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	**: TAX4560 Woven Fabric Technology**
Academic Year	: 2020/2021
Date	: 13th February 2022
Time	: 0930-1230 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 Five (05) pages.

3. Write down your Index Number in all the pages of the answer script.

4. **Answer compulsory question one (Q1) and additional five (05) questions.**

5. Question one (Q1) is compulsory and carries twenty-five (25) marks.

6. Question two (Q2) to eight (Q8) carry fifteen (15) marks each.

7. Answer for 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.

8. Write down the answered question numbers in the space given in the answer book.

9. Answers should be in clear hand writing.

10. Do not use red colour pen.

iii. The total number of yarn packages required for warping and the weight of yarn to be wound on to each yarn package in pounds. (04 Marks)

(Q4) (a). List five (05) main ingredients used in a size mixture. (05 Marks)

(b). You have received an order to weave 7000 meters of plain weave shirting material with following specifications.

$$\frac{\text{Polyester/Cotton } 65/35 \ 30 \text{ Tex X Polyester/Cotton } 60/40 \ 40 \text{ Tex}}{24 \text{ ends/cm X } 20 \text{ picks/cm}} \text{ X100}$$

Warp crimp is 12% and weft crimp is 10%. Assume that the waste percentages for the warp and weft are 3% and 5%, respectively. Calculate the,

i. Total length of warp yarn and total length of the weft yarn required to weave $1m^2$ of fabric. (04 Marks)

ii. Weight of warp yarn and weight of weft yarn required for $1m^2$ of fabric.
(03 Marks)

iii. Calculate the fabric area density in grams per square meter. (03 Marks)

(Q5) (a). The pirn package contains several unique features that aid in the smooth propagation of the shuttle during the shuttle weaving process. Discuss the unique features of the pirn package. Use diagrams where necessary. (06 Marks)

(b). Projectile picking mechanism was introduced to overcome some of the disadvantages caused by the shuttle picking mechanism. Explain such specific features of the projectile picking mechanism compared to the shuttle picking mechanism. (09 Marks)

(Q6) (a). With the aid of suitable diagrams, distinguish between negative and positive cam shedding mechanisms. (07 Marks)

(b). Positive dobbies are preferred over negative dobbies when weaving heavy fabrics such as fancy woollens and worsteds. Explain why. (08 Marks)

(Q7) (a). What are the functions of a sley mechanism? (05 Marks)

(b). Distinguish between linkage and cam operated sley mechanisms. Use diagrams where necessary. (10 Marks)

(Q8) (a). Distinguish between negative and positive let-off mechanisms. (06 Marks)

(b). Distinguish between the two (2) major types of weft detecting systems used in shuttle looms highlighting the working principles, benefits, and limitations of each system.

(09 Marks)