Register Number ……..

M.TECH. DEGREE EXAMINATIONS: DECEMBER 2009

First Semester

TEXTILE TECHNOLOGY

TTX502: Yarn Formation Mechanics and Structure

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. Define fibre shape factor.
2. Give the formula for floating fibre %.
3. Define compliance ratio.
4. Find out the hank of cotton component of card sliver fed in a draw frame producing Cotton/ PET blend using following details.

   Blend ratio: 67% cotton, 33% PET

   Number of doubling: 8

   Hank of PET sliver fed: 0.16

   Number of PET sliver fed: 3
5. What do you mean by integrated composite spinning system?
6. Calculate the doubling in rotor spinning using following details.

   Yarn turns/ meter: 600

   Rotor diameter: 40mm
7. Define Schwarz's constant (K) for determining twist angle (tan ά).
8. Define friction ratio in friction spinning.
9. Define Hairiness Index.
10. Define packing fraction.

PART B (5 x 16 = 80 Marks)

11) a) With specific reference to fineness of fibre explain its influence on quality of out put yarn in different spinning system with suitable examples.

(OR)

b) Explain the fibre extent in different spinning technology.

12) a) Explain the dynamics of carding and derive an expression for transfer coefficient for loading and unloading condition of fibre in cylinder.

(OR)

b) i) With neat sketch explain the ideal drafting theory and explain the law of addition of irregularity. (8)

ii) Explain the concept of drafting waves and the factors determining the amplitude of drafting wave. (8)

13) a) i) Explain how you calculate the yarn twist in friction spinning? (6)

ii) With neat sketch the forms of self twist yarn and explain the production of different doubler twister self twist yarn. (10)

(OR)

b) i) Classify faciated yarn and compare the yarn characteristics of MVS and MJS. (3+3)

ii) With neat sketch explain the principle working of MVS 861. (10)

14) a) With the reference of ideal yarn geometry prove that TPI = TM √ count.

(OR)

b) With neat sketch explain the ideal migration behavior of fibre in yarn and prove that ideal migration frequency is (¼) √3D (8 +8)

15) a) i) Explain in detail the prediction of tensile properties in blended yarn. (8)

ii) Explain the effect of twist on fibre breakage in yarn (8)

(OR)

b) i) Explain different hairiness measurement techniques (6)

ii) Explain the influence of fibre properties, ring spinning parameters and yarn parameters on hairiness of yarns. (10)

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