NATIONAL OPEN UNIVERSITY OF NIGERIA

DEPARTMENT OF PURE AND APPLIED SCIENCES

OCTOBER/NOVEMBER, 2019 EXAMINATIONS

COURSE CODE: CHM 304 **CREDIT UNIT:** 2
COURSE TITLE: **COLOUR CHEMISTRY AND TECHNOLOGY** **TIME:** 2 HRS
INSTRUCTION: ***Answer question 1 and any other 3 questions***

Question 1

(a) What is a mordant? **2 marks**

(b) Highlight four different principles applicable for classifying dyes **4 marks**

(c) Name the primary colours that are needed to produce violet and black colours **2 marks**

(d) Give the chemical formula of three named mordants **4 marks**

(e) Write short note on each of the followings

(i) Acid dyes (ii) Basic dyes (iii) Reactive dyes **9 marks**

(f) Write the structures of betalain pigment **2 marks**

(g) What are the four factors that affect the choice of pigment for industrial application? **2 marks**

Total 25 marks

Question 2

(2a) Discuss major colourant applications in Agricultural industry **8 marks**

(b) Outline four grades of paper that are suitable to dyeing **4 marks**

(c) State two features of cationic direct dyes which made them suitable for application in the paper industries **3 marks**

Total 15 marks

Question 3

3(a) Colours are known to provide some specific psychological feelings. Give two of such feelings for each of the colour listed below: yellow; pink; blue; indigo and red. **5 marks**

(b) Distinguish between dyes and pigment based on the following: solubility, product resistance, chemical composition, Imparting of colours and structure during the application process **10 marks**

Total 15 marks

Question 4

4 (a) What are anthocyanin pigments? Hence draw the chemical structures of pelargonidin, 4 **marks**

(b) With the aid of a simple diagram, describe the operation of a Hank dyeing machine. **7 marks**

(c) Enumerate the advantages of both Jig dyeing and Beam dyeing machines. 4 **marks**

Total 15marks

Question 5

5 (a) What are cochineal and madder dyes? **2 marks**

(b) Give a brief description of how each of the dye in 5(a) is being produce **4 marks**

(c) Write short note on each of the followings;

(i) Polyester **3 marks**

(ii) Polyamide **3 marks**

(iii) (iii) polyethylene **3 marks**

Total 15 marks