(h) State the significance of fibre extent.

(i) Define cover factor of fabric. What can be maximum value of cover factor in woven fabric ?

(j) Define specific volume of a yarn. **10×2.5=25**

Roll No. ..... **Total Pages : 04**

MAR-21-210196

B. Tech. EXAMINATION, March 2021

Semester VI (NS)

THEORY OF TEXTILE STRUCTURES

TE-322

Time : 2 *Hours* *Maximum Marks :* 100

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 each Sections A, B, C and D. All questions carry equal marks.

Section A

1. (a) If the helix angle of yarn at its surface is 200, what would be the contraction and retraction factors ? What would be these value if angle changes 2 times ?

(b) Calculate count of rayon yarn if its final linear density ought to be 22 tex and twist 760 per meter.

(c) Establish the relation between contraction and retraction in yarn ? **10+10+5**

2. (a) Explain the effect of twist on yarn diameter and specific volume.

(b) Derive the idealized helical geometry of yarn. Explain the role of twist level in yarn structure. **12.5+12.5**

Section B

3. Explain how do you characterize migration in yarn. Explain fibre parameter responsible for migration. **25**

4. Discuss twist-tenacity relationship in spun yarn with the modified approach by Hearle and El-Sheikh ? Mention the parameters which can affect behaviour of spun yarn. **25**

Section C

5. Explain Peirce's geometrical model and relationship between h, p, c. **25**

6. Explain the following : **25**

(a) Crimp interchanged

(b) Jammed structure

(c) Concept of similar cloth.

Section D

7. What do you understand by drape of fabric ? Describe "Drape coefficient of fabric by Cussiks' Tester". **25**

8. Explain the structure of ring, rotor, airjet and friction spun yarn. Describe the effect of their structure on their properties. **25**

9. Attempt all questions :

(a) Define bending length of a fabric.

(b) What is packing coefficient of yarn ? Give the value of packing coefficient of ideal yarn.

(c) What type of migration is expected in cotton polyester blended spun yarn ?

(d) Define twist angle.

(e) Define twist multiplier.

(f) What is index of blending irregularities ?

(g) Draw a typical stress-strain curve for woven fabric.