



DEPARTMENT OF CHEMISTRY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SECOND SEMESTER EXAMINATION 2021/2022 SESSION
COURSE CODE: CHM327 **COURSE**

UNIT: 2

COURSE TITLE: INDUSTRIAL CHEMICAL PROCESSES II

INSTRUCTION: ANSWER ANY THREE (3) QUESTIONS TIME: 1 HOUR 30 MINUTES

- 1(a). In a tabular form, outline the chemical constituents of portland and high alumina cement (7 Marks)
- 1(b). Differentiate between magnetic and electrostatic separation. (6 Marks)
- 1(c). Write short note on vat and heap leaching. (4 Marks)
- 1(d). Outline six physical properties of glass. (3 Marks)
- 2(a). Discuss the following types of Portland cements. (9 Marks)
- (i) Regular (ii) Modified (iii) High Early Strength
- 2(b). List and explain two types of grinding method employ in mineral processing. (4 Marks)
- 2(c). Briefly explain properties and applications of tempered glasses. (4 Marks)
- 2(d). Give three properties of optical glasses. (3 Marks)
- 3(a). Using chemical equations, differentiate the two production processes of sodium carbonate. (10 Marks)
- 3(b). (i) Describe the production of H_2SO_4 using the contact process and state why air and SO_2 is purified in the production processes? (8 Marks)
- (ii) What are the disadvantages of leblanc process? (2 Marks)
- 4(a). Briefly explain the following. (4 Marks)
- (i) Electrosynthesis (ii) Electrorefining
- 4(b). Describe the industrial electrosynthesis of $MnSO_4$ using H_2SO_4 . (6 Marks)
- 4(c). (i) Using a schematic diagram, describe the modern method for manufacture of Ammonia. (8 Marks)
- (ii) State why Urea fertilizer is better than Ammonium nitrate. (2 Marks)