

DEPARTMENT OF CHEMISTRY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SECOND SEMESTER EXAMINATION 2021/2022 SESSION

COURSE CODE: CHM 317

COURSE TITLE: Industrial Chemical Processes I

2 Units

TIME ALLOWED: 1 Hour 30 Minutes

INSTRUCTIONS: Answer any Three (3) Questions

1. (a) Describe briefly and give two examples each of the following terms: **(6 marks)**
 - i. Low explosive
 - ii. High explosive

(b) i. What are dyes? **(2 marks)**

 - ii. Mention two (2) types of dyes and give one example of each **(3 marks)**
 - iii. Give three (3) examples of an auxochrome **(3 marks)**
 - iv. State three (3) applications of explosives **(3 marks)**

(c) Define the following terms:

 - i. Chromophore **(1 mark)**
 - ii. Auxochrome **(1 mark)**
 - iii. Mordant dyes **(1 mark)**
2. (a) Explain the applications of polymers in:-
 - i. Agriculture **(2 marks)**
 - ii. Medicine **(2 marks)**
 - iii. Industry **(2 marks)**

(b) List and explain briefly the classes of polymers based on the nature of monomer **(8 marks)**.

(c) Differentiate between addition and condensation polymerisation **(6 marks)**.
3. (a) Describe briefly the synthesis and two uses each of the following chemicals
 - i. Low Density Polyethylene **(4 marks)**
 - ii. High Density Polyethylene **(4 marks)**
 - iii. Ethylene oxide **(4 marks)**

(b) With the aid of a block diagram, explain

 - i. the process of the production of polypropylene **(5 marks)**
 - ii. type of polymerisation reaction **(1mark)**
 - iii. the Isotactic molecular structure and the type of molecules formed **(2 marks)**
4. (a). Enumerate the uses of the following raw materials:
 - i. Resins and shellac **(2marks)**
 - ii. Natural rubber **(2 marks)**
 - iii. Gelatin **(2 marks)**
 - iv. Asphalt and bitumen **(2 marks)**

(b). Justify the effect of surface preparation and metal surfaces for effective bonding in the use of adhesives **(10 marks)**

(c). List four examples of flavour enhancers. (**2 marks**)