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	**: TAX6265 Advanced Weaving Preparation & Machinery**
Academic Year	: 2021/22
Date	: 22nd February 2023
Time	: 1330-1630hrs

General Instructions

1. Read all instructions carefully before answering the questions.
2. This is a Closed Book Test (CBT).
3. Write down your Index Number in all the pages of answer scripts.
4. This paper consists of two parts, namely A & B in 04 pages. Part A consists of eight (08) questions. This section is compulsory, and the marks allocated for Part A is 25.
5. Part B consists of Six (06) questions. Answer only five (05) questions. Each question carries 15 marks. The marks allocated for Part B is 75.
6. Answers for 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.
7. Write down the answered question numbers in the cover page of the answer book.
8. Answers should be in clear handwriting.
9. Do not use red-colored pens to write the answers.

Part (A)

(Q1.) State two different aspects/criteria that can be considered for classification of winding machines.

(02 marks)

(Q2.) State two (02) advantages of Sulzer Projectile Weaving over conventional shuttle weaving.

(04 marks)

(Q3.) State any three (03) events causing loom stoppages. (06 marks)

(Q4.) State two (02) merits and two (02) demerits of "Multi-phase Weaving.

(04 marks)

(Q5.) Compare and contrast "Manual Drawing-in" with "Semi-Automatic Drawing-in" with respect to their operational principles.

(03 marks)

(Q6.) Briefly describe the term "style-changing" in weaving.

(02 marks)

(Q7.) Briefly explain the main difference between "knotting" and "splicing".

(02 marks)

(Q8.) Briefly explain two (02) advantages of a two-phase rapier weaving machine.

(02 marks)

Part (B)

(Q9.)

(a) Differentiate the process of "Automatic winding" from "Pirn winding ", with respect to the "creeling" and "doffing" actions. (04 marks)

(b) Briefly explain the purpose of having "Nearly parallel wound layer packages". (05 marks)

(c) **"For a winder to be an automatic winder, the doffing operation must be essentially automated"**. Is this statement correct or wrong? Give reasons for your answer. (06 marks)

(Q10.)

(a) Differentiate the "ordinary dobby" from the "rotary dobby" with respect to the speed and the wear and tear that happens during operation. (04 marks)

(b) Briefly explain the advantages of the electronic Jacquard shedding in comparison to the mechanical Jacquard shedding. (05 marks)

(c) **"The telescopic rapier is designed to reduce the total width of rapier looms".** Briefly discuss whether you agree/disagree with this statement, stating at least two (02) reasons to justify your answer. (06 marks)

(Q11.)

(a) Compare and contrast the operational principles of the "Negative Let-off Mechanisms" and the "Positive Let-off Mechanisms". (06 marks)

(b) State two (02) different types of selvedges that are formed during the weaving process and briefly explain the function of the "dummy selvedge" present in shuttle-less weaving machines. (05 marks)

(c) Discuss the operational principle of a selvedge formation device used for any of the above selvedge types. (04 marks)

(Q12.)

(a) Briefly explain why the purification level of compressed air impacts the quality of fabric produced in an Air-jet weaving machine.

(04 marks)

(b) Briefly explain the purpose of having tubular extensions in weft propulsion units/nozzles, of an Air Jet Loom.

(05 marks)

(c) Discuss three (03) advantages of the air jet weft insertion method.

(06 marks)

(Q13.)

(a) Write short notes on the operational principles of the following rapier driving mechanisms employed in rapier weaving machines.

i. Radial Cam Operated Rapier Drive Mechanism
ii. The Grooved Cam Operated Mechanism
iii. Gear wheel Operated Mechanism

(09 marks)

(b) State three (03) actions that take place during one cycle of weft insertion of the Sulzer Projectile Loom.

(06 marks)

(Q14.)

(a) Briefly explain the working principle of a circular weaving machine.

(04 marks)

(b) Discuss the limitations and challenges of circular weaving providing at least two (02) examples.

(05 marks)

(c) **"The Gentilini Ripamonti multi-phase weaving machine was unsuccessful in its commercialization."** Briefly discuss whether you agree/disagree with this statement, using at least three (03) reasons to justify your answer.

(06 marks)

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