0386

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

Study Programme	:	Bachelor of Industrial Studies Honours
Name of the Examination	:	Final Examination
Course Code and Title	:	**TAX3530- Fibre to Fabric**
Academic Year	:	2024/25
Date	:	25th January 2026
Time	:	0930-1230h
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 the answer script.
4. Answer the question one (Q1), which is compulsory and five (05) more questions from Q2 to Q8. Question one (Q1) carries twenty-five (25) marks and Question two (Q2) to eight (Q8) carry fifteen (15) marks each.
5. Answer to 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.
6. Write down the answered question numbers in the space given in the answer book.
7. Answers should be in clear hand writing.
8. Do not use red colour pens to write the answers
9. This is a Closed Book Test (CBT).

Compulsory Question

(1) (a) Name two (02) main subcategories of man-made fibres and provide one (01) example for each. (04 Marks)

(b) Cotton fibre is more crystalline in nature, but it shows good moisture absorbency. State the reason. (01 Marks)

(c) Briefly explain the features of cross-sectional view and longitudinal view of wool fiber under the microscope using suitable illustrations. (04 Marks)

(d) Describe warp density and weft density of a woven fabric. (02 marks)

(e) State any two (02) applications of jute fibres. (01 marks)

(f) What are the two (02) different types of wool yarn manufacturing systems? (01 marks)

(g) A cotton yarn of 210 yards weighs 0.16 ounces. Determine the English/ cotton count (Ne) of this yarn. (04 Marks)

(h) Give main two (02) stages of nonwoven fabric manufacturing. (02 Marks)

(i) Name any three (03) weft insertion elements used in fabric weaving process. (03 Marks)

(j) What are the functions of the sinker in knitting action. (03 Marks)

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

(2) (a) "Every fiber cannot be considered a textile fiber". Explain this statement with reference to fibre length and processability. (04 Marks)

(b) What is meant by "Polymerization" and explain two (02) methods of polymerization. (05 Marks)

(c) Explain how the degree of molecular orientation and crystallisation affects the strength and elongation behaviour of textile fibres. (06 Marks)

i. High degree of molecular orientation and high crystallisation
ii. Low degree of molecular orientation low crystallisation

(3) (a) Compare the wet tenacity of Nylon and Polyester. (02 marks)

(b) Briefly explain two (02) main methods solution spinning in man made fibre production. (04 marks)

(c) Describe below physical properties of viscose fibre. (09 Marks)

i. Tenacity at dry and wet states
ii. Elastic-plastic nature
iii. Hygroscopic nature

(04) (a) Cotton fibre is a single plant cell. Explain the micro structure of cotton fibre. (08 Marks)

(b) Flax, Jute and Sisal are classified as natural vegetable fibres. State any two (02) other common properties and characteristics of Flax, Jute and Sisal fibres. (02 Marks)

(c) Briefly explain the effects of alkalis and acids on silk fibres. (05 Marks)

(05) (a) What are the two (02) most important factors affecting the amount of twist in spun yarn. (02 Marks)

(b) What is the principle of the action of opposing spikes in cotton opening? (04 Marks)

(c) Explain why combing is important in finer cotton yarn manufacturing. (03 Marks)

(d) Using proper illustrations, explain the objectives of doubling and drafting on a draw frame machine. (06 Marks)

(06) (a) What is meant by wool scouring and explain two (02) methods used for scouring wool. (03 marks)

(b) Write shortnotes on following terms. (12 marks)

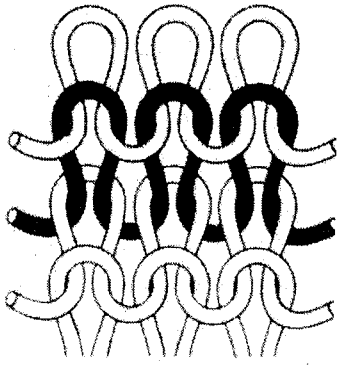
i. Yarn folding
ii. Real twist testuring
iii. Wool carbonizing
iv. Fibre blending in yarn manufacturing

(07) (a) Sizing is a process applied to warp yarns prior to weaving. Mention any two (02) objectives of sizing. (02 marks)

(b) Define shaft weaving in woven fabric design and name two (02) sheddin mechanisms used in shaft weaving. (03 marks)

(c) Explain the primary motions and secondary motions of a weaving machine. (10 Marks)

(08) (a) Draw the point paper diagram and yarn path diagram. (02 marks)



(b) With the aid of suitable diagrams, explain the formation of float stitch and tuck stitch in weft knitting. (05 marks)

(c) Describe the steps involved in loop formation by a bearded needle in knitting. (08 Marks)

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