NATIONAL OPEN UNIVERSITY OF NIGERIA
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA.
FACULTY OF SCIENCES
DEPARTMENT OF CHEMISTRY
2025_2 EXAMINATIONS

COURSE CODE: **CHM417**
COURSE TITLE: **Industrial Chemical Processes II**
COURSE UNIT: **2**
TIME: **2 Hours**
INSTRUCTION: **Answer question one and any other two questions.**

1a. Write short note on:

i. Zone refining 3marks
ii. Levigation 4marks

b. Explain the term "Liquation". 4marks
c. Discuss briefly on how to prepare potassium sulphate from Langbemite. 3 marks
d. What are the attributes of ammonium phosphate fertilizer. 3 marks
e. Why would you subscribe to electrochemical processes. 4marks
f. Expatiate on the steps involved in the preparation of SO_2 in the Contact process. 6 marks
g. List the uses of Nitric acid. 3 marks

2a. State the two main sources of sodium carbonate. 4marks

b. Explain how urea is utilized in the soil. 8marks
c. Discuss the Stengel process of producing fertilizer. 8marks

3a. List the processes involved in Ore pretreatment. 5marks

b. Describe how metal ore is refined using:
I. Poling 4marks
II. Cupellation 5marks
c. How many types of Portland cement are well recognized? 1mark
d. Discuss High Early Strength (HES) Portland Cement. 5marks

4. Write on the following:

a. Equivalent weight of a substance 5marks
b. Anode 2marks
c. Cathode 2marks
d. Electrolyte 4marks
e. Electrode 7marks

5a. Describe the constituents of the cathode and the anode of the membrane cell process. 4marks

b. What are the advantages and limitations of membrane cell have in comparison to other processes. 7marks

a. Write chemical equation to show chemical reactions that takes place in the Solvay process of producing sodium carbonate. 9marks