

**Department of Chemistry**

**Federal University of Technology, Minna**

**First Semester Examination 2012/2013 Session**

**Course Code: CHM511**

**Course Unit: 2**

**Course Title: Industrial Chemistry of Heavy Inorganic Chemicals**

**Time Allowed: 2 hours**

**Instruction: Attempt any Three Questions**

- 1a. Using balanced chemical equations, describe the production of tetraoxosulphate(vi) acid using the contact process
- b. Which of the production methods of chloralkali is most appropriate for the industrial production of chlorine from brine? Justify your choice.
- c. Which of the chloralkali process methods has the most impact on the following:
  - i. High yield
  - ii. Economic importance
  - iii. Environmental
- d. Give reasons for your choice in "c" above.
- 2a. With the aid of balanced chemical equations, explain the industrial production of ammonium trioxonitrate (v) using the Haber process.
- b. Explain the chemistry of the action of ammonium tetraoxosulphate (iv) in an alkaline soil.
- c. State five industrial applications of ammonium trioxonitrate (v)
- 3a. Ammonia can be produced industrially using natural feed stocks as starting material. Using balanced chemical equations, explain the methods involved.
- b. What is an alum? Describe how it can be produced industrially from alunite ore
- c. Give five industrial applications of a named alum.
- 4a. Solvay and Hou's processes can be used to produce sodium trioxocarbonate (iv) industrially, Using balanced chemical equations, explain the techniques.
- b. Which of the two is more advantageous? Justify.