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Faculty of Applied Science
Rajarata University of Sri Lanka
Mihintale.

RAJARATA UNIVERSITY OF SRI LANKA

FACULTY OF APPLIED SCIENCES

B.Sc. Third year Semester I Examination – September/October 2014

CHE 3201 – Industries Based on Inorganic Resources of Sri Lanka

Answer any four questions.

Time: 2 hours.

- 1). (a) Briefly explain the diaphragm cell and the mercury cell used as electrolytic processes in the production of Chlorine from sodium chloride solution. (30 marks)
- (b) Write down the reactions that occur in the above electrolysis cells. (20 marks)
- (c) Give two uses of each chlorine and NaOH. (10 marks)
- (d) Suggest one advantage and one disadvantage of the diaphragm cell over the mercury cell. (10 marks)
- (e) If a chlorine plant produces 2.0×10^7 kg of chlorine per annum, calculate the;
 (i) average current in the electrolytic cells and
 (ii) mass of NaOH produced in the process.
 (Faraday constant = 9.95×10^4 C/mol, relative atomic weights are H = 1, O = 16, Na = 23 and Cl = 35.5) (30 marks)
- 2). (a) Give the chemical compositions and two uses of the following minerals.
 (i) Lime stone.
 (ii) Mica.
 (iii) kaolinite.
 (iv) graphite.
 (v) Ilmonite. (60 marks)
- (b) Write short notes on Gem minerals in Sri Lanka and discuss how gem mining affects the environment. (40 marks)

- 3). (a) Give the processes available in the production of Portland cement. Explain briefly one of the process you have mentioned. (30 marks)
- (b) Discuss the setting and hardening of cement. (20 marks)
- (c) List five waste materials could be used as a fuel in cement kiln. (20 marks)
- (d) Discuss the pollutants in cement industry and give the measure to minimize the pollutant. (30 marks)
- 4). (a) Give the composition and one property and one use of each of the following types of glass. (50 marks)
- (i) Soda lime glass.
- (ii) Pyrex glass.
- (iii) Laminated glass
- (iv) Optical fibers.
- (b) Give the raw materials used in ceramics and briefly explain the steps involving in the production of ceramics. (35 marks)
- (c) What is meant by Glazing in ceramics? (15 marks)
- 5). (a) Briefly explain the synthesis of ammonia by the Haber process. (30 marks)
- (b) Discuss the problems causing with heavy use of NH_3 as a fertilizer. (25 marks)
- (c) Write balance chemical equation to produce SSP and TSP from apatite. (25 marks)
- (d) Compare the inorganic fertilizer with organic fertilizer. (20 marks)