

Chemical Engineering

INTRODUCTION TO CHEMICAL ENGINEERING

1. Who is considered to be the father of Chemical Engineering? What is his contribution?
2. Give three terms of expressing compositions of a gas mixture.
3. Give an example for the industrial use of 'distillation'
4. Define 'yield' in a chemical reaction.
5. What is the information available in a Process Flow Diagram?
6. Give the principle of flow measurement using a venturi meter.
7. Give three examples for novel materials with their application.
8. Define Biochemical Oxygen Demand.
9. List five different professional fields of Chemical Engineering with their primary role.
10. The heat transfer coefficient of oil flowing through a pipe is $300\text{W}/(\text{m K})$. Determine the value of heat transfer coefficient expressed in $\text{kcal}/(\text{hm } ^\circ\text{C})$, $\text{Btu}/(\text{hft}^2^\circ\text{F})$.
11. Explain the unit operation of drying. Give an industrial example with the name of the Dryer.
12. Define saponification value. What is its significance in saponification process?
13. Differentiate between Mixed flow reactor and Plug flow reactor.
14. Write in brief about 'laminar and turbulent flow'.
15. Explain the elements of a typical feedback control loop.
16. With a neat PFD explain the manufacture of Sulphuric acid.
17. List the methods for removal particulate matter from polluted air. Explain any two with the help of a sketch.
18. Safety is the most crucial point in all the aspects such as design and operation of a chemical process industry. Explain.
19. Classify chemical industries to give any six classes.
20. Air contains 78.08 % N_2 , 20.95% O_2 , 0.93% Argon and remaining CO_2 by mole. Express the composition by weight. Also find the density of air at NTP (Normal Temperature and Pressure, 25°C and 1 am). Given that molecular weight of Argon= 40.
21. Ethyl Chloride is produced by the gas phase reaction of HCl with Ethylene as

follows



Find the weight of raw materials needed to make 100 kilograms per hour Ethyl Chloride.

22. Explain the unit process of hydrogenation of oil.
23. Classify chemical reactions. Give example for each class.
24. Explain in detail the effect of temperature on rate of a Chemical reaction.
25. Explain the roles of Process Instrumentation in monitoring the control Chemical plants.
26. Solid waste management has become a serious environmental problem addressed by the society in recent years. Give your views in tackling the issue.