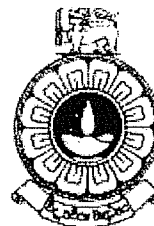


THE OPEN UNIVERSITY OF SRI LANKA
 DEPARTMENT OF TEXTILE AND APPAREL TECHNOLOGY
 POST GRADUATE DIPLOMA IN TECHNOLOGY
 (APPAREL PRODUCTION & MANAGEMENT)
 FINAL EXAMINATION- 2015/2016
 TTX7131- APPAREL MANUFACTURING TECHNOLOGY
 DURATION: 3 HOURS



Date: 20th November 2016

Time:0930-1230hrs

Total number of questions: 07

Number of questions to be answered: 05

Marks for each question are indicated at the end of the question. Use separate sheets to answer these questions.

- Q1. (a)** Overall product creation has main phases and their sub phases. Draw a chart to show all these phases. Briefly explain how apparel product development will fit into this chart. (40 marks)
- (b)** "Product development process can be represented as a cyclic activity in continually operating business environment". Justify this statement using a suitable diagram. (20 marks)
- (c) (i)** Draw a fashion cycle and explain how profit, popularity, production cost and price of the product during the each phase of the fashion cycle. (30 marks)
- (ii)** Give any two (02) strategies, which can be used to keep the sales without decline, when the product sales reaches to the peak level in the fashion cycle. (10 marks)
- Q2. (a)** Why is it important to consider economic cut order quantity concept in garment manufacturing? (10 marks)
- (b)** ABC garment factory has received several short order quantities. The order size as well as the SMV per garment with the due week are given in

following table.

Contract	A	B	C	D	E
Number of Garments	5,000	8,000	6,000	16,000	8,000
SMV per garment	8	4	12	3	10
Week Due	2	3	3	3	3

This factory has a weekly capacity of 80,000 SMV and there are 60 operators, organised as four lines. The factory works for 5 days per week.

- (i) Draw up a daily balance chart (Gantt chart) to deliver each order as per the due dates. (80 marks)
- (ii) Determine whether you can plan to complete these five orders in three weeks duration or if not, how many SMV will remain as incomplete workload at the end of three weeks from these orders. (10 marks)

Q3. (a) Quality of a stitch depend on several factors. Briefly explain how the following two factors affect on the quality of a seam. (20 marks)

- (i) Stitch size (ii) Thread tension

(b) Seam flatness is one of the main factors affecting on the appearance of a seam. Briefly explain any three (03) causes affecting on the seam flatness with reference to seam puckering. (30 marks)

(c) (i) Draw a graph to show the temperature variation with the time during garment welding process and explain how you can obtain a good quality seam using the drawn graph. (30 marks)

(ii) "During moulding, geometric dimensions or the characteristics of flat 2D materials are changed". Briefly explain this statement using suitable examples. (20 marks)

Q4. (a) Briefly explain why progressive bundle system is more suitable in garment manufacturing than conventional bundle system. (20 marks)

(b) Write short accounts on unit production system and modular production system used in garment manufacturing including their advantages and disadvantages. (40 marks)

- (c) Permanent/durable press finish are based on various cross linking agents. Briefly explain the problems encountered with the conventional cross linking agents including DMDHEU (dimethylodihydroxyethylene urea) and how today these problems have minimized in durable pressing treatments. (40 marks)
- Q5. (a) Measuring needle temperature variations during stitching have been carried out by using several methods by researchers. Briefly explain any one (01) of these methods. (20 marks)
- (b) Needle temperature variations depend on several factors. Briefly explain the effect of following factors on needle temperature changes during stitching with giving the reasons for these variations. You may use suitable graphs. (60 marks)
- (i) Sewing speed (ii) Needle finish (iii) Needle size
(iv) Throat plate hole diameter
- (c) Briefly explain any one (01) techniques that can be applied to reduce needle heating. (20 marks)
- Q6. (a) Research reports reported following results on needle penetration force related to the needle. and briefly explain how needle penetration force will vary with these factors and give the possible reasons for each of these. (45 marks)
- (i) Needle size (ii) Needle surface finish (iii) Needle point form
- (b) A student found following research results from reports related to the fabric used in sewing . Give the possible reasons for each of them. (30 marks)
- (i) Synthetic materials gave lower penetration force than with 100% cotton
(ii) GSM affects on penetration force significantly
(iii) Penetration force more depending on the number of plies to be sewn
(iv) Higher cover factor in woven fabrics gave significant effect

(c) Write a short note on "Sewability" test, which is used to measure the needle penetration force in a research laboratory. (25 marks)

Q7. (a) "Wearable mother boards" or smart shirts should consist of some important wearability and durability characteristics. Briefly explain three (03) of them with stating why they are important. (30 marks)

(b) Textile structures can be insulated using phase changing materials (PCM). Explain four (04) applications of PCM in textiles or apparels. (40 marks)

(c) Briefly explain any three (03) applications of nano-technology in textiles or apparels. (30 marks)