



NATIONAL OPEN UNIVERSITY OF NIGERIA  
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE  
EXPRESS WAY,  
JABI - ABUJA.  
FACULTY OF SCIENCES  
DEPARTMENT OF CHEMISTRY  
2024 1 EXAMINATION-

**COURSE CODE:** CHM 304  
**COURSE TITLE:** COLOUR CHEMISTRY AND TECHNOLOGY  
**COURSE UNIT:** 2  
**TIME:** 2 HOURS  
**INSTRUCTION:** Answer question one and any other two questions  
*Question 1 score 30marks with the other two scoring 20marks each*

**QUESTION ONE**

- i). Vividly classify electromagnetic radiation according to wavelength and frequency (7 marks)  
ii). What are subtractive colours (5 marks).  
1b) What are the effects and uses of the following colours; Violet, Indigo, blue, White, Orange and Pink (12 marks)  
c). Explain in details the examples and processes of obtaining natural dyes from plants (6 marks).

**QUESTION TWO**

- 2a). Give the categories of organic pigments (6 marks)  
b). Mention the categories of aluminium pigments stating how they can be applied in automotive topcoats (8 marks)  
c). Vividly explain the important applications of pigments. (6marks)

**QUESTION THREE**

- 3a). Clearly explain the major agricultural industries that use dyes. (9 marks)  
b). Explain clearly the main processes involved in natural dyeing (6 marks)  
c). How are dyes used in medicine (5 marks)

**QUESTION FOUR**

- 4a). Explain how the following mordants can be used and state their effects; iron, glaubersalt, spectralite, tin and calcium carbonate (10 marks)  
4b). Give the distinguishing features of soft and hard fibre (5 marks)  
4c). Give the types and examples of pigments that are used in the wire and (5 marks)

**QUESTION FIVE**

- 5a) State the characteristic features and uses of Kevlar (10 marks)  
5b). Give the features of Hank Dyeing Machine (5 marks)  
5c). What are the technical features of Muti Nozzle Soft Flow Dyeing Machine (5 marks)