227

2ND SEM. 2014/2015

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME	:	**BACHELOR OF SCIENCE IN TEXTILE, APPAREL DESIGN AND MANAGEMENT YEAR III**
COURSE CODE	:	**TADM 307**
TITLE OF PAPER	:	**COLOURATION TECHNOLOGY**
TIME ALLOWED	:	**TWO (2) HOURS**
INSTRUCTION	:	**ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS**

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QUESTION 1 [COMPULSORY]

a) Describe the following styles or approaches of printing
   i) Direct
   ii) Discharge
   iii) Resist

(3 x 4 = 12 Marks)

b) State whether the following statements are true or false. Justify your answer.
   i) A printed pattern cannot be produced without using a thickener.
   ii) A printed effect cannot be obtained without using a colouring matter in the print paste.
   iii) Foam printing and bubble printing are similar as air bubbles are used in both the processes.
   iv) The printed effects obtained by discharge style and the resist style do not show any differences.
   v) Flocking and flock printing refer to the same process.
   vi) Rapid fast and rapidogen colours can be developed with dichromate.
   vii) In the printing of vat dyes, colloresin is not the only thickener used
   viii) Transfer printing is a revolutionary development in the area of printing.

(8 x 2 = 16 Marks)

c) Describe **four (4)** possible screen printing faults that may affect the quality of the printed goods.

(8 Marks)

d) Which functional group is found in the chemical structure of:
   i) Sodium alginate ensuring that it does not react with reactive dyes.
   ii) Gums and starches which react with reactive dyes.

(4 Marks)

[TOTAL MARKS = 40]

QUESTION 2

a) Outline the printing process you observed for your screen printing sample under the following themes:
   i) Preparing the screens
   ii) Development of the screens
   iii) Printing of the design
   iv) Washing of the screens

(4 x 5 = 20 Marks)

b) Hot dye reactive dyes and acid dyes are not suitable for batik work. Only cold dyeing is suitable. Fully justify this assertion.

(5 Marks)

c) What are ingrain colours? Describe **two (2)** steps that are observed in order to produce colour using ingrain colours.

(5 Marks)

[TOTAL MARKS = 30]

QUESTION 3

Section A

a) Mention and explain the role of **three (3)** essential ingredients in a printing paste.

(3 x 5 = 15 Marks)

b) To ensure good colour penetration and levelness during the dyeing process outline **three (3)** steps that ought to be observed in all dyeing processes.

(6 Marks)

Section B

Instruction: Choose the most appropriate alternative for the following statements and justify your answer.

c) Under the conditions of dyeing, acid dyes are:
   i) Cationic
   ii) Ionic
   iii) Non-ionic
   iv) Amphoteric

(3 Marks)

d) How is the fixation of the colour in printing ensured

(3 Marks)

e) The typical enzyme/s used for de-sizing is/are:
   i) Peptidase
   ii) Cellulose
   iii) Amylase
   iv) Mixture of peptidase and cellulose

(3 Marks)
[TOTAL MARKS = 30]

QUESTION 4

a) Describe the **two (2)** types of impurities found in a raw material before colouration. Give examples of the impurities under each type.

(2 x 4 = 8 Marks)

b) What are the optimum conditions for bleaching cotton with hydrogen peroxide? Choose the correct alternative from the list below and justify your answer.
   i) 60°C, pH 7
   ii) 60°C, pH 10
   iii) Boil, pH 7
   iv) Boil, pH 10

(5 Marks)

c) Match the elements in group 1 with those in group 2

GROUP 1	**GROUP 2**
i) Thickener for printing with reactive dyes	i) Saturated steam
ii) Fixation of pigment illuminated discharge on cotton	ii) Sodium alginate
iii) Solvent in nylon printing	iii) Thiourea
iv) Used to make the printing paste acidic when necessary	iv) tartaric acid

(4 Marks)

d) During the dyeing practical session conducted using reactive dyes, you had to rinse the dyed goods a number of times before the bleeding of the colour stopped. Based on the dyeing process and fibre dye interaction when using reactive dyes explain why the dyed goods initially seemed to bleed excessively.

(4 Marks)

e) Explain the role of a calibration curve in the determination of an unknown solute.

(3 Marks)

f) There is a keen interest expressed through extensive research and the renewed use of natural dyes which are also said to be green dyes. Based on the advantages of natural dyes explain why this is so.

(6 Marks)

[TOTAL MARKS = 30]