

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	: TAX6367 Advanced Colouration
Academic Year	: 2024/25
Date	: 11 th February 2026
Time	: 1330-1630h
Duration	: 3 hours

General instructions

1. Read all the instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Three (3)** pages.
3. Write down your Index Number in all the pages of the answer scripts.
4. Answer the question one (Q1), which is compulsory and five (05) more questions from Q2 to Q8. Question one (Q1) carries 25 marks and questions two (Q2) to eight (Q8) carry fifteen (15) marks each.
5. Answer for each question should commence from a new page.
6. Write down the numbers of the answered question in the space provided in the answer book.
7. Answers should be in clear handwriting.
8. Do not use red colour pens to write the answers.
9. This is a Closed Book Test (CBT).

Compulsory Question

Question 01

- a. Acid dyes are categorised into different groups according to their chemical constitution. Name four (04) of them. (04 marks)
- b. Write down three (03) factors affecting the substantivity of Direct dyes for cotton fabrics. (03 marks)
- c. State the principle of mordanting in textile dyeing. (02 marks)
- d. List two (02) After-treatments applicable for Sulphur dyes. (02 marks)

- e. State the three (03) main operations involved in dyeing with Vat dyes. (03 marks)
- f. Write down the three (03) methods of dyeing blends of protein and cellulosic fibres. (03 marks)
- g. Colour vision deficiencies are classified into six distinct categories. Identify three (03) of them. (03 marks)
- h. What are the three (03) attributes of colour as defined by the Munsell system? (03 marks)
- i. State two (02) methods for modifying the molecular structure of textile fibres prior to dyeing. (02 marks)

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

Question 02

- a. Explain the general properties and characteristics of Basic dyes. (10 marks)
- b. Explain the phenomenon of "Dye Migration" associated with Acid dyes. (05 marks)

Question 03

- a. Describe the application methods for the following types of direct dyes on cotton fabrics.
 - i Self-levelling Direct dyes
 - ii Salt controllable Direct dyes
 - iii Temperature controllable Direct dyes (15 marks)

Question 04

- a. Write short notes on the following Mordant dyes. (06 marks)
 - i Natural Mordant dyes
 - ii Acid Mordant dyes
- b. Explain the application method for Azoic dyes on cotton fabric. (09 marks)

Question 05

- a. Explain the method of application of Vat dyes on cotton fabric. (10 marks)
- b. Briefly describe the fastness properties of Reactive Dyes. (05 marks)

Question 06

- a. Describe the process of preparing nylon for dyeing. (08 marks)
- b. Explain the phenomenon of "Gas fading" associated with cellulose acetate dyed with Disperse Dyes. (07 marks)

Question 07

- a. Explain the method for determining the colour fastness to perspiration according to the ISO recommendations. (08 marks)
- b. Explain the Ishihara test used for evaluating colour perception. (07 marks)

Question 08

- a. Write short notes on the following terms. (10 marks)
 - i CIE system
 - ii Colourimeter
- b. Discuss the influence of polymer chain orientation and crystallinity on the dyeability of textile fibres. (05 marks)

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