

Chemical Engineering

INTRODUCTION TO CHEMICAL ENGINEERING

1. Explain any one life saving application wherein Chemical engineers have a major role to play with.
2. List any three terms for expressing the composition of a solution
3. Identify the unit operation for decolonisation of industrial waste water. Describe the principle used.
4. Define the order of reaction and molecularity of a chemical reaction.
5. List any six process parameters that are monitored in a chemical plant
6. Outline the chemical reaction involved in production of sulphuric acid
7. Give any three chemical characteristics of wastewater
8. Classify the various types of fire.
9. Exemplify the chemical engineering applications in everyday life.
10. Write a note on the role of chemical engineers in atmospheric pollution control.
11. A solution of caustic soda contains 20% NaOH by weight. Taking the density of the solution as 1.196 kg/L. Calculate the (i) normality, (ii) molarity and (iii) molality of the solution.
12. a) Describe the equation of state.
b) Differentiate vapor pressure and partial pressure.
13. a) Write various mechanisms by which size reduction may be achieved.
b) List any one example each for size reduction and size separation equipment.
14. a) Identify the mode of heat transfer occurring in solids.
b) State the law governing the mode of heat transfer
c) List the various mode of heat transfer that occurs in fluids
15. With a neat flow diagram explain DCDA process.
16. Illustrate the working and principle of thermocouple
17. Distinguish between Process flow diagram and P& I Diagram
18. Explain various types of solid waste treatment methods.
19. a) Differentiate batch and continuous processes.
b) List the merits of continuous process over the batch process.
20. a) You are provided with two bars of steel and pure iron. The thermal conductivity of pure iron is 39 Btu / (ft h oF) and that of steel is 39 kcal/ (m h oC). Compare the thermal conductivity of both material and select a better conductor.

- b) The analysis of magnesite ore contains 81% MgCO_3 , 14% SiO_2 , and 5% H_2O by weight basis. Convert this composition into mole %.
21. Explain hydrogenation process and its industrial application
22. a) Differentiate between laminar and turbulent flow
b) Differentiate between mixed flow reactor and plug flow reactor
23. a) Define 'Black Body, emissivity and absorptivity in radiation heat transfer.
b) List any two radiation laws
24. Explain the working of U-tube manometer and Venturimeter with the help of a neat sketch
25. Explain the Case study of Effect of Aerial Spraying of Endosulfan on Residents of Kasargod, Kerala.
26. Explain the need for effluent treatment plant in a chemical industry.