

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech (APM)/SEM-3/APM-303/2010-11**

**2010-11**

**BASICS OF TEXTILE MANUFACTURE – I**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for the following :  $10 \times 1 = 10$

i) The least value of "aspect ratio" of a textile fibre should be

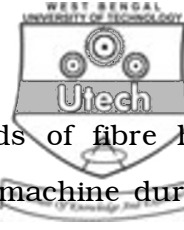
- a) 500 : 1
- b) 300 : 1
- c) 100 : 1
- d) 1000 : 1.

ii) 'Linen' is popularly known as the product made of

- a) Wool fibre
- b) Polyester fibre
- c) Jute fibre
- d) Flax fibre.

iii) Directional Frictional Effect (DFE) is the characteristics of

- a) Wool fibre
- b) Polyester fibre
- c) Jute fibre
- d) Flax fibre.



iv) Formation of linear continuous strands of fibre has been started in which of the following machine during yarn spinning ?

- a) Ring frame                              b) Carding
- c) Draw-frame                              d) Roving frame.

v) Lyocell fibre is basically

- a) regenerated cellulosic fibre
- b) natural vegetable fibre
- c) synthetic fibre
- d) inorganic mineral fibre.

vi) In sewing thread, the ticket number indicates approximately

- a) the resultant English Cotton count
- b) the resultant Denier value
- c) three times the resultant English Cotton count
- d) the resultant Tex value.

vii) The relation between the Wind (W) and Traverse (T) ratio in winding process is

- a)  $W = 2T$                                       b)  $W = T$
- c)  $T = 2W$                                       d)  $T = \sqrt{W}$ .



viii) Maturity of cotton fibres depends on development of

- a) lumen
- b) primary wall
- c) secondary wall
- d) cell.

ix) Smell of burnt hair is the characteristics feature of

- a) protein fibre
- b) vegetable fibre
- c) synthetic fibre
- d) mineral fibre.

x) Which of the following process is not required during 100% synthetic fibre spinning ?

- a) Comber
- b) Drawing
- c) Roving
- d) Blending.

**GROUP - B**

**( Short Answer Type Questions )**

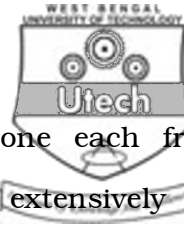
Answer any *three* of the following.  $3 \times 5 = 15$

2. Define the parameters that express the moisture property of a fibre. Establish a relationship between the parameters.

Write down the respective values of the parameters for cotton

fibre.

2 + 2 + 1



3. Name two important manufactured fibre one each from regenerated and synthetic category used extensively for apparel sector. What are the building blocks of those fibres ? Make a comparative study of their important physico-mechanical properties. 1 + 2 + 2
4. What is the significance of perfect ginning ? Prepare a process flow-chart mentioning the appropriate machines for making 100% combed yarn from long staple cotton in ring spinning system starting from ginning operation with suitable gin. 1 + 4
5. Define Plying and Cabling of yarn. If two X tex yarns are plied and subsequently three such plied yarns are cabled, find out the resultant count of the final yarn. Sometimes cabling process is employed for making sewing thread – Explain why. 2 + 2 + 1
6. What is the significance of waxing of yarn to be processed in the knitting machine ? Mention the essential criteria of the knitted yarn. 1 + 4
7. Establish with line diagram the relationship between fibre molecular structure with the ultimate end-use properties of apparel/garment. Illustrate the important features of micro-fibre. 3 + 2



**GROUP – C**

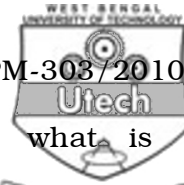
**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

8. a) Make a suitable classification of natural textile fibres mentioning sufficient examples of each class and their sub-classes. 6
- b) Different Texturisation methods introduce different characteristics to the yarns – Elaborate the statement. 5
- c) Mention the principle group of cotton fibres of commercial significance indicating their origin and staple length. 4
9. a) Mention different types of ginning machines presently used in ginning industries. Describe the process sequence of a single acting Macarthy gin with a suitable diagram. Discuss the suitability of Macarthy gin in cotton processing. 2 + 6 + 3
- b) Illustrate four different classes of manufactured fibres made of natural resources. 4



10. a) Point out the objectives of blowroom operation. What are the output materials of conventional and modern blow-room processes ? 3 + 1
- b) Name the processes and machines involved making continuous strand of materials for production of ring-spun yarns. Also discuss about input raw material, output delivery material and tasks of each machine. 2 + 6
- c) Compare the properties of ring-spun and rotor spun yarn. 3
11. a) What is fascinated yarn ? Which type of spinning machine is required to prepare such yarn ? How such yarn is structurally different from ring spun yarn ? Briefly describe the properties of fascinated yarns. 2 + 1 + 3 + 4
- b) What is the significance of winding process in the post spinning operation ? Deduce a relationship between angle of wind, package radius and package rotational speed. 2 + 3



12. a) Define 'Sewing thread'. In apparel, what is the percentage (by mass) of sewing thread? What are the basic requirements of sewing threads? Elaborate with detail important Sewing threads properties.  $1\frac{1}{2} + \frac{1}{2} + 3 + 6$
- b) Name the lightest natural and synthetic fibres indicating their specific gravity. Which one is floating in water and why?  $3 + 1$
13. a) Selection of cotton fibre in apparel production is very much obvious due to its favorable end-use properties – Explain.  $5$
- b) What is yarn polishing and how is it related to sewing process in apparel making?  $3$
- c) Explain yarn imperfection in relation to the Uster Classimat. Name two yarn faults and their possible causes.  $3 + 4$
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