

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 : 2020/21
Date : 24th February 2022
Time : 1400 - 1700 hrs
Duration : **3 hours**

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. Answer question **One (01)**, which is **compulsory**, and **Five (05)** additional questions.
 4. Total number of questions to be answered is **Six (06)**.
 5. Question One (01) carries thirty (30) marks and question Two (02) to Eight (08) carry fourteen (14) marks each.
 6. Answer for each question should commence from new page.
 7. Answers should be in clear hand writing.
 8. Do not use red color pens.
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Compulsory question

01.

- a) Draw longitudinal views of the following fibres. (04 marks)
- Wool fibre
 - Silk fibre
 - Cotton fibre
 - Viscose fibre
- b) Write three (03) objectives of ring spinning. (03 marks)
- c) Weight of 2000 meters of a cotton yarn is 20 grams. Calculate the Tex count and the English cotton (Ne) count of the yarn. (04 marks)
- d) Name four (04) modern methods of cotton yarn spinning. (04 marks)
- e) State three (03) objectives of yarn tensioning during yarn winding. (03 marks)
- f) Distinguish between "Air jet textured yarn" and "Stuffer box textured yarn" considering their properties. (03 marks)
- g) Define the term "Doubling". (02 marks)
- h) Draw the lapping diagram for the warp knitted structure with chain notation 3-4/1-0. (02 marks)
- i) Write two (02) objectives of fibre blending. (02 marks)
- j) With the aid of a suitable diagram, briefly explain the principle of roller drafting. (03 marks)

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

02.

- a) Degree of crystallization of a cotton fibre has been identified approximately as 65%: 35%, but it is regarded as a good absorbent of moisture." Reason out this statement. (04 marks)
- b) Explain the reasons for the crimp configuration of a wool fibre. (04 marks)
- c) Briefly explain three (03) differences between the polymer systems of wool and silk. (06 marks)

03.

- a) Briefly explain why viscose fibres exhibit poorer wet tenacity than cotton fibres. (04 marks)
- b) Compare Nylon and Polyester textile fibres considering the following properties. (06 marks)
- Hygroscopic nature

- ii. Elastic plastic nature
 - iii. Handle
- c) Briefly explain physical properties of elastomeric fibres. (04 marks)

04.

- a) State four (04) actions involved in blow room machinery. (02 marks)
- b) With the aid of diagrams, briefly explain the following actions taken place in a carding machine. (06 marks)
- i. Action between taker - in and cylinder
 - ii. Action between cylinder and flats
- c) Differentiate between "Carded yarn" and "Combed yarn" using staple diagrams where necessary. (06 marks)

05.

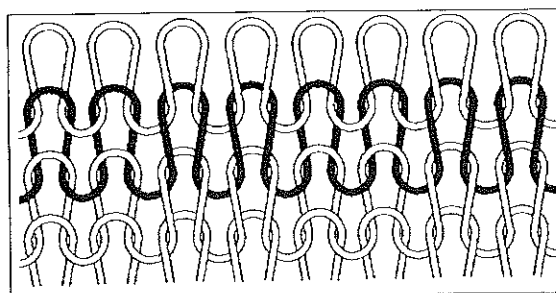
- a) Briefly explain the purpose of conducting "Wool scouring" prior to wool yarn manufacturing process. (02 marks)
- b) Why worsted carding machine length is shorter than woollen carding machine length? (06 marks)
- c) With the aid of suitable diagrams, briefly explain how different folded yarn types are made. (06 marks)

06.

- a) State any four (04) advantages of air-jet weaving. (04 marks)
- b) Explain three (03) primary motions and two (02) secondary motions of weaving. (05 marks)
- c) Explain why knitted garments are more suitable for producing undergarments than woven fabrics. (05 marks)

07.

- a) Draw the point paper notation and the yarn path diagram of the weft knitted structure given below. (02 marks)



- b) Explain main two (02) disadvantages of plain weft knitted fabrics. (04 marks)
- c) With aid of suitable diagrams, briefly explain how loop formation is performed by a compound needle. (08 marks)

08.

- a) Briefly explain the differences between warp knitting and weft knitting. (04 marks)
- b) Briefly explain main two (02) stages involved in non-woven manufacturing. (04 marks)
- c) Briefly discuss two (02) example processes for each of the above-mentioned stages. (06 marks)

-End of the Question Paper-