KUMARAGURU college of technology
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Register Number:……..…

M.TECH DEGREE EXAMINATIONS: JAN 2015

(Regulation 2014)

First Semester

TEXTILE TECHNOLOGY

P14TXT104: Advances in Chemical Processing

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Bleached cotton fabric was sent to a laboratory for determination of Copper Number, which is an estimate of the presence of [K_2]
   a) Hydroxyl groups b) Carboxyl groups
   c) Reducing groups d) Oxidizing groups

2. Out of the following, the one which is NOT a surfactant [K_1]
   a) Detergent b) Soap Oil
   c) Wetting Agent d) Hydrose

3. A typical curve between equilibrium dye uptake and dyeing temperature goes through a maximum. After the maximum, the dye uptake decreases because [K_3]
   a) Kinetic energy increases rapidly b) Pressure in the dye bath increases
   c) Saturation value is reached d) Dyeing is an exothermic process

4. Consider the following Assertion (A) and Reasoning (R) statements [K_4]
   (A)In the case of bleaching of cotton using oxidizing agent, formation of oxy cellulose is the major problem.
   (R) In an alkaline medium, the oxidizing agent reacts with the hydroxyl groups irrespective of whether these are from cellulose or water.
   a) (A) is right (R) is wrong b) (A) is wrong (R) is right
   c) (A) is right (R) is right d) (A) is wrong (R) is wrong

5. Malachite Green is an important dyestuff. The typical green colour is obtained when the dye molecule is [K_2]
   a) Non-ionic b) Cationic

c) Anionic
d) Made up of phenyl groups

6. Choose the correct sequence of the dyeing kinetics from the following [K_3]

1. Fixation
2. Absorption
3. Adsorption
4. Diffusion

a) 1-2-3-4
b) 3-2-4-1
c) 3-4-2-1
d) 3-4-1-2

7. Consider the following with respect to foam coating technique. Find out the odd statement(s). [K_2]

1. The actual add-on of the chemical finish is usually of the order of 2–3% or less, on dry weight of goods.
2. Higher pile deformation & Higher dye migration
3. High running speed
4. Inadequate foam stability and reproducibility
5. Less energy consumption compared to direct coating

a) 2,5
b) 1,2,4
c) 1,4
d) 1,2,3

8. Nano materials means having dimensions [K_1]

a) Less than 100nm
b) Less than 1000 nm
c) Less than 100µm
d) Less than 10µm

9. Choose the correct sequence of the printing on substrate using transfer printing from the following [K_3]

1. Cooling, 2.Press, 3.Presenting the Printable layer, 4.Separation, 5.Heat Application

a) 3-2-5-1-4
b) 4-5-2-1-3
c) 3-5-2-1-4
d) 5-3-2-1-4

10. Match the elements of Group I and Group II [K_4]

	Group I		Group II
A	Aqueous ink based technology	1	Oil, Solvent
B	Non-Aqueous ink based technology	2	Liquid to solid
C	Phase change ink based technology	3	UV curve
D	Reactive ink based technology	4	Solution, Dispersion

a) A-1, B-3, C-2, D-4
b) A-4, B-3, C-2, D-1
c) A-4, B-1, C-2, D-3
d) A-1, B-4, C-2, D-3

PART B (10 x 2 = 20 Marks)

11. Recall the β-alkoxy elimination reaction using formulae with respect to degradation of cotton during scouring. [K_1]
12. Give in own words on alkaline hydrolysis of polyester. [K_2]
13. Define: Aggregation number [K_1]
14. Infer from the solubility concept in dyeing. [K_4]
15. Cite any two examples of fluorine containing dyes. [K_2]
16. Underline the importance of florescent dyes with respect to applications. [K_1]
17. List the pretreatments and post treatments for the ink jet printing. [K_1]
18. Tell about sublimation. [K_2]
19. Give in own words on anti microbial finishes using nano materials. [K_2]
20. Draw the nip roller lamination system with parts. [K_4]

PART C (6 x 5 = 30 Marks)

21. Assess the degradation of cotton in desizing and bleaching departments. [K_5]

22. Deduce the Langmuir isotherm of adsorption during dyeing process with suitable graphs. [K_4]

23. Illustrate on the microencapsulation technology in dyeing using appropriate diagrams. [K_3]

24. Differentiate between thermal inkjet printing and jet printing machines in terms of principle, capacity, cost and working conditions. [K_3]

25. Discuss about the self cleaning nano finishes citing suitable commercial examples. [K_2]

26. Review on any two latest developments in pretreatments. [K_2]

PART D (4 x 10 = 40 Marks)

27. Illustrate the equilibrium in dyeing of textile materials. [K_3]

28. Describe about the following with structure, examples and applications. [K_2]

    i) Biodegradable dyes (5)

    ii) Anti microbial dyes (5)

29. Demonstrate the pigment printing and transfer printing techniques with suitable diagrams, conditions and applications. [K_3]

30. Express your views with suitable case studies on comfort and health issues related functional finishes practiced by the textile industry. [K_2]

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