

Name :
Roll No. :
Invigilator's Signature :

**CS/B.TECH (APM-NEW)/SEM-4/APM-401/2012
2012**

BASICS OF CHEMICAL PROCESSING OF TEXTILES

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) Both sides of the cloth are singed simultaneously in
- a) plate singeing machine
 - b) roller singeing machine
 - c) gas singeing machine
 - d) none of these.



ii) Best bio-polishing is carried out with

- a) alkaline pectinase
- b) protease
- c) cellulase
- d) acidic pectinase.

iii) Barium Activity Number of mercerized cotton ranges from

- a) 120 – 130
- b) 130 – 140
- c) 140 – 150
- d) 150 – 160.

iv) Diastafore is a

- a) malt extract enzyme
- b) bacterial enzyme
- c) proteolytic enzyme
- d) osmozyme.

v) The liquor ratio of scouring in kier boiling is

- a) 1 : 5
- b) 1 : 7
- c) 1 : 10
- d) 1 : 20.

vi) The reducing bleaching agent is

- a) H_2O_2
- b) O_3
- c) $Na_2S_2O_4$
- d) $K_2S_2O_8$.



- vii) Wavelengths visible to the human eye is
- a) 390 – 430 nm
 - b) 430 – 460 nm
 - c) 570 – 590 nm
 - d) 400 – 700 nm.
- viii) The model which represents the fibre as a solid structure with a network of interconnected channels is called
- a) the free volume model
 - b) the pore diffusion model
 - c) the folded chain model
 - d) the visco-elastic pseudo-model.
- ix) Cold branded reactive dyes are
- a) Mono-chloro triazinyl dyes
 - b) Di-chloro triazinyl dyes
 - c) Sodium salt of sulphonic acid
 - d) Remazol dyes.
- x) Hyperfiltration is nothing but
- a) activated charcoal adsorption technique
 - b) ion exchange
 - c) reverse osmosis
 - d) van't Hoff's filtration.

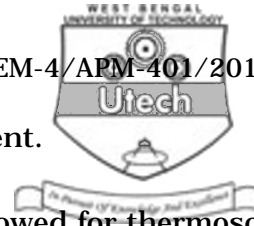


GROUP - B

(Short Answer Type Questions)

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

2. a) Write the sequence followed in an ideal preparatory process of grey cotton fabric.
- b) The crystallinity of cotton is higher, still it is hydrophilic. Why ? $2 + 3$
3. a) Classify the methods of desizing.
- b) What is starch ? Write the progressive hydrolysis reaction of starch. $3 + (1 + 1)$
4. a) Write the optimum concentration, temperature and pH at which different Enzymes are effective.
- b) Differentiate between saponification and emulsification. $3 + 2$
5. a) Classify direct dyes on the basis of the effect of electrolyte and temperature.
- b) How is wool fibre dyed with direct dye ? (Recipe is must) $3 + 2$



6. a) Differentiate between dyes and pigment. 2 + 3
- b) Write the compulsory steps to be followed for thermosol dyeing technique. 2 + 3
7. a) Differentiate between dyeing and printing.
- b) How does discharge style of printing differ from resist style of printing ? 2 + 3

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. Why is singeing essential ? Name different types of singeing machine. Describe with a neat sketch different types of singeing machine with relative merits and demerits. 3 + 2 + 10
9. What is the object of desizing ? Describe with a neat sketch the three hydrolytic methods of desizing with relative merits and demerits. What are enzymes ? Describe with a neat sketch the continuous desizing of P/C blended fabric using *J*-box with advantages and disadvantages. 1 + 7 + 1 + 6



10. What are the changes taking place during scouring ? Write the mechanism of peroxide bleaching. Briefly describe the bleaching process of 100% cotton fabric with function of chemicals used. Differentiate between hypochlorite and peroxide bleaching. Describe the effects of mercerization on cotton. How is barium activity number of mercerized cotton calculated ?

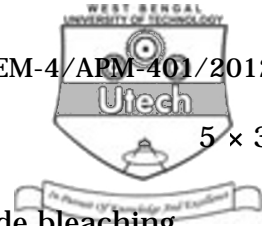
2 + 2 + 3 + 3 + 3 + 2

11. Briefly describe the effect of electrolyte, temperature and liquor ratio in direct dyeing of 100% cotton fabric. Why are the after treatments of direct dyes essential ? Name the after treatments. Write the reactive dyeing cycle of cotton fabric mentioning the time-temperature profile.

6 + 1 + 2 + 6

12. What do you mean by iso-electric point of protein fibres ? How are cationic dyes applied on to PAN fibres ? What are the methods of dyeing polyester with disperse dyes ? What are the advantages and disadvantages of carrier dyeing of polyester ?

3 + 3 + 4 + 5



13. Explain why ? (any five)

5 × 3

- a) Sodium metasilicate is used in peroxide bleaching.
 - b) Urea is used in reactive colouration.
 - c) Reducing agent is used in vat colouration.
 - d) Polyester is a rigid fibre whereas nylon is flexible.
 - e) Presence of additional acid in basic dye bath is beneficial.
 - f) Natural fibres burn but synthetic fibres melt.
 - g) Binder is used in pigment printing.
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