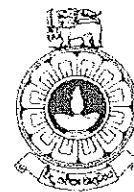


The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology



Study Programme	: Bachelor of Industrial Studies Honours
Name of the Examination	: Final Examination
Course Code and Title	: TAI4344/TAI5346/TTI5146 Industrial Garment Washing and Finishing
Academic Year	: 2019/2020
Date	: 04 th October 2020
Time	: 1330 – 1630 hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Four (4)** pages.
3. **Number of questions to be answered = 06**
4. Answer **Question one (Q1), which is compulsory and Five (05) more** questions.
5. Question one (Q1) carries 25 marks and questions two (Q2) to eight (Q8) carry fifteen (15) marks each.
6. Answer for each question should commence from a new page.
7. Answers should be in clear hand writing.
8. Do not use red colour pens.

Compulsory Question

- (Q1) (a) Differentiate between the garment washing and finishing processes carried out by the “garment manufacturer” and the “consumer”. (02 marks)
- (b) Write down the three (03) factors, which can be used to differentiate between the individual wet processes used for garment washing and finishing. (03 marks)
- (c) Explain the purpose of using Baking or Curing ovens for garment finishing treatments. (01 marks)
- (d) Describe the terms “Affinity” and “Substantivity” related to the interaction between fibres and dye molecules. (04 marks)
- (e) Write down five (05) disadvantages of using Stone Wash as a garment washing and finishing treatment. (05 marks)
- (f) Briefly describe three (03) fibre/fabric properties and characteristics, which are of specific importance to washing and finishing processes. (03 marks)
- (g) Briefly explain three (03) possible problems related to garment dyeing when compared to dyeing in fabric form. (03 marks)
- (h) Using suitable examples, describe the terms “Hydrogen bonds” and “Electro-static links” related to dyeing of textile materials. (04 marks)

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

- (Q2) (a) Discuss the main three (03) stages involved in the solid and liquid soil removal from a fabric in an aqueous medium with detergents. (09 marks)
- (b) Briefly explain the two (02) features, which should be considered prior to the stain removal procedure. (02 marks)
- (c) Describe the term “Zeta Potential” related to the detergents used as dye fixing agents. (04 marks)
- (Q3) (a) Explain the terms “Chromophores” and “Auxochromes”. (02 marks)
- (b) Describe the steps involved in denim garment dyeing using Reduced Vat method. (05 marks)
- (c) Give the reasons for poor wash fastness of cotton garments dyed with Direct dyes and discuss three (03) methods for improving wash fastness. (04 marks)
- (d) Discuss the terms “Macro emulsions” and “Micro emulsions” related to permanent softeners. (04 marks)

- (Q4) Assume your factory is required to produce the following finishing effects on already dyed denim garments.
- i) Skirt with abraded pocket edges
 - ii) Trouser with abraded spots on random areas
 - iii) Trouser with prominent abrasions only on the thigh area
- (a) For each of the given effect, mention one (01) applicable garment washing and/or finishing treatment. (03 marks)
- (b) For each of the given effect, explain the procedure of conducting the garment washing and/or finishing treatment you have mentioned under part (a) of the question (Q4). (09 marks)
- (c) Assume that for the dyed denim trouser, it is required to get yellowing effect with abraded spots on random areas. Name the required washing and/or finishing treatment to get the yellowing effect along with the required chemicals and explain the process parameters. (03 marks)
- (Q5) (a) Explain the reason for using buffers during enzyme treatments. (02 marks)
- (b) Discuss the importance of enzyme deactivation after the abrasion of denim garments with enzymes. (02 marks)
- (c) List the three (03) methods used for enzyme deactivation after abrasion of the garments using enzymes. (03 marks)
- (d) Discuss three (03) differences between the abraded effect obtained using “Cellulase enzyme” and “Laccase enzyme”. (06 marks)
- (e) Name the two (02) types of Cellulase enzymes and write down the main difference between those two types. (02 marks)
- (Q6) (a) Briefly discuss the importance of garment dyeing by giving two (02) examples. (02 marks)
- (b) Describe the Exhaust dyeing method with pigments for medium & dark shades with solid look. Clearly indicate all the processing steps, parameters, and chemicals used for each step. (06 marks)
- (c) Differentiate between the “Dip dyeing” and “Drip dyeing” of the garments. (04 marks)
- (d) Briefly explain the three (03) processing stages involved in producing the Peach skin effect. (03 marks)

- (Q7) (a) Write short notes on the following by clearly indicating the purpose, steps involved, chemicals used, and processing conditions.
- i) Rinse wash
 - ii) Soft wash
 - iii) Bio-polishing
- (15 marks)
- (Q8) (a) Write short notes on the following resin finishes applied on garments.
- i) Water/ Oil repellency finish
 - ii) Anti-soil finish
- (08 marks)
- (b) Based on the fibre molecular structure, briefly explain how the creases are formed in garments. (02 marks)
- (c) Briefly describe the process of applying crease recovery finishes on garments by clearly indicating the steps involved, chemicals used, and processing conditions. (05 marks)