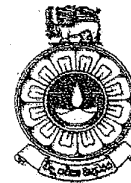


The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology



Study Programmes	: Bachelor of Science Honours in Engineering/ Bachelor of Industrial Studies Honours
Name of the Examination	: Final Examination
Course Code and Title	: TAX6366 - Yarn Manufacture II
Academic Year	: 2023/2024
Date	: 18 th February 2025
Time	: 0930-1230hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Four (4)** pages.
3. Write down your Index Number in all the pages of answer scripts.
4. Answer the question one (Q1), which is compulsory and five (05) more questions from Q2 to Q8. Question one (Q1) carries 25 marks and questions two (Q2) to eight (Q8) carry fifteen (15) marks each.
5. Answers to each question should commence on a new page. If a question has many parts, all the parts should be answered in the chronological order under the same question.
6. Write down the answered question numbers in the answer book.
7. Answers should be in clear hand writing.
8. Do not use red colour pens to write the answers.

Compulsory Question

(Q1)

- a) How can you distinguish between woolen yarn & worsted yarn based on visual characteristics? (02 marks)
- b) What is the purpose of Wool scouring? (02 marks)
- c) Give three (03) sources of waste Silk. (03 marks)
- d) Why has carding been eliminated in Flax spinning and what alternative method is used to replace it? (04 marks)
- e) Draw a flowchart illustrating the main steps involved in the extraction of Jute fibers. (03 marks)
- f) Under the Taw Conversion technique, the fiber cutting system is one of the methods used. If the radius of the cutter roller is 10 cm and the number of wraps is 6, calculate the achievable fiber length. (03 marks)
- g) Define the term "Texturing". (02 marks)
- h) What are the main two (02) objectives of yarn folding? (02 marks)
- i) What do you understand if the ticket number of a Cotton sewing thread is mentioned as "603"? (02 marks)
- j) What is the main drawback associated with ring spinning machine? (02 marks)

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

(Q2)

- a) Why are grading and sorting considered as essential preliminary steps before wool spinning? (03 marks)
- b) State the purpose of Wool carbonizing and briefly explain the method of chemical carbonizing method. (05 marks)
- c) What are the four (04) types of industrial Woolen blending methods based on the continuity of material flow and processing? Describe one (01) of these methods. (07 marks)

(Q3)

- a) Provide a brief explanation of "Mercerization", considering its purpose and the steps involved in the process. (05 marks)
- b) Briefly explain why the weighting has to be done in silk fabric manufacturing process. (05 marks)
- c) While wet spinning of flax results in the production of the finest, smoothest and strongest yarn, briefly explain why this method is not commonly used for the manufacturing Jute yarns? (05 marks)

(Q4)

- a) Briefly explain the three (03) types, stretched, modified stretch and bulk (textured) yarns. (06 marks)
- b) Compare yarns produced by false twisting process and draw texturing process with respect to the following factors. (04 marks)
- i) Cross sectional shape deformation
 - ii) Number of knots per unit length
 - iii) Dye depth
 - iv) Cost of yarn
- c) With the aid of a suitable diagram, briefly describe the "Edge Crimping" method. (05 marks)

(Q5)

- a) With a suitable diagram, briefly describe how the cabled yarns are produced from single yarns. (04 marks)
- b) Discuss the term, "contraction of yarn length during doubling". (05 marks)
- c) Briefly explain any three (03) types of fancy yarns. (06 marks)

(Q6)

- a) Give five (5) advantages of open-end spinning over ring spinning. (05 marks)
- b) With the help of a labeled diagram, explain the working principle of rotor spinning. (10 marks)

(Q7)

- a) State Three (3) important properties of fibers that are required for making yarns with Murata jet spinning. (03 marks)
- b) Give a description of wrap spinning, including:
- i) A diagram of a wrap spun yarn
 - ii) An explanation of the spinning process
 - iii) Limitations/ disadvantages
- (06 marks)
- c) List three (03) reasons why lubricants are applied to man-made fibers. (06 marks)

(Q8)

- a) Briefly describe the process of yarn manufacturing by friction spinning, including a suitable diagram. (05 marks)
- b) Name four (04) types of sewing thread packages and their corresponding applications. (04 marks)
- c) Give any three (03) common yarn faults with their diagrams and describe one (01) reason for each of those faults. (06 marks)