

AMB06 CHEMICAL ENGINEERING-I

1. Chemical engineering discipline, structure and practice.
2. Stoichiometry and chemical equations. Units, dimensions and conversions. Phase rule, Henry's law, Rault's law and their applications to gas-liquid and vapor-liquid systems.
3. Material balance for non-reacting and reacting systems, recycle and by pass.
4. Heats of solution, mixing and reactions. Types of energy and first law of thermodynamics.
5. Energy balance for non-reacting and reacting systems. Calculation of flame temperature and adiabatic reaction temperature.
6. Properties of fluids & fluid statics. Mechanical energy balance.
7. Flow of incompressible fluids: laminar and turbulent flows, velocity distribution in pipes, pressure drop in pipes and fittings.
8. Stokes law and its applications.
9. Flow in packed beds.
10. Flow measurement: Orifice & Venturi meter. Pumps and their characteristics.

Reference Books

1. Unit Operations of Chemical Engineering, McCabe W.L., Smith J.C. and Harriott P., McGraw Hill International Edition, Singapore, 5th Ed., 1993.
2. Chemical Engineering, Vol. 1, Coulson J.M. and Richardson J.F., Butterworth Heinemann, Oxford 6th Ed., 1999
3. Fluid Mechanics, Douglas J.F., Gasiorek J.M., Swaffield J.A., Addison-Wesley Longman, 3rd Ed., 1995.