



**B. TECH. DEGREE EXAMINATIONS: NOV /DEC 2024**

(Regulation 2018)

Sixth Semester

**TEXTILE TECHNOLOGY**

U18TXE0013: Testing of Functional and Technical Textiles

**COURSE OUTCOMES**

- CO1:** Outline the testing of functional textiles.  
**CO2:** Explain the testing of comfort characteristics of fabric.  
**CO3:** Discuss on moisture transmission tests.  
**CO4:** Summarize testing of functional finishes in textiles.  
**CO5:** Illustrate on the testing of protective textiles.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Consider the elements in List I and List II and choose the correct alternatives from amongst a, CO1 [K<sub>4</sub>]  
b, c, and d

List I	List II
A. Thermo physiological	i. Heavy loads
B. Tactile	ii. Sensory receptor
C. Dexterity	iii. Heat Balance
D. Psychological	iv. Economic Status

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

2. The correct sequence of UV rays in descending order of wavelength is/are CO5 [K<sub>2</sub>]  
a) UVD > UVC > UVB > UVA                      b) UVA > UVB > UVC > UVD  
c) UVB > UVC > UVA > UVB                      d) UVC > UVB > UVD > UVA

3. Identify the statements which are correct about objective of flame retardant testing, CO4 [K<sub>2</sub>]
1. Flame resistant character study
  2. Flame propagation speed study
  3. Self-extinguish study
  4. Add-on study
- a) 1,2,3 b) 1,3,4  
 c) 1,2,4 d) 2,3,4
4. Inverted Cup Test Method, the \_\_\_\_\_ PTFE membrane is used to seal CO3 [K<sub>1</sub>]  
 the mouth of the cup to prevent the wetting of the specimen.
- a) hydrophilic b) hydrophobic  
 c) rubber d) elastic
5. Assertion (A): Most common health problems due to electromagnetic radiations are dizziness, CO5 [K<sub>2</sub>]  
 allergies, even leukemia, cancer, sleep disorder, headache, brain tumors, fatigue and  
 Alzheimer's disease.
- Reason (R): Electromagnetic shielding is the practice of reducing the electromagnetic field in  
 space, this is the electromagnetic field in space by blocking the field with a barrier material of  
 conductive or magnetic materials.
- a) Both A and R are Individually true and b) Both A and R are Individually true but  
 R is the correct explanation of A R is not the correct explanation of A  
 c) A is true but R is false d) A is false but R is true
6. The wrong statement(s) in connection with the test methods that are employed for extreme heat CO3 [K<sub>1</sub>]  
 protective clothing,
1. Steam exposure test
  2. Radiant heat exposure test
  3. Hot water splash exposure test
  4. Cold surface contact exposure test
- a) 1,2,3,4 b) 3,4  
 c) 2,3,4 d) 1,2,3
7. The correct arrangement amongst the following geotextile in the ascending order of the CO1 [K<sub>1</sub>]  
 compressibility
- a) Woven slit film < Nonwoven heat b) Nonwoven heat bonded < Woven slit  
 bonded < Nonwoven needle punched film < Nonwoven needle punched

- c) Woven slit film < Nonwoven needle punched < Nonwoven heat bonded      d) Nonwoven heat bonded < Nonwoven needle punched < Woven slit film
8. Uptake in case of transverse wicking or transplanar wicking uptake of water across the \_\_\_\_\_ of the fabric. CO2 [K<sub>2</sub>]
- a) length      b) thickness  
c) diameter      d) surface
9. Assertion (A): Radiographic Inspection of fibre reinforced composite is exactly same as that of the Orthopedic doctors use for analysing any damage in our bones, any cracks present in our bone. CO4 [K<sub>4</sub>]
- Reason (R): Radiographic inspection technique detects any sand particle inside the composite material, it can detect crack, detect shrinkage and even detect blowholes in the material.
- a) Both A and R are Individually true and R is the correct explanation of A      b) Both A and R are Individually true but R is not the correct explanation of A  
c) A is true but R is false      d) A is false but R is true
10. The test method in which compression, bending, biaxial extension and friction are simultaneously evaluated is CO2 [K<sub>1</sub>]
- a) FAST 3      b) FAST 1  
c) KESF 3      d) Fabric extraction principle

**PART B (10 x 2 = 20 Marks)**  
**(Answer not more than 40 words)**

11. Outline the objectives of Testing of Technical Textile. CO1 [K<sub>2</sub>]
12. Write about the primary hand properties of fabric handle. CO2 [K<sub>2</sub>]
13. Summarize on transmission characteristics testing of textiles. CO3 [K<sub>1</sub>]
14. Write about the parameters tested to evaluate fibre reinforced composite. CO4 [K<sub>2</sub>]
15. Outline on NIJ standard that are evaluated for Ballistic protective wear. CO5 [K<sub>3</sub>]
16. Write short notes on functional textiles testing. CO1 [K<sub>1</sub>]
17. Appraise a short note on the KESF – 3 modules. CO2 [K<sub>2</sub>]
18. Appraise a short note on Vapour form testing of fabrics. CO3 [K<sub>1</sub>]
19. Give a note on penetration % in filter fabrics. CO4 [K<sub>2</sub>]
20. Summarize on the testing of compression bandages. CO5 [K<sub>1</sub>]

**Answer any FIVE Questions:-**  
**PART C (5 x 14 = 70 Marks)**  
**(Answer not more than 350 words)**

21. a) Deliberate in detail about the low stress mechanical properties of fabrics by FAST with diagram. (10) CO1 [K<sub>3</sub>]  
b) Discuss in a short note on Subjective and Objective evaluation of fabric handle. (04) CO1 [K<sub>4</sub>]
22. Elaborate the Objective evaluation of textile methods used in textiles and explain any one of them with necessary sketches. (14) CO2 [K<sub>2</sub>]
23. Discuss in detail about the testing of thermal transmission and water vapour transmission with suitable diagrams. (14) CO3 [K<sub>2</sub>]
24. a) Summarize the different testing methods that is used for filter textiles with diagram. (07) CO4 [K<sub>2</sub>]  
b) Discuss the various testing methods employed for extreme heat protective clothing. (07) CO4 [K<sub>3</sub>]
25. a) Brief on the test method to determine the UV protective textiles and explain any two of them. (10) CO5 [K<sub>4</sub>]  
b) Summarize on the Special Testing carried out for the nonwoven materials. (04) CO5 [K<sub>3</sub>]
26. Summarize the different testing methods that are used for geotextile applications with diagram. (14) CO4 [K<sub>2</sub>]

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