



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 : TAX3459
Yarn Manufacture I
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 handwriting.
8. Do not use red color pens.

Compulsory question**01.**

- a) Weight of 2000 meters of a cotton yarn is 30 grams. Calculate the Tex count and the English cotton (Nc) count of the yarn. (04 marks)
- b) State the main function of cotton ginning. (02 marks)
- c) State four (04) main actions of blow room machinery. (04 marks)
- d) What do you understand by “Tandem carding”? (02 marks)
- e) Illustrate the three (03) types of hooks that can be found in fibres of a carded sliver. (03 marks)
- f) State three (03) differences between drafting systems of drawing frame and roving frame. (03 marks)
- g) Write two (02) factors that affect the amount of twist in a spun yarn. (02 marks)
- h) State two (02) consequences associated with high yarn ballooning in ring spinning. (02 marks)
- i) List three (03) common carding defects. (03 marks)
- j) Briefly explain the importance of optimizing the number of cleaning points when blending cotton fibres with man-made fibres in blow room. (03 marks)
- k) State four (04) methods of fibre blending. (02 marks)

Answer any five (05) questions from the following seven (07) questions.**02.**

- a) Briefly explain three (03) objectives of spinning. (03 marks)
- b) Briefly explain the principle of roller drafting using suitable diagrams. (06 marks)
- c) Briefly explain two (02) new developments that can be found in modern ring spinning machines. (05 marks)

03.

- a) Briefly explain the importance of double apron arrangement of the drafting system in roving frames. (04 marks)
- b) Briefly explain the three (03) functions performed by building motion of a roving frame. (06 marks)
- c) Briefly explain the method of testing the roving twist. (04 marks)

04.

- a) Differentiate between “Carded yarn” and “Combed yarn” using staple diagrams where necessary. (06 marks)
- b) Write short notes on the following comber settings. You may use diagrams where necessary. (08 marks)
- i. Setting of detaching rollers
 - ii. Setting of the brush

05.

- a) With the aid of diagrams, briefly explain the following actions taking place in carding machine. (06 marks)
- i. Action between taker - in and cylinder
 - ii. Action between cylinder and flats
- b) Explain any two (02) features of modern cards. You may use diagrams where necessary. (08 marks)

06.

- a) Briefly explain advantages and disadvantages of Macarthy Gin machine. (06 marks)
- b) Briefly explain three (03) ginning defects. (06 marks)
- c) State four (04) advantages of automatic bale pluckers and feeders. (02 marks)

07.

- a) Discuss the advantages and disadvantages of lap feeding over chute feeding. (06 marks)
- b) Answer the following questions using the data given below about the production of a carding machine.

Rotational speed of the calendar roller (rpm)	15
Diameter of the calendar roller (cm)	20
Carded sliver count (tex)	2800
Number of hours per shift	08

- i. Calculate the production of the carding machine per shift in kilograms. (06 marks)
- ii. State the main assumption you made when answering the above question. (02 marks)

08. Write short notes on any two (02) of the following topics.

(14 marks)

- a) Influence of fibre properties on blending
- b) Precautions to be observed while blending or mixing
- c) Objectives of blending

-End of the Question Paper-