



**OPEN UNIVERSITY OF SRI LANKA** 045

**DIPLOMA IN TECHNOLOGY / DIPLOMA IN INDUSTRIAL STUDIES**

**TTX3233 / TTD 1212 - WEAVING MECHANISMS**

**FINAL EXAMINATION – 2006 /2007**

**DURATION: THREE (3 ) HOURS**

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

**TIME: 0930-1230 HOURS**

**Please write down your index number on the space provided below.**

**Index Number -----**

**This paper consists of two parts. Please answer all the questions of the part I. Write down your answer to individual questions in the space provided after each question. Answers to the question in the Part II have to be given in a separate answer book.**

**PART I**

**This part has 10 “short answer type” questions. Total Marks allocated for this part is 25%. Marks allocated for each question is given at the end of each question. Spend about 30 minutes to answer the questions of this part.**

**(1) Name four different types of yarn packages to be found in the textile manufacturing industry. State also whether these packages are spinning / winding / weaving / dyeing packages. (02%)**

- a. -----
- b. -----
- c. -----
- d. -----

**(2) Write down three objectives of warp sizing. (03%)**

- a. -----
- b. -----
- c. -----

(3) Illustrate the Photoelectric method of yarn defect detection” using a simple labelled sketch. (03%)

(4) There are different methods of shedding employed in weaving machines. State the method of shedding most suitable to produce the following fabrics. (02%)

a. A garment label containing washing instructions: -----

b. A fabric with woven geometrical figuring having a warp repeat of 40:  
-----

c. A single colour plain weave shirting fabric: -----

d. A terry towel with a multi-colour floral design: -----

(5) State three (3) advantages and one (1) disadvantage of shuttle-less picking over shuttle picking. (02 %)

Advantages:

a. -----

b. -----

c. -----

Disadvantages:

a. -----

(6) State four (4) disadvantages of water jet picking over air jet picking. (02%)

a. -----  
-----

b. -----  
-----

c. -----  
-----

d. -----  
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(7) State two methods employed by machine designers to reduce the space occupied by rapier looms: (02%)

a. -----

b. -----

(8) Name two different mechanisms used for weft patterning on shuttle looms. (02%)

a. -----

b. -----

(9) Explain why, air jet looms are not widely used for multi-colour weft insertion. (04%)

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(10) Name four (04) different types of non-conventional selvages and state two advantages of conventional selvedge. (03%)

Types of non-conventional selvages:

a. -----

b. -----

c. -----

d. -----

Advantages of conventional selvedge.

a. -----

b. -----

## PART II

This part has eight (08) questions. Answer any five questions. Each question carries equal marks amounting to a total of 75% marks. Use a separate answer book for this section. Spend about 2.5 hours to answer this section.

- (1) Write an essay on "yarn tensioning during winding".  
In this essay you have to include
- Why yarns are tensioned during winding? (20%)
  - Different tensioning devices, and (24%)
  - Short descriptions on such devices. (56%)
- (2)
- a. Define the term "Warping" (10%)
  - b. Distinguish between "Sectional" and "Beam" warping. (30%)
  - c. Describe the machine and other important equipment used for beam warping. (30%)
  - d. State the circumstances, under which the method described under "b" is preferably used. (30%)
- (3) Describe with a suitable sketch the operational principle of a single acting single cylinder Jacquard machine. (100%)
- (4)
- a. Explain how the weft yarn is inserted by the Gabler system (loop insertion) of rapier weft insertion giving suitable diagrams to show different stages of the insertion procedure. (60%)
  - b. Compare the method of Gabler weft insertion with the Dewas system (tip insertion). (40%)
- (5)
- a. Explain, the operational principle of a crank shaft driven conventional beat up mechanism. (50%)
  - b. Explain, the term "eccentricity ratio". (20%)
  - c. Describe in brief, the operational principle of a cam driven beat-up mechanism. (30%)

- (6) a. Explain with the aid of a suitable sketch uncontrolled non-automatic negative let-off mechanism. (40%)
- b. What are the disadvantages of an un-controlled, non-automatic negative let-off over a controlled automatic negative let-off? (30%)
- c. What is a positive let-off mechanism? (30%)
- (7) a. Draw a labelled sketch to illustrate the function of any type of mechanical weft stop motion used on shuttle looms. (40%)
- b. Compare the advantages and disadvantages of electrical and mechanical warp stop motions. (60%)
- (8) a. What is the function of a temple in a weaving machine? 25%
- b. Describe with the aid of suitable sketches, the operational principles of the following types of temples: 75%
- I. Ring Temple
  - II. Sun Temple
  - III. Full Width Temple