



THE OPEN UNIVERSITY OF SRI LANKA

BACHELOR OF INDUSTRIAL STUDIES /

BACHELOR OF TECHNOLOGY

FINAL EXAMINATION – 2006 / 2007

TTX5235 FABRIC TECHNOLOGY

DURATION - THREE HOURS

023

DATE: 31<sup>st</sup> March 2007

TIME: 09.30 – 12.30 HOURS

Total Number of Questions = 8      Number of questions to be answered = 05

Answer the question 1, which is compulsory, and five (04) additional questions.

Question 1 carries twenty five (28) marks and questions 2 to 8 carry fifteen (18) marks each.

**01. Compulsory Question**

- a. What do you understand by “Hand characteristics” of a fabric? (02 Marks)
- b. Distinguish between “Transmission” and “Transformation” characteristics. (02 Marks)
- c. Name two different types of fabrics each made from yarns, directly from fibres and directly from solutions. (02 Marks)
- d. What is an “Unbalanced plain weave” fabric? (02 Marks)
- e. What are the most important aspects of colour fastness that have to be present in the following products: Curtains, Floor Coverings, Swimming suits used in pools, Swimming suits used on the beach, T-shirts used for sports, Bed sheets. (02 Marks)
- f. State the nature of piles available in the following types of woven fabrics: Terry, Wire Fabrics, Double Fabrics, Velveteen, Corduroy. (02 Marks)
- g. What are “Tri-axial fabrics”? (01 Mark)
- h. What do you understand by “Snagging”? (02 Marks)
- i. State the most important structural features (Type of fibre, Type of yarn, Colour, Weave, Areal density) of the following woven fabrics: Canvas, Denim, Drill, Taffeta, Poplin. (05 Marks)
- j. Distinguish between “Single jersey” and “Double jersey” fabrics. (01 Mark)
- k. Sketch the point paper diagrams of the following stitches: Tuck, Float and Transfer. (03 Marks)
- l. Distinguish between “Full Cardigan” and “Half Cardigan” Fabrics. (02 Marks)
- m. What is a “Fall plate structure”? (02 Marks)

02. You want to make or select a fabric for underwear, which has to be mass produced. Describe the type of fabric you would select explaining its raw material and constructional features. Describe further the “Hand”, “Style”, “Durability” and “Production and working” characteristics you expect from the fabric. (18 Marks)
03. Describe the most important properties and characteristics you expect from fabrics intended for following end-uses. State also the fibre material and the method of fabric formation you would suggest:
- For mopping cloth (under wet condition) (09 Marks)
  - For composite conveyor belt (as pre-form) (09 Marks)
04. a. Distinguish between “Warp faced” and “Weft faced” unbalanced plain weave fabrics. (06 Marks)
- b. Describe the structural features and properties of a plain weave Rib (Repp) fabric. Explain also how the weaving machine and warp is set to ensure the rib effect. (12 marks)
05. Compare woven fabrics with knitted fabrics with respect to the following properties/characteristics:  
Resistance to Abrasion, Shrinkage, Tensile strength, Tearing Strength, Stretch and Recovery and Breaking Elongation. (18 Marks)
06. a. Differentiate between “Rib Gating” and “Interlock Gating” (06 Marks)
- b. Sketch needles and needle bed arrangements required for
- Plain fabric
  - Purl fabric (12 Marks)
07. A knitter wishes to make a fabric on a particular machine so that it has a specified width after the wet treatment. The details available are as follows:  
Fabric Specifications: Plain knitted fabric, to be finished to 52 cm width (tubular). The diameter of the machine is 50 cm and the number of needles per cm is 5. Relaxation coefficient of finished relaxed fabric = 2360.
- Calculate the stitch length and the stitch density of the finished fabric. (10 Marks)
  - Calculate the count of yarn required, to knit a fabric with the above specifications and with a fabric area density of 200 g/m<sup>2</sup>. (08 Marks)
08. a. What do you understand by “structures with partly threaded needle bars”? (06 Marks)
- b. With the help of suitable diagrams explain how pile fabrics are knitted on
- a double bed Raschel Machine (06 Marks)
  - a machine with a pin bar. (06 Marks)