(Following Roll No. to be filled by candidate)

Roll No. | 1 | 2 | 0 | 4 | 3 | 5 | 1 | 9 | 0 | 2 |

B. TECH.
FIFTH SEMESTER EXAMINATION 2013-14
ECH 503
CHEMICAL TECHNOLOGY-II (INORGANIC)

Time: 2 Hours **Max. Marks: 50**

Note:

- Attempt all questions.
- Marks and number of questions to be attempted from the section is mentioned before each section.
- Assume missing data suitably. Illustrate the answers with suitable sketches

1. Attempt any ***Four*** parts of the following: [4×3.5]
   a. What are the various resources for producing common salt on commercial scale? Also discuss the varieties of common salt available in the market.
   b. Describe the dual process for the manufacturing of soda ash giving all chemical reactions. Also discuss major engineering problems in brief.
   c. Describe the process of manufacturing hydrochloric acid.
   d. Give the process flow diagram for the manufacturing of chlorine-caustic soda using a combination of diaphragm and mercury cell.
   e. Explain the chemical reactions taking place in chlorine – caustic soda production by electrolytic process. Also discuss the disadvantages of diaphragm cell.
   f. Write down the advantages and disadvantages of mercury and membrane cells.

2. Attempt any ***Three*** parts of the following: [3×4]
   a. Draw and discuss the various types of sulfur burner for sulfur dioxide production with their suitable diagram.
   b. Describe DCDA process for the manufacturing of sulfuric acid with a neat and clean diagram.
   c. Describe the process of manufacturing oleum.
   d. Write the major chemical reaction for the manufacturing of single super phosphate, triple superphosphate and DAP. Also write the major component of mixed fertilizer.
   e. Describe the manufacturing of phosphoric acid from phosphate rock.

3. Attempt any ***Two*** parts of the following: [2×6]
   a. Describe the manufacturing of mixed fertilizer (NPK) from rock phosphate by strong H_2SO_4 process.
   b. Explain the major engineering problems for synthetic ammonia process with regard to thermodynamics and kinetic considerations and catalyst development.
   c. Describe the method of production of urea giving all the chemical reactions and proper process flow diagram.

4. Attempt any ***Two*** parts of the following: [2×6]
   a. Describe the process of manufacturing hydrogen gas by the partial combustion of methane with neat and clean diagram.
   b. Draw and discuss the process flow diagram for the manufacturing of oxygen. Also discuss major