

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



Study Programme	: Post Graduate Diploma in Apparel Production and Management.
Name of the Examination	: Final Examination
Course Code and Title	: TTX7140 Human Factors Engineering
Academic Year	: 2017/18
Date	: 1 st February 2019
Time	: 0930-1230hrs

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Seven (7)** questions in three **(3)** pages.
3. This is a Closed Book Test (CBT).
4. Write down your Index Number in all the pages of answer scripts.
5. Answer five (05) questions. Each question carries 20 marks.
6. Answer 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 answer book.
8. Do not answer more than five (05) questions.
9. Answers should be in clear hand writing.
10. Do not use red colour pens to write the answers.

- (Q1) (a) Giving examples, discuss the three (03) major elements of a work system. (06 marks)
- (b) Giving advantages and disadvantages of each system, describe three (03) different work systems used in the apparel Industry. (09 marks)
- (c) Write a short note on the challenges faced by the workers in the apparel Industry, due to its dynamic nature. (05 marks)
- (Q2) (a) Briefly explain the historical developments of the manufacturing systems used in the apparel industry. (06 marks)
- (b) Compare the manufacturing systems with higher division of labour and no division of labour in relation to the followings.
- (i) Advantages (07 marks)
 - (ii) Disadvantages (07 marks)
- (Q3) (a) Write a classification for cumulative trauma disorders by using the parts of a human body. (04 marks)
- (b) Discuss the possible occupational risk factors, which may lead to occur cumulative trauma disorders at a work place. (06 marks)
- (c) With five (05) examples, describe how the prevention of cumulative trauma disorders at work places, which can be achieved through engineering controls. (10 marks)
- (Q4) (a) Describe the operational principles of following shift rotational methods.
- (i) Continental shift rotation (07 marks)
 - (ii) Metropolitan shift rotation (07 marks)
- (b) Write a short note on the social and domestic problems of shift work. (06 marks)

- (Q5) (a) Write a comprehensive note on the design consideration of lighting at work places. (12 marks)
- (b) Using mathematical equations and standards, explain a suitable method to determine the vibration levels at work places. (08 marks)
- (Q6) (a) Briefly discuss the effects of noise at work places. (06 marks)
- (b) Controlling of the noise level at work places can be performed in different ways. Giving examples describe the ways, which can be used to control the noise level at work places. (09 marks)
- (c) Briefly explain why displays are necessary for machine designing. (05 marks)
- (Q7) (a) Describe the three (03) basic principles of applying anthropometric data in ergonomic designs. (09 marks)
- (b) Briefly discuss the applications, advantages and disadvantages of using standing work posture at work places. (06 marks)
- (c) Giving at least five (05) ergonomic considerations, describe how do you select sewing machines for apparel manufacturing. (05 marks)

