



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF APPLIED CHEMISTRY
BACHELOR OF SCIENCE HONOURS DEGREE
SUPPLEMENTARY EXAMINATIONS – AUGUST 2010
INDUSTRIAL INORGANIC CHEMISTRY I SCH2114
TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

Answer **ANY FIVE from the six provided.** Each question carries 20 Marks.

Total Marks - 100

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1. (a) List 4 physical properties of oxygen. [4 marks]
(b) Describe the cryogenic separation of oxygen from air. [10 marks]
(c) Name (6) industrial uses of Helium gas. [6 marks]
 2. With the aid of a process flow diagram describe the contact manufacturing process of sulphuric acid. [20 marks]
 3. (a) Account for the factors that affect the catalytic conversion of NH_3 from N_2 and H_2 . [6 marks]
(b) Explain the production of urea from dehydration of ammonium carbamate. Also explain the likely hazards that go with this process. [8 marks]
(c) List 6 industrial applications of urea. [6 marks]
 4. (a) List the advantages of the electric furnace method of phosphoric acid production over the wet process method. [4 marks]
(b) Illustrate (3) three possible reactions that occur in the furnace during manufacture of phosphoric acid. [9 marks]
(c) Describe (2) two methods by which the phosphoric acid can be purified [4 marks]
(d) Name (3) three uses of phosphoric acid. [3 marks]
 5. (a) Describe the thermal properties of ceramics. For each property indicate an instrument that can be utilised for its determination. [12 marks]
(b) Explain the process of devitrification in glass-ceramic products. (4 marks)
(c) Name (2) two applications of cermets. [4 marks]

6. (a) What is the chemical composition of Portland Cement? [8 marks]
- (b) Describe the cement manufacturing process. [12 marks]

End of Question Paper!