Subject Code : P8CHE8

INDUSTRIAL CHEMISTRY

UNIT-I

Basic ideas about unit operation – Flow charts – Chemical conversion – Batch versus continuous processing – Chemical process selection – Design – Chemical process control- Chemical process economics – Market evaluation – Plant location – Management for productivity and creativity – Research & Development and its role in chemical industries.
Industrial safety measures – Fire extinguisher, Fire retardant materials – Fire retarding wood – Procedures for handling toxic chemicals

UNIT-II

Fuels.
Fossil fuels- classification and unique features- Coal, Petroleum, natural gas. Biofuels: Biomass- biodiesel. Nuclear fuels: for various types of nuclear reactors. Hydrogen as fuel in the future, Hydrogen storage materials. Fuel cells – basic principle.

UNIT-III

Oils, fats, waxes and soaps

Introduction-Distinction between oils and fats-properties and its classifications-animal fats and oils-difference between, animal, vegetable and mineral oils-isolation of essential oils and their uses-saponification value-ester value-acid value-iodide value-wijs method – Reichert meissel value-Henher value-elaident test-hydrogenation of oils – Soaps and its manufacture-general consideration in soap making – manufacture of toilet and transparent soaps – oil to be used for soap – cleansing action of soap

Food chemistry: Food processing food preservatives and food additives.

UNIT-IV

Dyes
Introduction-senation of colour- colour and constitution-nomenclature-basic operations in dyeing- classification of dyes according to the mode of application – synthesis, reaction an applications of diphenylmethane dyes-triphenylmethane dyes-phthalein dyes-xanthene dyes-acridine dyes-sulphur dyes-cyanine dyes.

UNIT-V

Polymer Chemistry

Introduction - structure, classification of polymers, polymerisation methods, Importance of polymers, Molecular weight of polymers – Number average and weight average, Determination of molecular weight by osmometry, light scattering, viscosity and sedimentation methods, Kinetics of polymerisation reactions, polycondensation reactions, ionic and free radical polymerisation, copolymersation - coordination polymers, Conducting polymers.

References

1. Chemical Process Industries – Norrish Shreve, R. and Joseph A. Brink Jr. McGraw
1. Hill, Industrial Book Company, London.
2. Production and Properties of Industrial Chemicals – Brain A. C. S. Reinhold – New York.
3. Petroleum Products Hand Book. Guthrie V., McGraw Hill, Tokyo.
4. Industrial Chemistry (Including Chemical Engineering) – B. K. Sharma (10th Edition
5. Outlines of Chemical Technology – For the 21st Century – M. Gopala Rao & Matshall Sittig (3rd Edition)
5. Source Book on Atomic Energy by S. Glasstone
6. 7. Charles E. Carraher, Polymer chemistry, 6th edn, Marcel Dckker, Brijbasi Art Pvt.Ltd, 2003.
7. F.W.Billmeyer, Jr., A Text Book of Polymer Science, John Wiley and Sons, New York, 1971.
8. V.R.Gowariker, N.V. Viswanathan and Jayadev Sreedhar, Polymer Science, New Age
9. Publishers,New Delhi, 1986.