Chemical Engineering

INTRODUCTION TO CHEMICAL ENGINEERING

1. Chemical engineers have contributed substantially more than any other engineering disciplines in advancing the quality of life. Justify this statement citing three examples in everyday life.
2. The mass velocity of a gas through a duct is 1000 kg/m2 h. Express the velocity in lb/ ft2 s
3. Propose a separation technique for removal of CO2 from products of combustion. What property of CO2 makes it feasible?
4. Distinguish between laminar and turbulent flow
5. List any six process parameters that are monitored in a chemical plant
6. Explain the basic concept of P & I diagram.
7. Identify the role of safety in chemical process industries.
8. List three different techniques for municipal solid waste treatment.
9. List any five different professional fields of Chemical Engineering with their primary role
10. Discuss the role of chemical engineers in controlling atmospheric pollution.
11. A solution of potassium chloride in water contains 384 g KCl per litre of the solution at 300 K. the specific gravity of the solution is 1.6. Determine the following:
    a) The weight percentage of KCl
    b) The molarity of the solution
12. a) Illustrate the equation of state
    b) Differentiate between vapour pressure and partial pressure.
13. Differentiate between Extraction and Leaching with an example.
14. Explain different modes of heat transfer with example
15. Give the schematic representation of (i) control valve (ii) centrifugal pump (iii) heat exchanger (iv) distillation column (v) CSTR
16. a) Explain the principle based on which a thermocouple is working.
    b) Enumerate the need for using U-tube manometer and Venturimeter in industries.
17. Write down the major causes of Bhopal gas tragedy.
18. Scope for Chemical Engineers in the development of sustainable alternatives for betterment of world's economy.

19. Chemical engineers play key role in meeting the world’s energy demand. Explain
20. An aqueous NaCl solution contains 230 g of NaCl per litre at 20 0C. The density of the solution at this temperature is 1.148 g/cc. Calculate (i) mole %, (ii) weight % and (iii) molality.
21. Explain hydrogenation process and its industrial application
22. a) Distinguish unit operations and unit processes with examples
    b) Distinguish between drying and evaporation.
23. What is the different Classification of chemical reactions with an example
24. Describe the DCDA process for the production of sulphuric acid with a process flow diagram.
25. a) Discuss the physical, chemical and biological characteristics of waste water.
    b) List any four waste water treatment techniques
26. Explain the effect of Aerial spraying of Endosulphan on residents of Kasarrgod