

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology



Study Programme	: Bachelor of Science Honours in Engineering/ Bachelor of Industrial Studies Honours
Name of the Examination	: Final Examination
Course Code and Title	: TAX4539 Quality Assurance for Textile & Clothing
Academic Year	: 2023/24
Date	: 20 th March 2025
Time	: 0930-1230hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
 2. This is a Closed Book Test (CBT).
 3. Write down your Index Number in all the pages of answer scripts.
 4. This question paper consists of Eight (08) questions in five (05) pages.
 5. Answer compulsory question one (Q01) and additional Five (05) questions.
 6. Question 01 (Q01) carries twenty five (25) marks and question two (Q02) to eight (Q08) carry fifteen (15) marks each.
 7. Answers for each question should commence from a new page. If a question has many parts, all the parts should be answered in the chronological order under the same question.
 8. Write down the answered question numbers in the cover page of the answer book.
 9. Answers should be in clear handwriting.
 10. Do not use red colour pens to write the answers.
-

Compulsory Question

- (Q1) (a) Give two (02) functional quality characteristics for each of the following textiles. (4 marks)
- (i) Table cloth material
 - (ii) Rain coat material
- (b) List four (04) properties that are checked on sewing threads during inspection. (4 marks)
- (c) Identify two (02) key quality aspects to consider when applying the 'Darts' in garment construction. (2 marks)
- (d) Briefly explain each situation under which the following abrasions occur. (4 marks)
- (i) Flat abrasion
 - (ii) Edge abrasion
- (e) A yarn has 12 tpm (turns per meter) and 16 tex count. Calculate the 'Twist factor' of the yarn in direct method. (2 marks)
- (f) Define the following terms related to the force-elongation curve of a textile material. (4 marks)
- (i) Strain
 - (ii) Modulus
- (g) List two (02) observations of **cotton fibers** during a burning test. (2 marks)
- (h) List one (01) fiber type that can be identified using each of the following solvent. (3 marks)
- (i) Sodium Hydroxide(NaOH)
 - (ii) Sulfuric Acid(H₂SO₄)
 - (iii) Acetone

Answer any five (05) questions from the following seven (07) questions

- (Q2) (a) Using one (01) practical example related to the garment manufacturing, discuss the concepts of 'Quality of Design' and 'Quality of Conformance to Design' used in the **apparel industry**. (6 marks)
- (b) Define the concepts of 'Quality Control (QC)' and 'Quality Assurance (QA)' in the manufacturing process. Discuss how each contributes to maintaining product quality in apparel production. (9 marks)

- (Q3) (a) A fabric roll was inspected for its quality and found to have the following defects.

Length of the fabric roll = 100 yards, Width of the fabric roll = 45 inches

Defects of 3 inches long or lesser	= 2
Defects of over 3 inches long but less than 6 inches	= 4
Defects of over 6 inches long but less than 9 inches	= 2
Defects over 9 inches	= 3
Holes of 1 inch or less	= 2
Holes over 1 inch	= 1

Using the '**Four point system**', determine whether the fabric roll is up to the quality standards or not. Use the threshold limit for the acceptance as **28** points per 100 square yards. (10 marks)

- (b) Two spun synthetic sewing threads are used for stitching denim jeans with the following parameters. Calculate which thread has the highest Ticket number. (5 marks)

Thread A consists of three plies, each with a metric count of 60 (60/1 Nm).

Thread B consists of two plies, each with a metric count of 40 (40/1 Nm).

- (Q4) (a) Sewing defects can arise due to poor handling. List out three (03) possible sewing defects with their relevant causes. (6 marks)
- (b) List two (02) quality factors that determine the suitability of underlining fabrics in garment manufacturing. Briefly explain how these factors impact the performance of the garments. (6 marks)
- (c) If you were to evaluate the fit of a shirt, identify three (03) key factors you would check to ensure its best fit to the wearer. (3 marks)
- (Q5) (a) Using your knowledge in weft knitted fabric defects, fill in the following table. You are required to copy this table to your answer sheet. (6 marks)

Name of the defect	Cause of the defect (1 cause per defect)	Who is responsible?
Barre		
Ladder		
Spirality		

- (b) Briefly explain three (03) causes of 'Seam slippage' at a seam. (6 marks)
- (c) Briefly explain the procedure of measuring the thickness of a fabric sample in a testing laboratory. (3 marks)
- (Q6) (a) With the aid of suitable **labeled diagram**, briefly explain the 'Diaphragm method' that is used to measure the bursting strength of a single jersey knitted fabric sample. (9 marks)
- (b) Briefly explain the following terms related to the shrinkage of different fiber types. (6 marks)
- (i) Swelling shrinkage
 - (ii) Felting shrinkage
 - (iii) Hygral expansion

(Q7) (a) Using suitable graphs, compare the effect of twist level on the strength of a staple fiber yarn and continuous filament yarn. (6 marks)

(b) With the aid of suitable labeled diagram, briefly explain the 'Straightened fiber method' that is used to measure the twist of a yarn sample. (9 marks)

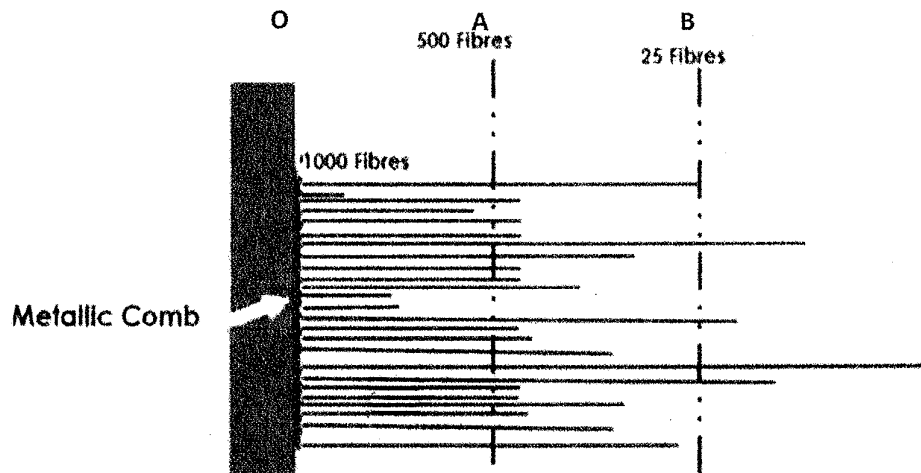
(Q8) (a) Describe the observations that can be made when examining the longitudinal and cross-sectional views of the following fiber types under a microscope.

(8 marks)

- (i) Cotton
- (ii) Wool
- (iii) Degummed Silk
- (iv) Polyester

(b) 1000 cotton fibers were taken from a sample and arranged as follows to measure the Uniformity ratio. If the OA length = 0.8 inches and OB length = 1.5 inches, calculate the uniformity ratio of the cotton fiber sample.

(4 marks)



(c) List three (03) adverse effects of using immature cotton fibers for textile production. (3 marks)