{yarn count (Ne)}}$$

- (a) 0.40
- (b) 0.50
- (c) 0.60
- (d) 0.70

- (ii) The hairiness is more in which type of yarn structure?

- (a) Ring
- (b) Rotor
- (c) Air-jet
- (d) Friction

- (iii) Define Hamburgers Theory of blended yarn?
- (iv) What is the minimum possible cover factor ?
- (v) Draw the geometry of plain knitted fabric.
- (vi) Explain characterization of migration behaviour.
- (vii) State the assumptions for idealized helical yarn structure.
- (viii) Define concept of similar cloth.
- (ix) Define buckling of woven fabric.
- (x) Explain the strip and grab method of tensile strength of fabric. (10×2=20)