

 **National Open University of Nigeria**

**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**

 **Faculty of Science**

 **NOVEMBER, 2018 EXAMINATIONS**

**COURSE CODE: CHM304**

**COURSE TITLE: COLOUR CHEMISTRY**

**CREDIT: 2 Units**

**TIME ALLOWED: 2 Hours**

**INSTRUCTION:** **Answer Question ONE (1) and any other THREE (3) Questions**

**QUESTION 1**

1. (a) Define each of the following terms

 (i) Electromagnetic Spectrum (ii) Pigment [4 Marks]

 (b) Explain each of the following terms:

 (i) Absorption (ii) Transmission (iii) Refraction [9 Marks]

 (c) State three factors affecting the selection of pigments [3 Marks]

 (d) List three applications of aluminium pigments [3 Marks]

 (e) State the repeated units of each of the following polymers

 (i) Cellulose (ii) PVC (iii) Polyurethane [3 Marks]

 (f) What are the special features of Hank Dyeing Machine? [3 Marks]

**QUESTION 2**

2. (a) Define each of the following terms:

 (i) Frequency (ii) Colour (iii) Light [6 Marks]

 (b) (i) Explain briefly the origin of colour [2 Marks]

 (ii) State four constituent colour of the visible spectrum [2 Marks]

 (c) (i) What are the three main types of colour? [3 Marks]

 (ii) State two (2) feature effects of violet colour [2 Marks]

**QUESTION 3**

3. (a) What are natural dyes? [2 Marks]

 (b) List four natural dyeing materials. [2 Marks]

 (c) (i) Define polymer fibres [2 Marks]

 (ii) State four kinds of synthetic polymer [2 Marks]

 (d) (i) Give a brief account of the discovery and use of PVC. [5 Marks]

 (ii) Write a chemical equation for the preparation of PVC from ethylene. [2 marks]

**QUESTION 4**

4. (a) Define the term synthetic fibre [2 Marks]

 (b) State four kinds of synthetic fibres. [4 Marks]

(c) Differentiate between nylon and polyester [2 Marks]

(d) (i) What are polyurethanes? [2 Marks]

 (ii) Mention two uses of polyurethane [2 Marks]

( e ) Describe the operation of a Beam Dyeing Machine [3 Marks]

**QUESTION 5**

11. (a) Explain each of the following dyeing processes:

 (i) Batch dyeing process

 (ii) Continuous dyeing process [8 Marks]

 (b) What are the special features of continuous dyeing process [2 Marks]

 (c) Describe the workings of a Cold Pad dyeing process [3 Marks]

 (d) What are the significant features of Pad Batch dyeing process [2 Marks]