

**B.TECH DEGREE EXAMINATIONS: DEC 2014**

(Regulation 2009)

Second Semester

**FASHION TECHNOLOGY**

FTY101 : Fibre Science

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The staple length of American Cotton fibre is
  - a) 5 – 6 cm
  - b) 2 – 2.5 cm
  - c) 3- 4 cm
  - d) 4 – 5 cm
2. The fibre with irregular, rough, cylindrical and prominent scale margin is
  - a) Silk
  - b) Wool
  - c) Nylon
  - d) Poly propylene
3. Match the following
  1. Jute - a. Regenerated cellulose fibre
  2. Viscose - b. Mineral fibre
  3. Wool - c. Multicellular fibre
  4. Asbestos - d. Natural protein animal fibre
  - a) 1-a, 2-c, 3-d, 4-b
  - b) 1-c, 2-a, 3-d, 4-b
  - c) 1-c, 2-d, 3-b, 4-a
  - d) 1-b, 2-a, 3-d, 4-c
4. Dry-jet-wet technique is extensively used for the spinning of ----- fibres
  - a) Polyester
  - b) Viscose
  - c) Spandex
  - d) Nylon
5. Match the following
  - P. Wet spinning - 1. Polyester
  - Q. Melt spinning - 2. Spandex
  - R. Gel spinning - 3. Viscose
  - S. Dry-jet-wet spinning - 4. Kevlar
  - a) P2, Q4, R1, S3
  - b) P3, Q1, R2, S4
  - c) P1, Q3, R4, S2
  - d) P3, Q1, R4, S2
6. Match the following
  - P. Polyester - 1. PAN
  - Q. Nylon - 2. AA
  - R. Acrylic - 3. DMT
  - a) P1, Q2, R3
  - b) P3, Q2, R1
  - c) P2, Q1, R3
  - d) P2, Q3, R1

7. PLA fibre is
- |                      |                           |
|----------------------|---------------------------|
| a) Poly Lactic Acid  | b) Polyester Lactic Amide |
| c) Poly Lyocel Fibre | d) Protein Lactic Amine   |

8. Identify the statements which are true.

Statement 1. Viscose rayon has good luster and wet strength.

Statement 2. Lyocell has improved moisture management properties and wet strength.

Statement 3. Encapsulation technique ensures slow release properties.

- |            |               |
|------------|---------------|
| a) 1 and 2 | b) 1 and 3    |
| c) 2 and 3 | d) 1, 2 and 3 |
9. Silk fibre dissolves in
- |                              |                             |
|------------------------------|-----------------------------|
| a) 85% HCl (cold)            | b) 75% Sulphuric acid (hot) |
| c) 70% Sulphuric acid (cold) | d) Sodium hydroxide         |

10. Match the following

- |                       |                     |                       |
|-----------------------|---------------------|-----------------------|
| 1. Flax               | - a. Dog bone shape |                       |
| 2. Acrylic            | - b. Polygonal      |                       |
| 3. Silk               | - c. Kidney shape   |                       |
| 4. Cotton             | - d. Triangular     |                       |
| a) 1-a, 2-c, 3-d, 4-b |                     | b) 1-c, 2-a, 3-d, 4-b |
| c) 1-d, 2-a, 3-c, 4-b |                     | d) 1-b, 2-a, 3-d, 4-c |

**PART B (10 x 2 = 20 Marks)**

11. Write the chemical properties of cotton fibre.
12. Differentiate between spun and filament yarns with respect to their characteristics and method of manufacturing.
13. Mention the raw materials used in the production of Nylon6 and nylon 66 and also give the chemical structure of these fibres.
14. Write the physical and chemical properties of polyester fibre.
15. Differentiate between the chemical properties of a cellulosic and a protein fibres.
16. Comment on the moisture absorbency of any eight textile fibres stating their moisture content.
17. Enlist the special applications of PLA fibres and state the special properties.
18. Mention the principle behind the production of gold and silver coated fibres.
19. Define 'Tex' and 'Denier'.
20. Highlight the principle behind identification of fibres based on their density.

**PART C (5 x 14 = 70 Marks)**

21. a) (i) Classify the textile fibres based on polymer nature and chemical source and brief the applications of Natural and Manmade fibres respect to functional uses. (7)
- (ii) Illustrate the morphological and chemical structure of Silk and Jute fibres. (7)

**(OR)**

b) Elaborate on the production and cultivation of cotton and jute fibres.

22. a) With a flow chart explain the various stages involved in the manufacturing process of viscose rayon fibre. How the modal and lyocel fibre production differs from the basic viscose rayon production.

**(OR)**

b) (i) Analyze on the process variables and their influence on the manufacturing process of acrylic fibres and elastomeric fibres. (8)

(ii) State the physical and chemical properties of viscose rayon fibre. (6)

23. a) Compare the physical, chemical, thermal and optical properties of viscose and polyester fibres.

**(OR)**

b) Discuss and compare the physical, chemical, thermal and optical properties of wool and silk fibres.

24. a) Elaborate on the various principles involved in the production of super absorbent fibres and highlight their application in the field of medical and hygienic textiles.

**(OR)**

b) (i) What are high tenacity and high modulus fibres? List out their special properties and end uses. (7)

(ii) Differentiate between ultra fine fibres and Nano fibres based on their method of production and state their special characteristics and application. (7)

25. a) (i) Elucidate on the behavior of different fibres to burning test. (7)

(ii) Explain the method of identification of fibres using solubility test. (7)

**(OR)**

b) Discuss the yarn numbering system and brief their textile material representation in English, Metric count, Tex and Denier.

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