Roll No. ..... **Total Pages : 03**

J-21-0117

B. Tech. EXAMINATION, 2021

Semester VI (CBCS)

THEORY OF TEXTILE STRUCTURE

TE-605

Time : 2 *Hours* *Maximum Marks :* 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. What are the postulates of ideal yarn structure ? Explain with a neat sketch. **15**

2. (a) Find out the relationship in yarn count, twist factor and specific volume of the yarn. **10**

(b) Define Twist Contraction and Twist Retraction. **5**

Section B

3. Define Fibre Migration. Explain the mechanism of fibre migration. **15**

4. Establish the relation between yarn modulus (E_y) and filament modulus (E_f) i.e. **15**

$$E_y = E_f \cos^2 \alpha$$

Section C

5. Illustrate Kemp's race track model of fabric geometry. **15**

6. (a) Write *seven* equations of pierce fabric geometry. **10**

(b) What is Crimp Interchange ? **5**

Section D

7. (a) What are the properties of similar yarn and strictly similar yarn ? **5**

(b) Find out cross-sectional area proportion in a blended yarn. **10**

8. Explain the structural properties of ring, rotor, airjet and friction yarn. **15**

(Compulsory Question)

9. Attempt any *six* questions :

(a) TPI in the 36's Ne yarn when TM = 3.0 tpi $(Ne)^{-1/2}$.....

(b) Theoretical limit of twist angle is.....

(c) Find out number of fibres in 6th layer of open circular packed yarn.

(d) What do you mean by bucking of fabric ?

(e) Establish the relation between TM ($tpi/Ne^{1/2}$) and TF ($tex^{1/2}$ tpcm).

(f) Relation in *h* (Length of one turn of twist or inverse of twist, cm) and T (Yarn twist, tpcm).....

(g) Fibre migration in the yarn significantly improves yarn strength. (true/false)

(h) Functional relationship between *p*, *h*, *c*.....

(i) Define shear stress. **2½×6=15**