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 Textiles and Clothing
Academic Year	: 2021/2022
Date	: 30th January 2023
Time	: 0930-1230hrs

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of Eight (08) questions in Four (04) pages.
3. Write down your Index Number in all the pages of the answer script.
4. Answer compulsory question one (Q01) and additional five (05) questions.
5. Question one (Q01) is compulsory and carries twenty-five (25) marks.
6. Question two (Q02) to eight (Q08) carry fifteen (15) marks each.
7. Answer 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 space given in the answer book.
9. Answers should be in clear hand writing.
10. Do not use red colour pen for writing.

Compulsory Question

(1) (a) What are the standard atmospheric conditions used for testing of textiles in textile laboratories of tropical countries? (02 Marks)

(b) Give any three (03) meanings of quality of a product. (03 Marks)

(c) Give three (03) types of seam failures. (03 Marks)

(d) State any four (04) types of cutting faults occurring in garment manufacturing. (04 Marks)

(e) Write down two (02) formulae to calculate twist factor in direct-and-indirect-Methods. (02 Marks)

(f) Briefly explain the terms "Air Permeability" and "Air Resistance". (04 Marks)

(g) Give two (02) applications for fabrics with "water absorption" property and two (02) applications for fabrics with "water repellence" property. (04 Marks)

(h) Write any three (03) colour fastness tests that should be done in textile testing. (03 Marks)

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

(2) (a) Explain the concepts of "Quality of Design" and "Quality of Conformance to the Design" and elaborate the importance of these two concepts in quality from the manufacturer's point of view. (06 Marks)

(b) To achieve a good quality product or service, it is essential to maintain both "Quality Control" and "Quality Assurance" processes. Explain why? (04 Marks)

(c) What do you understand by the term "Total Quality Management"?
A total quality strategy can embrace many objectives. List such four (04) objectives. (05 Marks)

(3) (a) Using the PAF Model, explain the procedure of optimizing total quality cost for a garment manufacturing company. Give at least two (02) examples for each of the contributing costs for the total cost. You may use the suitable graphical representations to elaborate the answer. (08 Marks)

(b) Briefly explain the "Quality Management Principles", which the revisions of ISO 9001 and 9004 are based on? (04 Marks)

(c) Write a short note on "ISO 9000 and the Sri Lankan Textile/Apparel Industry". (03 Marks)

(4) (a) In a garment manufacturing company, following defects have been identified during a fabric roll inspection process.

Defects of 2 inches long or lesser = 4; Point value per defect = 1
Defects over 2 inches but less than 4 inches = 3; Point value per defect = 2
Defects over 4 inches but less than 6 inches = 2; Point value per defect = 3
Defects over 6 inches but less than 9 inches = 4; Point value per defect = 4
Defects over 9 inches = 3; Point value per defect = 4
Holes less than 1 inch = 2; Point value per defect = 2
Holes over 1 inch = 1; Point value per defect = 4

Using the four-point system determine whether you accept or reject the particular fabric roll. For the calculation purposes assume that the fabric roll has 200 yards in length and 36 inches in width. Use the threshold limit for the acceptance as 28 points per 100 yards^2. (10 Marks)

(b) Explain five (05) fabric spreading faults that can be taken place during garment manufacturing process. Mention how you can overcome these faults as well. (05 Marks)

(5) (a) Discuss the reasons for testing of fabric strength in garment manufacturing. (04 Marks)

(b) What do you understand by the term tensile strength? Explain the three (03) methods of preparing specimens for testing the tensile strength of a given fabric sample. (06 Marks)

(c) Briefly explain the relationship between load and elongation in testing the tensile strength of a fabric sample. Use a suitable graphical representation to elaborate your answer. (05 Marks)

(6) (a) Fabrics are invariably subjected to various types of mechanical stresses and cause abrasion during usage. Giving examples explain such three (03) types of abrasions that can be seen on garments. (06 Marks)

(b) Explain the following types of dimensional change of fabrics. (09 Marks)

i. Relaxation Shrinkage
ii. Swelling Shrinkage
iii. Hygral Expansion

(7) (a) Compare the effect of twist level on the strength of a staple fiber yarn and a continuous filament yarn. You may use suitable graphs to elaborate your answer. (06 Marks)

(b) Discuss how the following yarn properties are affected by twist. (06 Marks)

i. Handle
ii. Moisture absorption
iii. Aesthetic effects

(c) Giving at least one (01) example each, write down the three (03) main causes for unevenness of a yarn. (03 Marks)

(8) (a) How do you identify the following fiber types using a microscope and a burning test? (06 Marks)

i. Cotton ii. Wool iii. Polyester

(b) How do you measure the effective length of a fiber sample using a comb sorter? (05 Marks)

(c) Discuss the negative effects of cotton fiber immaturity. (04 Marks)