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

Study Programme	: Bachelor of Technology 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	: 2022/23
Date	: 30th January 2024
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 four (04) 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) Briefly explain the term "Quality" from a customer's point of view. (2 marks)

b) Briefly explain the relationship between quality of a product and its market share. (3 marks)

c) If there is a sewing thread made from cotton yarns quoted as 150/3Nm, what is the Ticket number of the sewing thread? (3 marks)

d) State four (04) pattern making faults that can be observed in garment manufacturing. (2 marks)

e) State four (04) finished fabric defects that can be observed during fabric manufacturing. (2 marks)

f) Briefly explain why wool fabrics are subjected to 'felting shrinkage'. (3 marks)

g) Define the following terms which are used in a force – elongation curve of a textile material. (3 marks)
   (i) Tenacity
   (ii) Modulus
   (iii) Yield Point

h) A cotton yarn of 3000m in length, weighs 30g. Calculate the decitex and denier counts of the yarn. (2 marks)

i) Briefly explain the identification of cotton fibers through both longitudinal and cross-sectional views under a microscope. (3 marks)

j) State the observations obtained from the burning test for the following fiber types. (2 marks)
   (i) Cellulose
   (ii) Nylon

Answer any five (5) questions from the following seven (7) questions.

(Q2) (a) The quality of design of a product will depend on the quality of three consecutive activities required to establish a proper design. Briefly explain these three (03) activities and their contribution to the quality of design. (6 marks)

(b) Graphically illustrate the 'Prevention–Appraisal-Failure' model with reference to the number of defects in a product and indicate the contribution of prevention cost, appraisal cost and failure cost to the total cost. (5 marks)

(c) Briefly explain the content included in the following documents of ISO9000 family of standards. (4 marks)

    (i)   ISO9002

    (ii)   ISO9003

(Q3)   (a) Discuss the main characteristics of the following quality procedures.

(9 marks)

    (i)   Quality inspection

    (ii)   Quality Control

    (iii)   Quality Assurance

(b) Identify six (06) critical properties for each of the following accessories, that will contribute to the overall quality of a garment. (6 marks)

    (i) Buttons

    (ii) Sewing Threads

(Q4)   (a) A fabric roll was inspected for its quality and found to have the following defects.

Length of the fabric roll = 200 yards, Width of the fabric roll = 45 inches

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

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 yards^2. (7 marks)

(b) Provide one(01) advantage and one(01) disadvantage of each of the below inspection methods which are used in garment manufacturing process.

(8 marks)

    (i)   Patrol inspection

    (ii)   Centralized inspection

(Q5) (a) Briefly explain the following woven fabric defects and the causes for each of them. (6 marks)
       (i)   Double ends
       (ii)   Miss picks
       (iii)   Thin place

     (b) Briefly explain the difference of the procedure to conduct the "Grab test" and the "Ravelled strip test" in measuring the tensile strength of a woven fabric sample. (4 marks)

     (c) Briefly explain the test principle for measuring the water resistance of a fabric sample in water permeability test. (5 marks)

(Q6) (a) Briefly explain three (03) types of abrasions occurred in garments with one (01) example for each. (6 marks)

     (b) Using a suitable diagram, explain any method that is used to measure the bursting strength of a knitted fabric sample. (6 marks)

     (c) Differentiate the terms water repellency and waterproof characteristics of a fabric sample. (3 marks)

(Q7) (a) Briefly explain why is measuring the linear density of a yarn used as a method to evaluate its fineness, and give two (02) reasons for employing this approach instead of directly measuring the yarn's diameter. (4 marks)

     (b) Briefly explain any one (01) method of measuring the tensile strength of yarns. (6 marks)

     (c) Briefly explain how the properties of raw materials impact the evenness of a cotton yarn. (5 marks)

(Q8) (a) Explain the terms "Staple length", "Effective length" and "Span length" of cotton fibres. (6 marks)

     (b) Briefly explain how the staple length measurement is taken for a sample of cotton fibres. (3 marks)

     (c) With the aid of a suitable diagram, explain the procedure of measuring the fibre fineness by airflow method. (6 marks)