AMPL08 CHEMICAL ENGINEERING OPERATIONS

UNIT-1 INTRODUCTION

1.1 Production trends, Material and energy balances,
1.2 Symbols and flow sheets,
1.3 Waste generation and recycling, engineering problems,
1.4 Materials of construction,
1.5 Environmental and energy conservation measures.

UNIT-2 PULP AND PAPER, CELLULOSE DERIVATIVES, SUGAR AND STARCH

2.1 Cellulose derivatives: Pulp, paper and boards,
2.2 Types of raw material for pulping,
2.3 Various pulping methods,
2.4 Recovery of chemicals from black liquor,
2.5 Manufacture of paper, Quality improvement of paper.
2.6 Sugar and Starch: Raw and refined sugar,
2.7 Byproducts of sugar industries,
2.8 Starch and starch derivatives.

UNIT-3 OILS AND FATS, SOAPS AND DETERGENTS, CHLOR-ALKALI INDUSTRIES

3.1 Types of oil, Different fatty acids,
3.2 Extraction of oil from seeds, Oil purification,
3.3 Hydrogenation of oil.
3.4 Soaps and Detergents: Types of soaps,
3.5 Soap manufacture, recovery and purification.
3.6 Chlor-alkali Industries: Brine electrolysis,
3.7 Manufacture of caustic soda and chlorine in mercury cells,
3.8 Diaphragm cells, Membrane cells, Hydrochloric acid.

UNIT-4 NITROGEN, PHOSPHORUS INDUSTRIES & MIXED FERTILIZERS

4.1 Ammonia, Nitric acid, Ammonium sulphate,
4.2 Ammonium nitrate, Urea, Calcium ammonium nitrate.
4.3 Phosphorus Industries: Phosphorus, Phosphoric acid, Phosphatic fertilizers.
4.4 Mixed Fertilizers: SSP, TSP, NPK, KAP, DAP, Nitrophosphate, Bio fertilizers.

UNIT-5 SULPHUR, CERAMIC INDUSTRIES

5.1 Sulphur dioxide, Sulphuric acid, Oleum.
5.2 Ceramic Industries: Portland cement, Lime, Gypsum.

Reference Books:

1. Faith, W.L., Keyes, D.B. and Clark, R.L., Industrial Chemicals, Wiley (1980).
2. Kirk and Othmer, Encyclopaedia of Chemical Technology, Wiley (2004).
3. Groggins, P.H., Unit Processes in Organic Synthesis, Tata McGraw-Hill (2003)