



THE OPEN UNIVERSITY OF SRI LANKA  
 DIPLOMA IN TECHNOLOGY/ DIPLOMA IN INDUSTRIAL  
 STUDIES  
 FINAL EXAMINATION – 2009 / 2010  
 TTX3233 WOVEN FABRIC TECHNOLOGY  
 DURATION - THREE HOURS

DATE: 26<sup>th</sup> March 2010

TIME: 1400 – 1700 HOURS

Total Number of Questions = 09

Number of questions to be answered = 06

Answer the question 1, which is compulsory and five (05) additional questions.  
 Question 1 carries twenty-five (25) marks and questions 2 to 09 carry fifteen (15) marks each.

**01 Compulsory question**

- a) State the classification of weaving machines based on the method of weft insertion.(02%)
- b) Illustrate the two methods, “Side withdrawal” and “Over end withdrawal” of yarn.(02%)
- c) Name four different types of yarn imperfections. (02%)
- d) Sketch and name all the parts of a “Disc/Washer tensioner”. (02%)
- e) State two reasons for sizing of warp yarns. (02%)
- f) What is the function of hygroscopic agents added to a size mixture? (02%)
- g) What is “Positive shedding”? (02%)
- h) What is a “Reversing motion”? (02%)
- i) Distinguish between “Single lift” and “Double lift” Jacquards. (02%)
- j) What is the function of air jet guide ducts in air jet looms? (02%)
- k) What is a photo-electric feeler? (02%)
- l) Give an illustration to show how warp yarn tension of a hand-regulated let-off motion varies with time. (02%)
- m) What are the two types of stop motions used in conventional looms. (02%)
- n) What is a “Warp protection motion”? (02%)

- o) What is the function of “Temples”? (02%)
02. (a) Distinguish between “Beam warping” and “Sectional warping”. (04%)
- (b) Explain why Sectional warping is more suitable than Direct warping for preparing warp beams for striped or checked fabrics. (04%)
- (c) Describe Briefly the sectional warping process. (06%)
03. (a) Sketch the following types of yarn packages to show their type of wind (parallel/cross / etc.) and the method of yarn withdrawal. (08 %)
- I. Ring bobbin II. Cone  
IV. Bottle bobbin V. Warp beam
- (b) State and explain the two main objectives of winding. (06%)
04. Compare the three methods of shedding, cam, dobbie, and Jacquard with respect to the principles of operation, ability of changing of weaves, size of warp and weft repeats, reliability, maintenance cost and investment cost. (14%)
05. a) What are the functions of the shuttle box of a conventional weaving machine? (06%)
- b) What do you understand by parallel picking? Explain a mechanism of parallel picking with a suitable sketch. (08%)
06. State the detailed classification of rapier looms and describe most important features of these different systems. (14%)
07. Compare the method of “Projectile Weft Insertion” with conventional “Shuttle Picking”. Include in your answer the important differences/similarities of the techniques employed and the advantages and disadvantages of the above mentioned weft insertion methods. (14%)
08. a) What are the functions of a reed? (06%)
- b) Explain under what conditions the double beat-up mechanisms can be employed. (03%)
- c) Explain the effect of uneven weft yarns on fabric quality when a positive take-up motion is employed. (05%)
09. a) What are the functions of a fabric selvedge? (04%)
- b) Why is it impossible to have a conventional selvedge in shuttle-less weaving? (03%)
- c) Explain the operational principle of a full-width temple with a suitable diagram, (07%)