



**NATIONAL OPEN UNIVERSITY OF NIGERIA
DEPARTMENT OF PURE AND APPLIED SCIENCES
2024_2 EXAMINATION**

COURSE CODE: CHM 312

COURSE TITLE: INDUSTRIAL CHEMICAL PROCESSES 1

INSTRUCTION: *Answer question 1 and any other 2 questions*

CREDIT UNIT: 2

TIME: 2 HRS

Question 1

- a) Summarize the first three (3) fermentation processes. **12mks**
- b) Explain why hops are boiled for at least 30 minutes and sometimes longer during beer manufacture. **3mks**
- c) Describe in detail, the industrial process of manufacturing wine. **12mks**
- d) With example, why is special explosives also called permissible explosives used in coal mine? **3mks**

Question 2

- a) Differentiate between addition and condensation polymerization **4mks**
- b) Name three (3) newer application of polymer in medicine. **4mks**
- e) Describe the production process of dyes. **12 mks**

Question 3

- a) Explain four applications of HDPE. **8mks**
- b) Write notes on natural and synthetic flavoring agents **12mks**

Question 4

- a) Give six applications of styrene butadiene rubber. **12mks**
- b) Classify dyes on the bases of;
 - i. Source of material:
 - ii. Dyeing process
 - iii. Chromophore
 - iv. Application
 - v. Nuclear structure
 - vi. Color index **8mks**

Question 5

- a) Name the three separate activities involved in pesticide production. **3mks**
- b) State the economics disadvantage of pesticides. **3mks**
- c) Explain what is meant by persistent pesticides. **3mks**
- d) Describe the production process of nitrocellulose explosives. Use equations were appropriate. **11mks**