

Name:

Entry No:

TXL 141 Technology of Textile Preparation and Finishing

Minor II

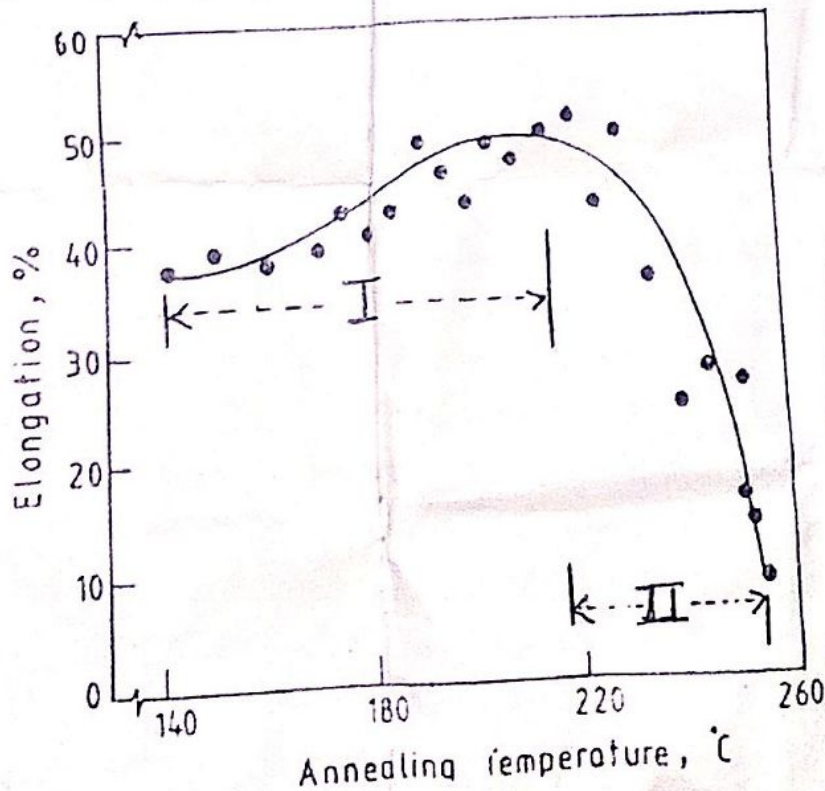
Max Marks-21.5

2.30-3.30 pm/19-03-2015/VLT1

Attempt all questions. There are two sections, A and B. Both the sections need to be attempted in separate answer-sheets.

Section A

- 1) What is the need for heat setting of textile fibres? (1)
- 2) What happens to the following upon heat setting of synthetic polymer textiles and why? (3)
Crystallinity, Orientation, Tensile strength
- 3) What is the relevance of CDT (critical dissolution time)? (1)
- 4) Shown below is a graph. Explain the behavior in the two zones marked I and II. (2)



- 5) Calculate the storage capacity of a J-box if the running speed of the fabric being processed is 50 m/min and the residence time is 30 min in a bleaching process. (2)
- 6) Explain the concept of counter current washing with suitable diagrams. (2.5)

Section B

7) Justify the following statements with suitable reasons: (0.5 × 4)

(i) Pilling resistance of the fabric improves after shearing operation

(ii) Durable press finishing of cotton with DMDHEU has better washing stability as compared to melamine formaldehyde.

(iii) Use of Bronsted acid as a catalyst should be avoided during high temperature dry curing of cotton.

(iv) Multi-roll sander as compared to single-roll (for sueding effect) is better suited for fabrics that may contain knots, slubs, or thick selvages.

8) Indicate whether the following statements are TRUE or FALSE (with proper justification): (0.5 × 4) (0.25 for the answer & 0.25 for the justification)

(i) Single action nappers produce non-directional pile on the fabric surface.

(ii) Can dryers are used for knitted fabric only.

(iii) Higher level of yarn twist in the fabric as compared to low twist level should reduce the wrinkle tendency of the fabric.

(iv) Both the compaction and anti-crease finish improve dimensional stability of the fabric

9) Fill-in the blanks

(0.5 × 4)

(i) In order for the embossing pattern to be durable on styles made from cotton, rayon, or linen, the fabrics must be pretreated with resin and calendered, followed by.....(curing / washing / heat-setting).

(ii) 'Compaction' is generally done for.....(woven fabric only / knitted fabric only / both the woven & knitted fabrics).

(iii) In Padding Mangle, if the viscosity of the padding solution / emulsion increases, the wet pick-up.....(increases / decreases / remain same)

(iv) After applying durable press finishing on cotton substrate, its abrasion resistance.....(increases / decreases / remains same).

10) Point out the purposes of calendering. What is the objective of using 'steam' as the fabric enters into 'compactor' unit? Residual fabric shrinkage after 'loop drying' is lower - explain. (1+0.5+0.5)

11) Explain - why are cotton fabrics prone to wrinkle formation? Discuss the approaches to prevent the cotton structure from wrinkle formation. Point out the advantages and limitations of dry state curing of cotton substrate. (1+0.5+0.5)

TXL 141 Technology of Textile Preparation and Finishing

Re-Minor I

Max Marks-20

4.00-5.00 pm/6-04-2015

Attempt all questions.

1. A sheet of warp yarns is being sized by continuous method. The concentration of the size (starch) in padding bath is 10% (w/w). The % expression is maintained at 120%. The denier of each yarn is 200 and there are 1000 ends in the sheet. If the sheet moves at a speed of 100 m/min, calculate:
 - a) Rate of consumption of pad liquor (3)
 - b) The gain in weight of the sheet after padding and drying (in %) or
2. A lot of desized cotton fabric is to be scoured by continuous method by padding. After desizing and washing, the fabric has not been dried and has a uniform expression of 60%. The fabric needs to have 4% add-on of caustic soda and an expression of 100% after padding. Assuming no liquor exchange, calculate:
 - a) The concentration of caustic soda in pad liquor (2)
 - b) Rate of consumption of pad liquor (2)
3. What is Stoke's shift and what is its relevance? (2)
4. Briefly and clearly, discuss the role of sodium silicate and EDTA in relevant pretreatment processes. (3)
5. What causes the enhancement of color yield in cotton fabric after mercerization? (2)
6. Strength of cotton fibres increases after mercerization even though its crystallinity goes down. Explain. (2)
7. In a pretreatment process, the substrate is treated with 8% H₂SO₄ and then heated to a high temperature. Identify the process and the reason for the treatment. (2)
8. Discuss the role of wetting agents and the emulsifier in alkaline scouring. (2.5)
9. Match the following: (2.5)

A	Bleaching	1	Poor Light Fastness
B	Mercerization	2	Sequestering agent
C	Carbonization	3	Cellulose-II
D	Desizing	4	Sod. Persulphate
E	OBA	5	Mineral acid

10. Fill in the blanks: (3.5)

- a) In Chainless mercerization machines, widthwise tension is applied by _____.
- b) The crystal type of viscose is cellulose _____.
- c) Motes are completely removed during _____.
- d) PERC is used in _____.
- e) An application of singed yarns is _____.
- f) In tension mercerization, strength of cotton increases with _____ tension.
- g) Bleaching with Sodium chlorite is carried out in _____ medium.