

2<sup>ND</sup> SEM. 2014/2015



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**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

**PROGRAMME : BACHELOR OF SCIENCE IN  
TEXTILE, APPAREL DESIGN AND  
MANAGEMENT & CONSUMER  
SCIENCE EDUCATION YEAR II**

**COURSE CODE : TADM 205**

**TITLE OF PAPER : TEXTILE SCIENCE AND LAUNDRY**

**TIME ALLOWED : TWO (2) HOURS**

**INSTRUCTION : ANSWER QUESTION ONE (1) AND  
ANY OTHER TWO (2) QUESTIONS**

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GRANTED BY THE CHIEF INVIGILATOR**

**QUESTION 1 (COMPULSORY)**

- a) Give an example where each of the following detergent auxiliary agents can be appropriately applied in laundry. Justify the applicability based on the function of the auxiliary agent.

- i) Anti-microbial agents
- ii) Fragrances
- iii) Enzymatic agents

**(3 X 3 = 9 Marks)**

- b) Name the fibres made from the following fibre forming substance or reaction between the following:

- i) Carboxylic acid and an amine
- ii) Alcohol and a carboxylic acid
- iii) At least 85% by weight of ethylene
- iv) At least 85% by weight of acrylonitrile units

**(4 Marks)**

- c) If a fabric fails to perform as expected. State and describe **two (2)** fibre identification tests that would help you to identify the real fibre content.

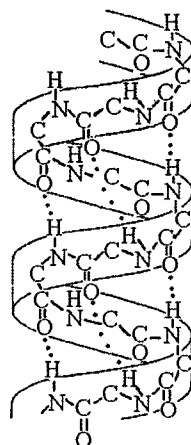
**(2 X 3 = 6 Marks)**

- d) The wicking property of fibres is important in the production of sportswear. Give **two (2)** examples of sports where this fabric property is of essence. Explain how this property is of benefit to the sporting disciplines mentioned.

**(1 + 4 = 5 Marks)**

- e) Below is an illustration of a segment of the helical keratin polymer that is found in wool fibres. Encircle at least **three (3)** portions that depict the general structure of an amino acid.

**(3 X 2 = 6 Marks)**



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**TADM 205 (M)**

- f) Given a 40g sample of yarn which after oven drying has a dry mass of 35g, and that its linear density is 30 tex before drying:
- i) Calculate the moisture regain percentage for the yarn sample.
  - ii) Given that the moisture regain in a standard temperature atmosphere should be 12%, calculate the yarn linear density in the standard atmosphere.

**(2 X 5 = 10 Marks)**

**[TOTAL MARKS = 40]**

**QUESTION 2**

- a) Give **two (2)** examples of surfactants and explain how they differ from each other  
**(2 + 6 = 8 Marks)**
- b) With the aid of a diagram, fully explain the action of soap in the removal of a cooking oil stain on Mrs Dlamini's cotton apron during laundry.

**(3 + 4 = 7 Marks)**

- c) Compare and contrast cellulosic fibres and synthetic fibres under the following themes. Tabulate your answer.

- i) Elasticity
- ii) Heat tolerance
- iii) Electrostatic charge
- iv) Absorbency

**(4 X 3 = 12 Marks)**

- d) Fully explain why it is not advisable to dry-clean olefin fibres.

**(3 Marks)**

**[TOTAL MARKS = 30]**

**QUESTION 3**

- a) Distinguish between soaps and synthetic detergents in terms of:
- i) Chemical composition
  - ii) Effect in hard water

**(4 + 4 = 8 Marks)**

- b) Briefly explain the behaviour of apparel made from the following fibres when cleaning the apparel item.

- i) Polyester
- ii) Silk
- iii) cotton

**(3 X 4 = 12 Marks)**

- c) Give the most suitable fabric finish or pre-treatment for the following and justify your answer.
- Cotton fabric with small protruding hair-like fibre ends
  - White nappy towels
  - Curtain drapes for an old age home
  - Creating soft, lightweight jeans that are easy to launder
  - Removing sizing from warp yarns after weaving

(10 Marks)

[TOTAL MARKS = 30]

#### QUESTION 4



Illustration (1)



Illustration (2)

- a) The illustrations above depict two examples of molecular arrangements showing amorphous and crystalline regions in fibres. Briefly discuss each illustration under the following:
- Degree of orientation
  - Fibre stiffness
  - Possible behaviour in water
- (3 X 4 = 12 Marks)
- b) Give **four (4)** reasons that led to the development of synthetic fibres.

(8 Marks)

- c) Denim is a cotton fabric that has an interesting surface texture, better wrinkle recovery and visible right and wrong side.
- Mention and define the most suitable type of weave for denim fabric.
  - Clearly illustrate and label the type of weave mentioned in (i)

(4 + 6 = 10 Marks)

[TOTAL MARKS = 30]