

The Open University of Sri Lanka

Department of Textile and Apparel Technology

Post-Graduate Diploma in Technology / Master of Technology

Final Examination - 2010/2011

TTX7131 - Apparel Manufacturing Technology

Duration- 3 Hours



Date: 14th March 2011

Time: 0930-1230 hrs

Total number of questions = 07

Number of questions to be answered = 05

Marks for each question are indicated at the end of the question.

- Q1. (a) According to fashion philosophy, fashion changes through a cycle. Describe the variations in product cost, profit, sales-volume and popularity of the product during each phase of the fashion cycle. (08 marks)
- (b) Apparels can be classified as fashionable, seasonal, staple and basic goods (classics). Prepare a perceptual map using these four categories and explain the variations of consumer demand for the products at each sector (continuum) of the prepared perceptual map over one year (52 weeks) period of time. You may select suitable examples, for the each sector (continuum) of the map. (12 marks)
- Q2. (a) What do you understand by the term "Effective Sourcing"? Explain the importance of effective sourcing for developing the Sri Lankan Apparel industry. (06 marks)
- (b) A garment factory has received eight different orders. The details of the received orders are given in Table 1. Production planning manager has assigned you to prepare a production plan for the sewing section to complete these eight orders. The factory has a weekly capacity of 90,000 SMV and there are 60 operators organized into 4 lines. If the factory works on a 5 day week,
- (i) Draw a Gantt chart to indicate the delivery of the eight orders in time.
- (ii) Deduce the available capacity (total available load in SMV) of the plant at the end of the sixth week, in order to accept several new orders. (14 marks)

Order	A	B	C	D	E	F	G	H
No. of garments	7,200	6,750	4,500	27,000	10,125	6,000	6,300	5,400
SMV/garment	5	8	10	5	8	6	5	10
Week due	2	4	6	6	4	2	3	6

Table 1

Q3. (a) Seam quality depends mainly on two components: seam appearance and seam performance. Explain the two (02) factors that have an effect on seam appearance and seam performance. (08 marks)

(b) Briefly explain the basic principles behind the following non-conventional apparel assembling techniques.

(i) High frequency welding

(ii) Ultra sonic welding

(iii) Hot element welding

(iv) Hot air welding

(v) Laser welding

(12 marks)

Q4. (a) Explain how, compared to conventional garment manufacturing systems, flexible manufacturing systems help to improve the effectiveness of apparel production,

(10 marks)

(b) Explain the drawbacks of garment dyeing process.

(04 marks)

(c) Explain the purpose of doing durable press treatment on garments and state the disadvantages of durable press process.

(06 marks)

Q5. (a) Explain how the following factors influence variations in needle temperature. Give the reasons for these variations.

- i. Needle diameter
- ii. Needle surface finishes
- iii. Fabric density
- iv. Sewing thread (12 marks)

(b) Briefly explain any four (04) techniques that are used to reduce needle heating. (08 marks)

Q6. (a) "Needle penetration force is a significant factor in sewing". Explain this statement giving reasons. (02 marks)

(b) A student has reported the following observations from a needle penetration force experiment.

- i. Once the needle point touches the fabric, the penetration force gets the highest value
- ii. Scarf of the needle gave a lower needle penetration force than the needle eye
- iii. Needle penetration force given by needle shaft is lesser than that of the needle eye

Discuss the reasons for each of the above observations. (09 marks)

(c) Explain how the needle penetration force varies as per the following factors and give the reasons for each of these variations.

- i. Fabric weight density
- ii. Ends and picks density of a woven fabric (fabric cover factor)
- iii. Needle point form (09 marks)

Q7. (a) There are number of wearability and durability characteristics that need to be met by any "wearable mother boards" or smart shirts. Discuss at least three such characteristics, each for wearability and durability. (06 marks)

(b) Textile structures can be insulated using phase changing materials (PCM). Explain three (03) applications of PCM in textiles and apparels. (06 marks)

(c) Briefly explain any four (04) applications of nano-technology in textiles and apparels. (08 marks)