

**CS/B.Tech/TT/EVEN/SEM-4/TT-403/2015-16**



**MAULANA ABUL KALAM AZAD UNIVERSITY OF  
TECHNOLOGY, WEST BENGAL**

**Paper Code : TT-403**

**TEXTILE CHEMICAL PROCESSING-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 × 1 = 10**

- i) Machine speed in gas singeing is

- |                   |                     |
|-------------------|---------------------|
| a) 50 - 60 m/min  | b) 70 - 75 m/min    |
| c) 80 - 125 m/min | d) 130 - 150 m/min. |

- ii) In desizing, the hydrolysis is carried out up to

- |                  |                             |
|------------------|-----------------------------|
| a) dextrin stage | b) maltose stage            |
| c) glucose stage | d) $\alpha$ -dextrin stage. |

- iii) Continuous desizing of polyester/cotton blend fabric is carried out
- a) in winch with a dwell period of 5 min
  - b) in J-box with a dwell period of 25-40 min
  - c) in Jigger with a dwell period of 10 min
  - d) in pad-roll.
- iv) The MLR in a kier is usually
- a) 1 : 15
  - b) 1 : 10
  - c) 1 : 20
  - d) 1 : 5.
- v) For semi-mercerized cotton the value of BAN varies in between
- a) 115 and 130
  - b) 105 and 110
  - c) 135 and 140
  - d) 140 and 160.
- vi) Heat setting temperature for woven and knit goods of textured polyester filament is
- a) 140 - 150°C
  - b) 200 - 210°C
  - c) 220 - 225°C
  - d) 170 - 195°C.

**vii) Sulphur coloured cotton goods are bleached preferably with**

- a) hydrogen peroxide**
- b) sodium chlorite**
- c) sodium bromite**
- d) sodium hypochlorite.**

**viii) Degumming improves the lustre by removing**

- a) cellulose layer of the fibre**
- b) fibroin part of the fibre**
- c) hydrophobic part of the fibre**
- d) none of these.**

**ix) Which of the following preparatory processings is unnecessary for knitted cotton fabric ?**

- a) Singeing**
- b) Bleaching**
- c) Mercerisation**
- d) Desizing.**

x) Barium activity number is used to measure the efficiency of

- a) bleaching
- b) degumming
- c) mercerisation
- d) none of these.

**GROUP - B**

**( Short Answer Type Questions )**

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

2. a) What is the HLB value of a surfactant ? 1
- b) What role does it play in the chemical processing of textiles ? <http://www.makaut.com> 4

3. Compare the relative merits and demerits of peroxide and chlorite bleaching.

4. a) What do you mean by carbonization ? How is it carried out ? 1 + 3
- b) Name an antioxidant usually used as peroxide killer. 1

5. a) Why is sodium metasilicate the most popular stabilizer in  $H_2O_2$  bleaching? 1

b) What are the problems associated with silicate while using as stabilizer? What are the remedial measures to be undertaken to solve the problem?

2 + 2

6. a) How does wool scouring differ from cotton scouring? 3

b) What is anti-chlor treatment? 2

**GROUP - C**

**( Long Answer Type Questions )**

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

7. a) How do you classify different desizing processes according to their chemical natures? 3

b) Discuss the importance of pH in peroxide bleaching. 3

c) Briefly describe a method of obtaining full white fabric from grey material with special emphasis on bleaching operation. 7

d) What precautions should be exercised during chlorite bleaching? 2

8. a) Describe the functioning of a gas-singeing machine\* and highlight the modern features of this machine.

7

- b) Give necessary labelled diagram(s). 5

- c) Give the flowchart of the wet processing sequences that a cotton fabric must undergo for obtaining a printed finished fabric with white background. 3

9. What are the objects of scouring ? What are the different scouring processes used for removal of natural impurities except natural colouring substances ? Write the recipe for ~~kip~~ boiling of cotton. What are the impurities in wool ? How is scouring of wool carried out ? Write with a neat sketch the continuous method of scouring of P/C blend fabric using Vaporlok machine.

2 + 2 + 2 + 2 + 3 + 4

10. Write the mechanism of bleaching. What are the reaction steps involved in  $H_2O_2$  bleaching ? Write the function of each chemical used for bleaching of 100% cotton fabric. Why is a treatment with peroxide killers required after  $H_2O_2$  bleaching ? Why is antichlor treatment essential after chlorine system bleaching ?

2 + 3 + 6 + 2 + 2

**11. Write short notes on any three of the following : 3 × 5**

- a) Liquid ammonia mercerisation
  - b) Solvent scouring machine
  - c) Preparation of coloured goods
  - d) Optical whitening and blueing of textiles
  - e) Enzymatic treatment of textiles.
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