UNIVERSITY OF PUNE

INDUSTRIAL CHEMISTRY (VOCATIONAL COURSE)

PAPER-1, SECTION-2 (FIRST TERM)

Surface Chemistry and Catalysis

Topic 1 : Surface Chemistry and Interfacial Phenomenon **.**

Adsorption isotherm, sols, gels, emulsion, emulsions,

Micelles, Aerosols, Surfactants

Topic 2: catalyst

Introduction types- homogeneous heterogeneous basic principle mechanisms factor affecting the performance, introduction of phase transfer catalysis, enzyme catalysis,

Enzyme catalyzed reactions- rate model

Industrial important reactions

BOOKS :

1. K.C. college hand book.
2. Catalysis homogeneous heterogeneous: B Delmon & G. janner
3. Catalysis science and technology : J Anderson
4. Aerosols science and technology, H.R. Shepherd
5. Surface chemistry : J.J Bikermann

PAPER-I SECTION-II (SECOND TERM)

Material and Energy Balance

Topic 1 :Dimensions and units:

Basic chemicals calculations, atomic weights, molecular weights, equivalent weights, mole concept, composition of liquid and gaseous mixture.

Topic 2 : material balance without Chemical Reactions:

Flow diagram for material balance, simple balance with or without recycle or by-pass for chemicals engineering separation such as distillation, adsorption, crystallization, evaporation, extraction etc.

Topic 3 : Material balance involving Chemical Reactions:

Concept of limiting reaction, conversation, yield, liquid and gas phase reaction with/without recycler by-pass.

Topic 4 : Energy Balance

Heat capacity of pure gases and gaseous mixture at constant pressure, sensible heat changes in liquid enthalpy changes.

BOOK:

1. Stiochiometry : Bhat and Vora

Chemical process Princi

F.Y.B.Sc. PAPER-II, Section-l (1st TERM)

Industrial Fuels

Topic 1: Industrial Fuel

Introduction, calorific value & its determination, classification, Selection & properties, methods of processing fuel, numerical Problems — 6 L

Topic 2: Solid fuels

Wood, distractive distillation of wood, peat, lignite, different Types, formation, classification of coal, advantages & Disadvantages of solid fuel, analysis of coal, manufacture of coal gas, distillation of coal tar, fraction distillation of coal oil. — 12 L

Topic 3: Liquid fuels

Characteristic, petroleum, origin & source, composition & Classification, distillation, Thermal & catalytic (moving & fixed bed) cracking, aviation gasoline, kerosene, diesel, gas oil, rocket fuel — 12 L

Topic 4: Gaseous Fuels

Classification, type, water gas, producer gas, oil gas, LPG, biogas, advantages & disadvantages, analysis of fuel gases — 6 L

BOOK:

1. Industrial chemistry: B. K. Sharma, Ch. 3, p. 133-262

F.Y.B.Sc. PAPER-II, Section-ll (2nd TERM)

Extractive Metallurgy

Topic 1: Basic metallurgical Operations: 8 L

Pulverization, calcinations, roasting, refining

Topic 2: Physicochemical principles of extraction of 14 L

Iron. Aluminium, chromium, Magnesium, Copper

Topic 3: Inorganic materials of industrial importance 14 L

Their availability, forms, structure and modifications, alumina

Silica, silicates, clays, mica, carbon, zeolites

Total = 36 L

Books:

1. K. C. College Handbook
2. Industrial chemistry: B.K. Sharma
3. Industrial chemistry: Riegel
2. ples Part 1 : O. A. Hougen, K. M. watson & R. A.Ragats

Paper III Practicals

Based on Theory Paper I and Theory Paper II