



Study Programme : Bachelor of Industrial Studies Honours  
Name of the Examination : Final Examination  
**Course Code and Title** : **TAX3530 - Fibre to Fabric**  
Academic Year : 2022/2023  
Date : 18<sup>th</sup> February 2024  
Time : 1330-1630hrs  
Duration : **3 hours**

### General Instructions

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

### Compulsory Question

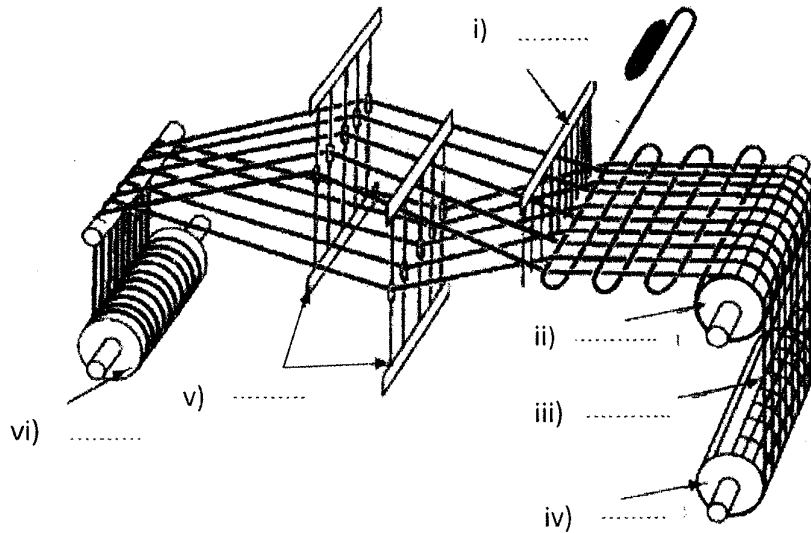
- (1) (a) Name the three (03) sub categories falling under the main category of vegetable fibres and give one (01) example for each. (03 Marks)
- (b) Fibre forming polymers can be classified according to their structure. Draw suitable diagrams using symbols to show following two (02) polymer structures. (04 Marks)
- i. A linear co-polymer
  - ii. A branched co-polymer
- (c) Define the terms "Crystalline Structure" and "Amorphous Structure" in a textile fibre. (04 Marks)
- (d) Write any three (03) types of inter - polymer forces of attraction formed in wool fiber structure. (03 Marks)
- (e) A given sample of 120 yards of cotton yarn, weighs 0.0457 ounces. Determine the English count of this yarn. (03 Marks)
- (f) Briefly explain the difference of the spinneret position in wet spinning and dry jet wet spinning methods in man-made fibre production processes. (04 marks)
- (g) Define the following terms in relation to Knitting. (04 Marks)
- i. Courses and Wales
  - ii. Loop and Stitch

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

- (2) (a) Draw the cross sectional and longitudinal views of the following fiber types. (08 Marks)
- i. Cotton
  - ii. Wool
  - iii. Silk
  - iv. Viscose

- (b) Briefly explain the process and the importance of "Drawing" filaments after spinning. You may use a suitable diagram to support your answer. (07 Marks)
- (3) (a) Cotton does not melt under high temperature. Briefly explain why? (02 Marks)
- (b) Cotton increases its strength under wet conditions rather than under dry conditions. Briefly explain why? (03 Marks)
- (c) Briefly explain the techniques "Setting of Wool" and "Felting of Wool"? (04 Marks)
- (d) Differentiate the "Dry Tenacity", "Wet Tenacity" and "Hygroscopic Nature" of Nylon and Polyester. (06 Marks)
- (4) (a) Write the main functions of a "Blow Room" process in staple yarn manufacturing. (03 Marks)
- (b) Explain the "Action of Opposing Spikes" that is employed in the machines used in blow room process. (04 Marks)
- (c) State any four (04) objectives of "Carding" process in staple yarn manufacturing. (02 Marks)
- (d) Differentiate between "Carding Action" and "Stripping Action" of a carding machine. (06 Marks)
- (5) (a) Write the objectives of "Combing" step in staple yarn manufacturing process. (03 Marks)
- (b) Briefly explain the three (03) main objectives of a "Roving" operation. (06 Marks)
- (c) Using a suitable diagram, briefly explain the principle of "Open End Spinning" used in modern spinning techniques. (06 Marks)

- (6) (a) Given below is the basic structure of a weaving machine. Name the given elements. (03 Marks)



- (b) Briefly explain the importance/ purposes of below processes in warp preparation (09 Marks)

- i. Winding
- ii. Warping
- iii. Sizing

- (c) Briefly explain the "Principle of Pirn Winding". (03 Marks)

- (7) Write short notes on the followings.

(a) Primary motions of a weaving machine. (05 Marks)

(b) Secondary motions of a weaving machine. (05 Marks)

(c) Problems associated with **shuttle looms**. (05 Marks)

- (8) (a) Using suitable diagrams briefly explain the steps of loop formation by "Latch Needle" in knitting technology. (07 Marks)

(b) Draw the point paper notations and yarn path diagrams for the following knitted structures.

i. Plain (single jersey) (02 Marks)

ii. 1x1 Rib (02 Marks)

(c) Using point paper notations and yarn path diagrams, explain "Tuck/ Miss Stitch" and "Float Stitch" used in knitted structures. (04 Marks)