



**NATIONAL OPEN UNIVERSITY OF NIGERIA
DEPARTMENT OF PURE AND APPLIED SCIENCES**

2020_1 EXAMINATION (ALTERNATIVE A)

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 ONE [25MARKS]

1. (a) Mention five characteristics/features of organic pigments. (5marks)
- b) Write short note on each of the following:
 - (i) Inorganic pigments (5marks)
 - (ii) Water retting (5marks)
- (c) Discuss the mechanism of beam dyeing machine (5marks)
- (d) Give a brief description of a simple experiment to obtain dyes from plant materials. (5marks)

QUESTION TWO [15MARKS]

- 2(a) Explain the term 'dye' (3marks)
- (b) Discuss the industrial classification of dyes (12 marks)

QUESTION THREE [15MARKS]

- 3 (a) Describe briefly the term 'colour' (**3marks**)
- 3 (b) Enumerate the three types of colour and give one example for each type (**9 marks**)
- 3 (c) What are Auxochromes? (**3marks**)

QUESTION FOUR [15MARKS]

- 4(a) What are the monomers of polyurethane, cellulose and polyacrylonitrile **(3marks)**
- 4(b) Mention four uses of polyurethanes **(4marks)**
- 4(c) Explain the term transesterification, using appropriate equation to illustrate the process **(8marks)**

QUESTION FIVE [15MARKS]

5. (a) Write a balanced equation for the industrial synthesis of nylon 6,6 from adipic acid and hexamethylene diamine. **(4marks)**
5. (b) (i) Differentiate between poly ethylene and polypropylene **(5 marks)**
5. (c) In a tabular form, list 6 polymers used as plastics and the polymers used as fibres **(6marks)**