KUMARAGURU
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Register Number:……..…

M.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Second Semester

APPAREL TECHNOLOGY

P18ATI2003: Technology of Apparel Finishing

COURSE OUTCOMES

CO1: Gain knowledge on pre-treatment and surface modification techniques.

CO2: Discuss and describe the advanced printing and garment finishing techniques.

CO3: Describe the advanced finishing techniques and unconventional finishing techniques.

CO4: Identify advanced finishing techniques for different finishing applications.

CO5: Define and identifying the eco parameters for eco-friendly finishing processes and chemicals.

CO6: Suggest and adopt ecofriendly measures for dyeing, printing and finishing for sustainable development.

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion(A): Activation Surface modification of plasma may induce the formation of active sites on the textile surface. CO1 [K3]
Reason (R): The active sites formed in textiles are responsible for chemical reactions., with substance brought in contact with the material after plasma processing

a) (A) is true and (R) is true
b) (A) is wrong and (R) is true
c) (A) is true and (R) is wrong
d) (A) is wrong and (R) is wrong

2. ----------is claimed as an environmentally friendly treatment for improving the felting and dyeability properties of wool fiber CO1 [K2]

a) Nitrogen plasma
b) Low-temperature plasma treatment
b) Air plasma
d) SiCl4 plasma

3. ----------gas is used for dyeing of polyester in supercritical fluid methods. CO2 [K3]

a) Carbon dioxide
b) Oxygen
c) Nitrogen
d) Hydrogen

4. Matching type item with multiple choice code CO2 [K3]

List I	List II
A. microwave dyeing ultrasonic assisted dyeing	i. BTCA (butanetetra carboxylic acid)
B. ----------is used for easy care finishing	ii. for inducing internal heating of textiles
C. Water repellent finishing chemical	iii. Amorphous region
D. ----- for creasing of cellulose fabric	iv. Fluorocarbons

	A	B	C	D
a)	i	ii	iii	iv
b)	ii	i	iv	iii
c)	iv	iii	i	ii
d)	ii	iv	ii	i

5. Assertion (A): Soil-release finishes on textiles facilitate the removal of soils during laundering under common CO3 [K2]

Reason (R): Removal of soils from fabrics has been attributed to Rollup of oily soil, Penetration of soil–fibre interface by wash liquid, and Solubilisation and emulsification of soils.

a) (A) is true and (R) is true
b) (A) is wrong and (R) is true
c) (A) is true and (R) is wrong
d) (A) is wrong and (R) is wrong

6. Limiting Oxygen Index (LOI) of wool fibers is CO3 [K2]

a) 25
b) 30
c) 15
d) 20

7. Multiple selection item with multiple choice code CO4 [K2]

Principle followed in the dyeing by supercritical dyeing of synthetif fibers.

i.Dissolution of the dye and Absorption of the fiber surface stuff
ii. Reaction of dye with fibre molecule by covalent bond
iii. Diffusion into the fiber and transfer to the fiber
iv. After tretamnet of dyed fabrics

a) i and iii
ii and iv
c) ii and iii
i and iv

8. Assertion (A): A supercritical fluid is a substance under pressure above its critical temperature. Under these described conditions the distinction between gases and liquids does not apply and substance can only be described as fluid. CO5 [K2]

Reason (R): Supercritical fluids have properties intermediate between those of gases and liquids, controlled by the pressure.

a) (A) is true and (R) is true
b) (A) is wrong and (R) is true
c) (A) is true and (R) is wrong
d) (A) is wrong and (R) is wrong

9. UV finishing agent used for cotton fabrics ---------- CO6 [K2]

a) Benzotriazole derivatives
b) Benzophenones
c) Benzotriazoles
d) Cyanoacrylates

10. Sequencing type item CO6 [K3]

Obtaining EDX Spectrums using the following steps in the sequence

1. Electrons are excited from lower energy shells to higher energy shell
2. A high-energy beam of charged particles is focused into the sample Ground state (unexcited) electrons in sample are stimulated
3. The number and energy of the X-rays emitted from a specimen can be measured by an energy dispersive spectrometer
4. The difference in energy between the shells may be released in the form of an X-ray

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

PART B (10 x 2 = 20 Marks)

11. Classify about the different plasma system for textile application CO1 [K2]
12. Explain the about the advantages of enzymatic surface modification of textiles CO1 [K3]
13. Explain the principle of electrochemical dyeing of textile materials CO2 [K2]
14. Infer the concept of Supercritical carbon dioxide. CO2 [K2]
15. Give the recent developments in transfer printing of textiles CO3 [K3]
16. Explain about the Wrinkle free finishing of apparels CO4 [K3]
17. Explain about the anti-static finishing of textile. CO4 [K3]
18. Explain the scope of coated fabrics for multifunctional properties CO5 [K3]
19. Explain about the working principle of transmission electron microscope (TEM) CO5 [K3]
20. Identify the application of Energy Dispersive X-ray Spectrometry (EDS) CO6 [K2]

PART C (10 x 5 = 50 Marks)

21.	Explain about the different techniques of plasma treatment of textile materials	CO1	[K3]
22.	Explain about the enzymes in the surface modification of cellulosic, fabrics.	CO2	[K2]
23.	Explain the utilization of Hetra Functional (HF) reactive dyes for minimizing the Dye content in effluent.	CO3	[K3]
24.	Explain about the functional Nano Finishes For textiles	CO3	[K3]
25.	Explain about the theories of flame retardancy	CO4	[K3]
26.	Explain about the problems faced in the Conventional processing of textiles	CO4	[K3]
27.	Explain about the Gravure coating developed from the printing industry	CO5	[K3]
28.	Explain the theory of UV repellent finishing of textiles	CO5	[K3]
29.	Explain in detail about the flame retardant finishing of textiles using different flame retardant chemicals.	CO6	[K3]
30.	Feature out the application of Energy dispersive X-ray spectroscopy (EDS or EDX) in characterizing the element	CO6	[K3]

Answer any TWO Questions

PART D (2 x 10 = 20 Marks)

31.	Explain in details about the surface modification of textiles by plasma of cellulosic materials such as cotton and linen.	CO1	[K3]
32.	Explain in detail about the water repellent and water proof finishing of textiles.	CO3	[K3]
33.	Discuss in detail about the working principles of Atomic Force Microscopy (AFM)	CO6	[K3]

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