



RAJARATA UNIVERSITY OF SRI LANKA
 FACULTY OF APPLIED SCIENCES
 B.Sc. (General/Special Degree)
 Third Year – Semester I Examination – October/November 2015
 CHE 3201– INDUSTRIES BASED ON INORGANIC RESOURCES
 OF SRI LANKA

Answer any four questions.

Time: 02 hours.

1.
 - (a) Give three different types of desalination processes of sea water and give one advantage and one disadvantage in each process. (30 marks)
 - (b) Briefly explain the electrolysis of brine in the production of caustic soda. Give the reactions taking place in the cathode and the anode. Identify the products from the electrolysis and give two uses of each of the product. (40 marks)
 - (c) Draw a flow diagram and explain for the production of table salt by solar evaporation from sea water. (30 marks)

2.
 - (a) State different types of lime minerals available in Sri Lanka along with their locations and give five applications of lime minerals. (35 marks)
 - (b) Describe the different types of methods available to recover gems. Discuss briefly the environmental effects with gem mining. (25 marks)
 - (c) Write short notes on Eppawala apatite mineral. (40 marks)

3.
 - (a) Draw the flow chart for the dry process of manufacture of Portland cement, starting from its raw materials. (20 marks)
 - (b) Indicate the temperature/ range of temperature and list the reactions taking place during burning of raw materials in the kiln. (25 marks)
 - (c) Distinguish between setting and hardening of cement. (25 marks)

- (d) Identify three types of pollutants from cement industry and discuss the treatment of one of them.

(30 marks)

4. (a) Write short notes on four of the following;

- (i) soda glass,
- (ii) optical glass,
- (iii) laminated glass,
- (iv) coloured glass,
- (v) borosilicate glass.

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(28 marks)

- (b) What is meant by annealing of glass? Why is it necessary for any glass article produced in a factory to undergo annealing?

(22 marks)

- (c) Describe the terms modifiers and stabilizers used in glass industry. What specific role do they play in a glass mixture?

(25 marks)

- (d) Briefly explain the function of each raw material in ceramic body. Describe the term glass ceramics. Give two advantages of glass ceramics.

(25 marks)

5. (a) (i) Explain the effect of nitrogen on plant growth.
(ii) Give the differences between fertilizers and manures.

(30 marks)

- (b) Write chemical equation to show how apatite from Eppawala in Sri Lanka converted to single super phosphate (SSP) and triple super phosphate (TSP).

(30 marks)

- (c) Draw the flow diagram to show the wet process to produce phosphoric acid from phosphate rock. What is the main byproduct in this process? Write down the balance chemical equation when phosphoric acid is produced from wet process.

(40 marks)