



M.TECH DEGREE EXAMINATIONS: JUNE 2018

(Regulation 2015)

Second Semester

TEXTILE TECHNOLOGY

P15TXT204 : Clothing Comfort

COURSE OUTCOMES

- CO1: Classify textile products according to end user requirements
CO2: List the ways of heat transmission of our body
CO3: Discuss the ways to improve moisture transmission characteristics
CO4: Selection of fibre type, yarn structure and fabric structure for sports application
CO5: Differentiate between water repellent and waterproof fabrics

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion (A): In double layered fabrics, the hydrophobic layer should be in contact with the skin to ensure better moisture management CO3 [K4]
Reason (R): The hydrophobic layer wicks away the moisture.
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
2. As the movement of the body, the convection heat loss CO2 [K4]
(a) Increases, decreases
(b) Increases, Increases
(c) Decreases, increases
(d) Remain Constant, increases
3. Thermal Insulation increases with..... CO3 [K4]
a) Low fibre volume
b) High fibre volume
c) Fine structured fibre
d) Moisture regain

4. Matching type item with multiple choice code

CO1 [K4]

List I		List II	
A. Thermal comfort		i. firefighter dress	
B. Sensorial comfort		ii. movement of body parts	
C. Psychological		iii. tactile, touching, hand-fee	
D. Functional		iv. heat and mass transfer	
		v. Aesthetic sense	

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

5. Assertion (A): Fabrics made of micro polyester has good moisture management properties

CO4 [K4]

Reason (R): Micro polyester holds more air inside.

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|---|---|
| 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 |

6. Transfer of dry heat through textile materials is a function of _____ of the materials

CO2 [K4]

- | | |
|-----------------------|------------------------------|
| a) Air permeability | b) Water vapour permeability |
| c) Thermal resistance | d) Flammability |

7. Identify the **incorrect** statements from the following

CO5 [K]

- 1) Air has low thermal transmittance
- 2) Porosity is a measure of water holding capacity of fabrics
- 3) Moisture increases the effectiveness of textile structure in preventing heat loss
- 4) Water passage through textile layer is accomplished by diffusion and sorption

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

8. Assertion (A): Fabrics made of texturized yarn has good thermal insulation property

CO4 [K4]

Reason (R): Texturized yarns are porous, have more bulk and hold more air

- | | |
|---|---|
| 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 |

9. A fibre with excessive carbon and oxygen content will tend to CO5 [K3]
- a) Be self-extinguishing b) Be thermal insulator
- c) Ignite easily and burn readily d) Burn readily
10. 1.Sweating cools the skin by evaporating water CO3 [K4]
2. During high activity levels like sports, body metabolic rate increases
3. Fabric with high porosity wicks away the sweating
4. At high activity levels body temperature increases
- a) 2-4-1-3 b) 1-3-2-4
- c) 3-4-2-1 d) 4-1-3-2

PART B (10 x 2 = 20 Marks)

11. Define comfort and comment on the pros and cons of clothing with reference to comfort. CO1 [K2]
12. What is tactile sensation? State the components of tactile sensation. CO1 [K2]
13. What do you mean by Thermal Comfort? State the factors influencing thermal comfort. CO2 [K2]
14. How the thermal steady state of the human body is maintained? CO2 [K2]
15. Enlist the desired attributes of a good moisture management fabric. CO3 [K3]
16. Outline the relation between fabric porosity and air permeability. CO3 [K4]
17. Cotton fabrics produced from yarns with micro pores within the yarn structure exhibit more moisture vapour transmission – verify and justify. CO4 [K4]
18. Hollow fibres are more suitable for cold weather clothing. – justify. CO4 [K4]
19. Identify the parameters influencing fabric prickle sensation. CO5 [K2]
20. State the effect of garment fit on the comfort properties. CO5 [K3]

PART C (10 x 5 = 50 Marks)

21. Enumerate the processes involved in human sensory perception of clothing comfort and analyze the fibre and fabric parameters affecting the same. CO1 [K2]
22. Illustrate and explain the human- clothing environment system. CO1 [K2]
23. Give the mechanisms behind the Heat loss and factors determining thermal comfort. CO2 [K3]
24. Describe the method of measurement of thermal transmittance of Clothing Materials. CO2 [K2]
25. Explain in detail about the different concepts of moisture transmission through textiles. CO3 [K2]
26. Analyze the impact of hydrophilic/hydrophobic nature of fibres, fabric layering and surface coating on the moisture management properties of fabrics. CO3 [K4]
27. Elaborate on the effect of yarn structure on the comfort properties of clothing. CO4 [K4]

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|---|-----|------|
| 28. Elaborate on the impact of fabric structure and fabric constructional parameters on clothing comfort. | CO4 | [K4] |
| 29. Analyze the impact of water holding capacity and moisture vapour transmission property of a fabric on the sweat management. | CO5 | [K3] |
| 30. Elaborate on the different components of Non-sensorial comfort. | CO5 | [K2] |

Answer any TWO Questions
PART D (2 x 10 = 20 Marks)

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|---|-----|------|
| 31. Explain in detailed about the various elements of clothing comfort. | CO1 | [K2] |
| 32. Tabulate the impact of various structural properties of fibre, yarn, fabric on heat and moisture management properties. | CO4 | [K4] |
| 33. Discuss in detail about the various methods of measuring water vapour permeability and the different parameters measured. | CO5 | [K4] |
