KUMARAGURU
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B.TECH DEGREE EXAMINATIONS: JUNE 2017

(Regulation 2015)

Second Semester

TEXTILE TECHNOLOGY

U15TXT201: Textile Fibres

COURSE OUTCOMES

CO1:   Outline the fundamentals about textile fibres.

CO2:   Describe about structure & properties major natural fibres.

CO3:   Explain the properties of major regenerated fibres.

CO4:   Illustrate the properties of major synthetic textile fibres.

CO5:   Demonstrate about the properties of high performance fibres and identification of fibres.

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.   Matching the following.   CO5   [K$_2$]

List I	List II
A. Silk	i. Lumen
B. Jute	ii. Long striations
C. Cotton	iii. Nodes
D. Viscose rayon	iv. Triangular with rounded corners

	A	B	C	D
a)	iv	iii	i	ii
b)	iv	ii	iii	i
c)	iii	ii	i	iv
d)	iv	i	ii	iii

2.   Degree of polymerization is the _____ between molecular weight of a polymer and   CO1   [K$_1$]
its monomer.

a)   Subtraction   b)   Ratio

c)   Multiplication   d)   Addition

3. The cotton fibre begins to scorch and degradation by breaking of C=O bond at_____ degree Celsius.   CO2 [K_3]

a) 170   b) 150

c) 180   d) 160

4. The elongation % of Nylon 6,6 is_____   CO4 [K_1]

a) 25-65   b) 10-20

c) 25-95   d) 50-70

5. 1. If the degree of polymerization of the polymer increases, the probability of improvement in cohesiveness and strength of a fibre will decrease.   CO1 [K_3]

2. As the orientation of polymer chain increases in a polymer system, the crystalline region decreases.

3. Compared to a branched polymer, a linear polymer will have more inter-molecular forces in its polymer system.

4. The dye molecule penetration is high in amorphous region than crystalline region.

Which is NOT correct?

a) 1,2   b) 2,3

c) 1,4   d) 2,3,4

6. The strongest fibre among the following fibres is_____   CO5 [K_2]

a) Nylon   b) Polyester

c) Nomex   d) Kevlar

7. Assertion (A): The convolutions arise in order to relieve internal stresses during drying and collapse of fibre.   CO2 [K_2]

Reason(R): The stress form as the drying of liquid water (SAP) which creates difference in atmospheric pressure and inside the lumen.

a) Both A and R are individually true and R is the correct explanation of A   b) Both A and R are individually true and R is not the correct explanation of A

c) A is true but R is false   d) R is true but A is false

8. Assertion (A): The moisture regain value of acetate fibres is higher than Triacetate fibres.   CO3 [K_2]

Reason(R): The number of hydroxyl groups in acetate fibre is higher than triacetate fibre.

a) Both A and R are individually true and R is the correct explanation of A   b) Both A and R are individually true and R is not the correct explanation of A

c) A is true but R is false   d) R is true but A is false

9. Consider the following fibres with respect to moisture regain.   CO4 [K$_3$]

    1. Silk 2. Acetate 3. Triacetate 4. Polypropylene 5. Polyester

Sequence the fibres in increasing order of moisture regain.

a) 3, 1, 4 & 2   b) 3, 2, 4 &1

c) 3, 4, 1& 2   d) 3, 1, 2& 4

10. In the degumming process of silk _____ is removed from the silk fibre.   CO3 [K$_2$]

a) Cericin   b) Startch

c) Protein   d) Wax

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Differentiate fibre and polymer   CO1 [K$_2$]

12. List essential properties of textile fibres   CO1 [K$_1$]

13. Contrast chemical structure of cotton and jute fibre   CO2 [K$_2$]

14. List the chemical composition of wool fibre   CO2 [K$_1$]

15. Recall the merits and demerits of man-made fibre   CO3 [K$_1$]

16. Contrast the acetate fibre from triacetate fibre   CO3 [K$_2$]

17. Why is polypropylene used as packing materials?   CO4 [K$_3$]

18. Differentiate the PAN from modacrylic.   CO4 [K$_2$]

19. Distinguish between p-aramid and m-aramid fibres with two valid points   CO5 [K$_3$]

20. How would you identify the polyester and nylon through solubility method?   CO5 [K$_2$]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21. Describe the morphological structure of cotton fibre with schematic diagrams, parts, dimensions and specifications.   CO2 [K$_2$]

22. Discuss on the characteristics of fibre forming polymers with suitable schematic diagrams and examples.   CO1 [K$_2$]

23. Compare the physical and chemical properties of wool and cotton fibres. CO2 [K$_2$]

24. Illustrate the wet spinning system with neat diagram, advantages and disadvantages CO3 [K$_2$]

25. Distinguish the physical and chemical properties of polyester and nylon fibres. CO4 [K$_2$]

26. Demonstrate the identification any seven fibres using
    i) Flammability method (7) CO5 [K$_2$]
    ii) Microscopic method (7) CO5 [K$_2$]

27. Discuss about the general properties and applications of aramid and PVC fibres. CO5 [K$_2$]

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