

Code No: RR210804

Set No. 1

II B.Tech I Semester Supplementary Examinations, November 2006
INORGANIC CHEMICAL TECHNOLOGY
(Chemical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Discuss the importance of research in the growth and development of process industry. Explain the term patent. [16]
2. Distinguish between sewage and industrial waste water. Explain the method activated sludge sewage water disposal with a neat flow chart. [16]
3. (a) What are porcelain enamels?
(b) How are they manufactured?
(c) What are the applications? [4+8+4]
4. (a) Write a detailed note on Plaster of Paris.
(b) What are acid resistant cement and super sulphate cement? Mention their applications. [8+8]
5. Describe the manufacturing of caustic soda by using De Nora mercury cell with physico-chemical principles. [16]
6. Describe with a neat flow sheet, the process of manufacturing carbondioxide from natural gas. [16]
7. Explain the production of ammonia in a high capacity single train ammonia plant. [16]
8. Draw a neat flow diagram depicting the various details for the production of sulphuric acid by the contact process? [16]

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1. Briefly describe the following operations of a process industry and classify them in to unit operations and unit processes.
 - (a) Calcination
 - (b) Combustion
 - (c) Drying of solids
 - (d) Crystallization. [4x4]
2. What are the sources of water? List out the impurities in water. What are the disadvantages of hard water in industrial use? [16]
3.
 - (a) How magnesite refractories are made?
 - (b) Describe their properties and application. [10+6]
4.
 - (a) Write a detailed note on Plaster of Paris.
 - (b) What are acid resistant cement and super sulphate cement? Mention their applications. [8+8]
5. Write the working principles of the following with neat sketches
 - (a) Recuperative pot furnace
 - (b) Regenerative tank furnace [8+8]
6.
 - (a) Explain liquefaction of gases.
 - (b) Discuss the different cycles used in liquification of gases with the help of a flow diagram. [6+10]
7. Describe the production of ammonia in bulk by using hydrocarbon steam reforming operations (kellogs ammonia process). [16]
8.
 - (a) What are the various grades of sulphuric acid available?
 - (b) What are the various industries that consume sulphuric acid? [6+10]

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1. Explain the importance of energy and material balance in a process plant. Why they are computed? [16]
2. What is BOD? Explain its significance with reference to water pollution. How it is measured and controlled. [16]
3. (a) How chromite bricks are manufactured? What are their applications?
(b) Give an account of the properties of dolomite refractories.
4. Explain briefly about
(a) Sorel cement
(b) Blast furnace slag cement
(c) Role of Gypsum
(d) Coloured cement [4x4]
5. Write the working principles of the following with neat sketches
(a) Recuperative pot furnace
(b) Regenerative tank furnace [8+8]
6. (a) Describe how carbon dioxide can be recovered from the furnace gases with a neat diagram.
(b) Write briefly about the liquid carbon dioxide. [12+4]
7. Describe the production of nitric acid from ammonia. [16]
8. (a) How is uranium occurring in nature? Write about the ores of uranium?
(b) Discuss some physical properties of uranium and its compounds? [10+6]

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1. Explain the importance of energy and material balance in a process plant. Why they are computed? [16]
2. (a) Mention the engineering problems involved in the crystallization process employed for the water conditioning.
(b) Explain the Reverse osmosis process employed for the separation of water from brine. [8+8]
3. (a) What are the advantages of single pure oxide refractories over the mixed refractories?
(b) How Beryllia refractories are made? What are their applications?
4. (a) What are the various types of Portland cement?
(b) What are the functions of the ingredients of cement?
(c) Describe the various micro constituents and their functions in the Portland cement. [6+6+4]
5. Write in detail the chemical reactions occur in the furnace of Glass manufacturing with temperatures. [16]
6. (a) Describe the production of hydrogen by catalytic reforming of petroleum stocks.
(b) Describe the production of hydrogen from methanol and steam. [8+8]
7. Explain the production of synthetic ammonia along with a neat flow diagram. [16]
8. (a) What is Alum? What are its uses?
(b) Draw the flow sheet for the production of Alum? [6+10]
