



**THE OPEN UNIVERSITY OF SRI LANKA
BACHELOR OF TECHNOLOGY/ INDUSTRIAL STUDIES
FINAL EXAMINATION – 2012/2013
TTX6233 – TECHNICAL TEXTILES
DURATION – THREE HOURS**

DATE: 29th July 2013

TIME: 0930 - 1230 HOURS

Total number of questions = 08

Number of questions to be answered = 06

Answer question one (Q1), which is compulsory and five (05) other questions

Question one (Q1) carries 25 marks and questions two (Q2) to eight (Q8) carry fifteen (15) marks each.

Compulsory Question

- (Q1) (a) Write down the classification of technical textiles. Give an application for each category. (06 marks)
- (b) Briefly explain the term “Geo-synthetics”. (02 marks)
- (c) Biomedical textiles could be divided into five (05) categories. Name those categories. Give an example for each category. (05 marks)
- (d) What are methods that could be used to produce laminated fabrics? (02 marks)
- (e) Briefly explain the term “textile preforms” with reference to technical textiles. (03 marks)
- (f) Briefly explain the terms “thermoplastic resins” and “thermo-set resins”. (04 marks)
- (g) Write down six (06) important properties of high performance carbon fibres. (03 marks)

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

- (Q2) “Natural fibre, regenerated fibre, synthetic fibre and high performance fibre categories are used as raw materials for technical textiles”. Giving examples for each fibre category, write a comprehensive description to endorse the above statement. (15 marks)

- (Q3) (a) Briefly explain why resin systems are necessary for the production of textile composites. (03 marks)
- (b) Describe four (04) important properties of resin systems used in textile composites. (08 marks)
- (c) Write a short note on the application of polyester resins for the production of textile composites. (04 marks)
- (Q4) Describe given below two (02) methods of manufacturing long fibre reinforced textile composites. Give their advantages/disadvantages in your description.
- (a) Resin transfer moulding method (08 marks)
- (b) Spray Lay-up method (07 marks)
- (Q5) (a) There are three main areas of reinforcement performed by geo-textiles. Briefly explain them by using suitable diagrams. (09 marks)
- (b) With the aid of suitable diagrams, explain the filtration and drainage functions of geo-textiles. (06 marks)
- (Q6) Write short notes on **three (03)** of the following:
- (a) Advantages of using geo-textiles for wind erosion control. (05 marks)
- (b) Use of textiles in vehicle interior. (05 marks)
- (c) Advantages of using textile reinforced composites in aircrafts. (05 marks)
- (d) Properties and characteristics of textiles used for sail cloths. (05 marks)
- (Q7) (a) Briefly explain the characteristics of textiles used for thermal protective clothing. (08 marks)
- (b) Describe the heat transfer mechanism of a clothing system. You should consider the formation of microclimate between the skin and the clothing. (07 marks)
- (Q8) (a) Explain the process of manufacturing continuous glass filaments. (08 marks)
- (b) Briefly discuss the characteristics/properties of high modulus polyethylene (HMPE) fibres. (07 marks)