



M.TECH DEGREE EXAMINATIONS: JUNE 2017

(Regulation 2015)

Second Semester

TEXTILE TECHNOLOGY

P15TXT202 : Fabric Quality Analysis

COURSE OUTCOMES

- CO1:** Analyze the mode of fabric failure (tensile, tear, abrasion, bursting and fatigue).
- CO2:** Explain the influence of fibre, yarn characteristics and fabric structure on the fabric failure.
- CO3:** Evaluate the Role of transmission properties on thermal properties and thermal comfort.
- CO4:** Predict fabric handle, tailorability and sewability using low stress mechanical properties of fabrics.
- CO5:** Apply the knowledge of Dimensional Stability, Flammability, Impact Resistance, and absorbency designing technical textiles products.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion (A): Even the stiffest fibres in tension are very flexible in bending CO1 [K₃]
Reason (R): Because of the fineness of textile fibres
- 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. Micro deformation of polymeric materials are CO1 [K₃]
- a) Visible to eye b) Highly localized and Visible under microscope
- c) Visible under microscope d) Found throughout
3. The crack begins to progress across the fibre axis in CO2 [K₃]
- a) Tensile failure b) Tensile Fatigue failure
- c) flex failure d) Bursting failure
4. Match the following CO3 [K₄]

List I	List II
A. The core temperature of Human body	i. Still air contained with in the fabric

B. Thermal insulation of textile fabrics is primarily due to	ii. 37°C+_0.5°C
C. mean skin temperature for men	iii. evaporation of perspiration
D. Dissipating the body heat in hot conditions	iv. 33°C to 34.5°C

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

5. Assertion (A): In summer wearing cotton fabric is comfortable CO3 [K₃]

Reason (R): Because water vapour and air permeability of cotton fabrics are good

- 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. Wick ability is the ability to sustain CO3 [K₄]

- a) adsorption b) absorption
- c) Capillary flow d) adhesion

7. Multiple selection item with multiple choice code CO1 [K₄]

In flex fatigue of textile fibres

- i. Kink bands in polymers are commonly observed in compressed surface
- ii. The initial formation of micro-deformations in polymers involves changes in the orientation of the crystalline or amorphous region
- iii. Polyester does not show kink bands at room temperature
- iv. In a typical flex failure wedge shape cut is not formed finally

The set of correct statement is

- a) i, ii b) i, iii
- c) ii, iii d) ii, iii

8. -----is not a low stress mechanical property CO4 [K₄]

- a) Shear stiffness b) Linearity
- c) Hysteresis at 0.5° d) Extension at break

9. Thermal insulation of textile fabrics is primarily due to ----- CO4 [K₄]

- a) Still air contained with in the fabric b) moving air with in the fabric
- c) Voids with in the fabric d) Holes with in the fabric

10. Sequencing type item CO3 [K₄]
 Find out the correct sequence of events
 1. Fibres migrating out 2. Forming nuclei of pill 3. Fibre entanglement 4. Pill growth
 a) 2-3-4-1 b) 1-3-2-4
 c) 3-4-2-1 d) 4-1-3-2

PART B (10 x 2 = 20 Marks)

11. Define tensile fatigue failure. CO1 [K₄]
 12. Define thermal comfort. CO3 [K₅]
 13. What do you mean by water vapour permeability? CO3 [K₄]
 14. Express the different modes of fabric failure. CO1 [K₃]
 15. Write down the different transmission properties. CO2 [K₄]
 16. Define fabric hand. CO3 [K₄]
 17. What is LOI? CO5 [K₃]
 18. Write down primary hands and associated mechanical properties with them. CO4 [K₄]
 19. Differentiate between objective measurement and subjective measurement of fabric handle value. CO4 [K₃]
 20. What is the Dimensional stability of knitted fabric? CO5 [K₃]

PART C (6 x 5 = 30 Marks)

21. Explain the influence of fibre properties on abrasion resistance CO1 [K₄]
 22. Discuss the factors that affect liquid water transport in a woven fabric. CO3 [K₄]
 23. Explain how water absorbency of textile material can be determined? CO5 [K₄]
 24. Write a note on Impact resistance of textile materials. CO5 [K₄]
 25. Discuss the influence of fibre ,yarn and fabric structure on fabric drape. CO4 [K₄]
 26. Explain how electrical conductivity of textiles are determined? CO2 [K₄]

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

27. Explain the mechanism of tensile failure of fabrics. CO1 [K₅]
 28. Discuss the influence of fibre ,yarn and fabric structure on pilling. CO4 [K₅]

29. What do you mean by physiological comfort? Explain how a clothing system helps to achieve it. CO4 [K₅]
30. Analyze the influence of yarn and fabric structure on fabric hand. CO3 [K₄]
31. Explain how technical textile fabrics are evaluated for various applications? CO5 [K₄]
