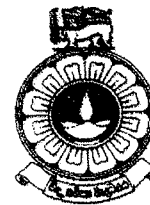


The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology



Study Programme : Bachelor of Science Honours in Engineering /
Bachelor of Industrial Studies Honours
Name of the Examination : Final Examination
Course Code and Title : TAX5551 Textile Colouration
Academic Year : 2024/25
Date : 5th February 2026
Time : 1330-1630h
Duration : 3 hours

General instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Three (3)** pages.
3. Answer compulsory question one (Q1) and additional Five (05) questions.
4. Question 01 (Q1) carries twenty five (25) marks and each of the questions two (Q2) to eight (Q8) carries fifteen (15) marks.
5. Answer for each question should commence from a new page.
6. This is a Closed Book Test (CBT).

Compulsory Question

- (Q1) (a) List three (03) oxidative desizing agents. (3 marks)
- (b) Mention two (02) advantages of using a counter-current washing system instead of a conventional continuous open-width washing range. (2 marks)
- (c) Briefly explain the role of pH in the hydrogen peroxide bleaching process. (2 marks)
- (d) Briefly describe the purpose of using a mordant in textile dyeing. (3 marks)
- (e) Briefly explain two (02) characteristics of 'Direct Dyes'. (4 marks)

- (f) List two (02) advantages of the long liquor dyeing method in comparison to the short liquor dyeing method. (2 marks)
- (g) Briefly explain one (01) main difference between relief and roller printing machine features with reference to dye application. (3 marks)
- (h) List three (03) natural thickening agents used for textile printing processes. (3 marks)
- (i) Briefly explain the objective of heat setting of a fabric. (3 marks)

Answer any Five (05) questions from Question 2(Q2) to Question 8(Q8).

- (Q2) (a) Describe how the following desizing methods remove size materials from cotton fabrics. In your answer, briefly explain the working principle and process parameters of each method. (8 marks)
 - (i) Rot Steeping
 - (ii) Enzymatic Desizing
- (b) Using a clearly labelled diagram, briefly describe how the kier boiling process is carried out to remove impurities from fabric. (7 marks)
- (Q3) (a) With the aid of a labelled diagram, illustrate a mercerization machine, clearly indicating the material flow and liquor circulation paths. (7 marks)
- (b) Briefly explain appropriate methods for each of the following chemical processes. (8 marks)
 - (i) Bleaching of Polyester fibres
 - (ii) Scouring of Nylon 6,6
- (Q4) (a) With the aid of a labelled diagram, describe the working principle of a 'Loose Stock Dyeing Machine'. In your answer, explain how uniform dyeing is achieved in loose fibre form. (10 marks)
- (b) Briefly explain the exhaustion dyeing process of cotton with direct dyes. Draw a process graph to elaborate your answer. (5 marks)

- (Q5) (a) Briefly explain the basic principle of azoic dyeing, highlighting the chemical reaction involved and the components used in dye formation. (6 marks)
- (b) Discuss three(03) factors to be considered in selecting a dye for a given purpose. (9 marks)
- (Q6) (a) Briefly explain the process steps involved in screen printing, starting from screen preparation. (9 marks)
- (b) Write short notes on the following printing styles: (6 marks)
- (i) Discharge style printing
 - (ii) Batik Style printing
- (Q7) (a) With the aid of a suitable cross sectional view, briefly explain the working principle of relief printing machine. (10 marks)
- (b) Briefly explain the principal difference between conventional dye printing and pigment printing, with reference to the method of colour fixation on the fabric. (5 marks)
- (Q8) (a) Briefly explain the objectives of the following mechanical finishing processes as applied to textile fabrics and the effects produced in or on the textile surfaces. (6 marks)
- (i) Brushing
 - (ii) Sueding
 - (iii) Decatizing(decating)
- (b) Briefly explain the following chemical finishing applying methods. Use diagrams to explain. (9 marks)
- (i) Coating
 - (ii) Pad-dry-cure
 - (iii) Calendar Coating