

**ADVANCED DIPLOMA IN KNITWEAR STUDIES AND MERCHANDISING**  
**ADVANCED DIPLOMA IN APPAREL STUDIES AND MERCHANDISING**

**Examination Paper**

2<sup>nd</sup> Term 2015

Module Name: Textile Materials and Evaluation

Module Code: 326

Date: 21 Sep 2015

Time Allowed: 3 hours

Reading Time: 15 minutes

Examination Time: 7:15pm – 10:15pm

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This question paper has 6 pages (including this page).

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**INSTRUCTION TO CANDIDATES:**

- This paper has **EIGHT (8)** questions, with 5 questions in Section A, and 3 questions in Section B.
- **Question 1 in Section A is compulsory**, and answer at least one other question in Section A.
- Answer at least one question in Section B.
- You are required to answer **FIVE (5)** questions in total.
- All questions carry equal marks.

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**The following tools with an asterisk (\*) are NOT ALLOWED in the examination:**

- Paperback Dictionary \*
- Electronic Dictionary \*
- Open Book Examination Material \*
- Programmable Calculator \*

**DO NOT TURN OVER THE PAGE UNTIL YOU ARE TOLD TO DO SO**



## Section A

### Question 1 to Question 5

Question 1 is compulsory.

Answer at least **ONE** questions from Question 2 to 5

### Question 1

**Question 1 (Compulsory, answer all multiple choice questions in Question 1. Please write down the question number and the letter (in Capital) of the correct answer together on one page of the answer book. (10% per answer, total 100%)**

1. Which one of the following fibers is thermoplastic?
  - A. cotton
  - B. flax
  - C. polyester
  - D. rayon
  
2. Which one of the following fiber does NOT loose strength when wet?
  - A. Silk
  - B. Wool
  - C. Rayon
  - D. Flax
  
3. If a yarn has a length of 30,000 m., weighs 0.63 kg., what is the yarn count in Denier?
  - A. 230
  - B. 63
  - C. 189
  - D. 78
  
4. Which one below is NOT the advantage of open-end spinning?
  - A. Faster production
  - B. Increased strength
  - C. Better uniformity
  - D. Improved absorption of colors
  
5. The residue of burning flax fibre is:
  - A. Hard bead
  - B. Hollow bead
  - C. Ash
  - D. Solution



6. Which one below is NOT the function of “carding” in yarn spinning?
- A. Fibres straightening
  - B. Fibres blending
  - C. Removing dirt and foreign matters
  - D. Twisting
7. If a yarn has a length of 63,000 yds., weighs 2.5 lb., what is the yarn count in Cotton system?
- A. 20
  - B. 32
  - C. 30
  - D. 80
8. Which one is true, cellulosic fibre is:
- A. Resistant to acid
  - B. Resistant to alkaline
  - C. Resistant to burning
  - D. Resistant to water
9. Which stitch below is formed by holding two or more yarns within a needle hook?
- A. Plain stitch
  - B. Purl stitch
  - C. Tuck stitch
  - D. Welt stitch
10. In a weaving machine, which part is controlling the construction and design of woven fabrics:
- A. Reed
  - B. Shuttle
  - C. Harness
  - D. Warp beam

## Question 2

- (a) Draw with simple yarn path diagrams the knitting construction of the following three basic knitted fabrics and describe briefly their characteristics: **(50 %)**
- i. Single jersey (15%)
  - ii. 2x2 Rib (15%)
  - iii. Interlock (20%)
- (b) Draw with point diagrams to show the construction of the following woven fabrics, and describe briefly their characteristics: **(50 %)**
- i. Basket weave (15%)
  - ii. 3 up 1 down Left Hand twill weave (15%)
  - iii. 7-shaft satin weave (20%)

### Question 3

- (a) Describe with a simple sketch, the major parts of a weaving loom and their individual functions in weaving fabrics. **(60 %)**
- (b) Describe with a simple sketch, the following two weft insertion methods of weaving looms. Explain the advantages and disadvantages of each method. **(40 %)**
- i. Shuttle weft insertion (20%)
  - ii. Projectile or Missile weft insertion. (20%)

### Question 4

- (a) Describe the 4-points and 10-points Penalty Point Systems in fabric inspection separately. Demonstrate with calculation example for each system to determine the pass and fail of a roll of fabrics. **(60 %)**
- (b) What is AQL (Acceptable Quality Level)? Explain the concept, purpose and procedures of applying AQL in fabrics inspection. **(40 %)**

### Question 5

- (a) Describe briefly the testing methods of the following 2 strength tests of fabrics. What types of fabrics are suitable for each type of tests? **(40 %)**
- i. Tensile strength (20%)
  - ii. Busting strength test (20%)
- (b) Explain how to rate the color fastness for both color change and color stain on fabrics by “Gray Scale”. Give your comments on this rating method. **(30 %)**
- (c) Explain why the test on dimensional changes is needed on fabrics. In the testing process, what are the factors affecting the testing results. **(30 %)**

## Section B

### Question 6 to Question 8

Answer at least ONE questions from Question 6 to 8

#### Question 6

You are associated with a textile clothing manufacturer specialized in knits: one line of the products is lady's swimwears and the other line is children's sleepwears. The company buys all the yarn: nylon yarn for swimwears, cotton / polyester yarn, wool yarn, and acrylic yarn for the children's sleepwears. The company does all dyeing and knitting.

- (a) List all the dye classes for the swimwears, **(6 %)**
- (b) List all the dye classes for the sleepwears, **(10 %)**
- (c) Which two yarn dyeing machines with justification, **(24 %)**
- (d) Which fabric dyeing machine is used with justification, **(40 %)**
- (e) Which five colourfastness tests must be performed on the nylon swimwears. **(20 %)**

#### Question 7

Printing is a localized dyeing achieving multi-coloured design:

- (a) When examining a print design, which five characteristics must be considered assisting selecting a method of printing using a print paste. **(15 %)**
- (b) After a printing method is chosen using a print paste, what steps in their proper sequence are necessary to print from a well-scoured fabric. **(30 %)**
- (c) Compare the different ingredients needed to make up a print paste to dye-printing and another one for pigment printing. **(20 %)**
- (d) What are the three printing methods using a print paste, which one is the most popular. **(15 %)**
- (e) Explain the two methods used for colour fixation in printing. **(20 %)**

### **Question 8**

Give short and concise answers to the following 10 questions:

- (a) What are the three objectives of fabric pretreatments? **(10 %)**
- (b) Which two preparatory processes are not required for cotton knit? **(10 %)**
- (c) What purpose does an enzyme serve in preparing cotton woven? **(10 %)**
- (d) Which three properties separating a dye from a pigment in coloration? **(10 %)**
- (e) What equipment must be used to apply colour in a continuous or a semi-continuous dyeing process? **(10 %)**
- (f) What is a thermosoling process for? **(10 %)**
- (g) Identify two popular printing styles. **(10 %)**
- (h) Which two methods are being used for ink-jet printing? **(10 %)**
- (i) Which two tests are assessed in colourfastness to washing? **(10 %)**
- (j) What light source is used in colourfastness to light and the duration in hours of exposure? **(10 %)**

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