

**SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR**



EFFECTIVE FROM JUNE – 2017-18

**M.Sc (Industrial Chemistry)
Semester: I**

Paper Code: PS01CICH21

Total Credit: 4

Title Of Paper: Industrial Analysis - I

Unit	Description in Detail	Weightage (%)
	Details of practicals to be worked out by department	100

Paper Code: PS01CICH22

Total Credit: 4

Title Of Paper: ChemEnggPracticals - I

Unit	Description in Detail	Weightage (%)
	Practicals based on various mass transfer operations. Details of practicals to be worked out by department.	100

Title Of Paper:Industrial Management & Psychology

Unit	Description in detail	Weightage (%)
1	Human Resource Management: Introduction, Acquisition of Human resources, Development of human resources,	25
2	Financial & Marketing Management: Nature and scope of financial management, financial statement and analysis, funds flow, cash flow, cost concepts, financial planning, investment planning and analysis, budgeting and business plan.	25
3	Introduction, analyzing marketing opportunities, developing marketing strategies, planning marketing programmes. Operational Management: Introduction, Organization of manufacturing; Production planning & control; material management.	25
4	Psychology In Industry: Organizational behavior, Attitude, Frustration, Morale and group processes, Stress management, Leadership, Fatigue, Types of conflicts and their resolutions .	25

References:

1. Marketing Management, Philip Kotter, Prentice- hall India 9th edition.
2. Personal or Human Resource & Personnel Management, D.A Decenzo, S.P. Robbins, PH India pub. 3rd edition.
3. Industrial Marketing Strategy, Fredrick Webster, 3rd edition, John wiley& Sons.
4. N. R. F Maier, Psychology in industry, Oxford and I B H Publishing co.
5. T. W. Harwell., Industrial Psychology, Oxford and I B H Publishing co.
6. Keith Davis & John . W. Newsyrom, Human Behaviour at work, 8th Edn. McGraw Hill
7. V.O. Jenks, Human Relations in Organizations Haper& Row (1990)
8. M. L. Blum, J. C. Naylor, Industrial Psychology, CBS Publishers

Title Of Paper: Mass Transfer Operations

Unit	Description in detail	Weightage (%)
1	Ficks law of diffusion, Mass transfer Co-efficients, Various types of Distillation & distillation equipments, Reflux Ratio, Enthalpy concentration method in the design of multistage tray towers and packed towers.	25
2	Gas Absorption: Minimum Liquid- Gas ratio for Absorbers, Co-current & counter current absorption, HETP in continuous contact equipments. Equipments for gas-liquid absorption, Dimensionless analysis using Rayleighs and Buckingham II method	25
3	Liquid- Liquid Extraction: Binodal solubility curves, Calculations for single stage and multi stage cross & countercurrent extraction, Differential Extractors,	25
4	Drying: Rate of batch drying, calculations for cross and through circulation drying, Rate of drying for continuous driers, Hold up in rotary driers. Filtration: Theory of Filtration, Filtration Calculations, Filtration in centrifuge	25

References :

1. Mass Transfer Operations, Robert Treybal, Mc.Graw Hill Co. 3rd Edition.
2. Unit Operations of Chemical Engineering, W. McCabe, J. Smith, Mc.Graw Hill Co 7th edition.
3. Chemical Engineering, Vol. 1 to VI , Coulson & Richardson, Pergamon Press. 3rd edition.
4. Fundamentals of Engg. Heat & Mass Transfer, R.C. Sachdev, Wiley Ltd.
5. Basic Principles and Calculations in chemical engg., D. Himmelblau, Prentice Hall
6. Chemical Engg. Handbook, Robert Perry. 7th edition.

Title Of Paper: Industrial Organic Chemistry

Unit	Description in detail	Weightage (%)
1	Preparations and applications of following reagents :Aluminum tertiary butoxide, Boron trifluoride, DCC, Ozone, Platinum, Palladium, Selenium, Polyphosphoric acid, Diazo acetic ester	25
2	Organic reaction mechanism:Introduction, meaning of organic reaction mechanism, Nature of fission of covalent bond, bond formation, types of organic reaction, classification of reagents, reaction intermediate, concept used in organic reaction mechanisms.	25
3	Name reactions :Aldol condensation, Cannizzaro reactions, Dakin, HoubenHoesch, Knoevenagel,Leucarts, Meerwinpondorffverely, Perkin, Wurtz, Wolf kishner, Wurtz-fittig	25
4	Manufacture, history ,properties and uses of: Benzoic acid, Dimethylformamide (DMF),Dimethyl sulfoxide (DMSO), Tetrahydrofuran, Dimethyl ether and Diethyl ether	25

References :

1. Industrial Organic Chemistry, K. Wissermel, H J Arpe, 3rd Edition, Willey pub.
2. Organic Synthesis based on Name reaction and unnamed reaction, A. Hassner& C. Stummer, Pergamon press. 2nd edition
3. Advanced Organic Chemistry- Reaction Mechanism & Structure, J. March, John Wiley & Sons. 4th edition
4. Organic Chemistry Vol 1 &Vol 2, I. L. Finar, Long man Scientific. 5th edition
5. Reaction mechanism and reagents in organic chemistry, Gurdeep R. Chatwal, Himalaya publishing house.
6. Organic chemistry, warren, oxford university press

Title Of Paper: Technology of oleo Chemicals & Surfactants

Unit	Description in detail	Weightage (%)
1	Chemistry of Fatty acids, Technology of Fat Splitting and Hydrolysis, Glycerine production, Separation of Fatty acids, Fatty acid distillation, Fractionation of Fatty acids.	25
2	Introduction to Oleochemicals, Overview of Basic Oleochemicals: Fatty acids, Fatty esters, Fatty alcohols and Fatty amines	25
3	Applications of Oleochemicals as: Bio fuels , Agrochemicals and lubricants	25
4	Surfactants: Introduction, Classification, Physicochemical properties of surfactants, practical importance of surfactants in various fields, manufacturing of various industrial surfactants.	25

References :

1. Treatise on Fats, Fatty acids & Oleochemicals (vol.1 & 2), Edited by O.P. Narulla, Published by: Industrial Consultants (India), New Delhi.
2. Oleochemical manufacture and Applications, Edited by Frank D. Gunstone & Richard J. Hamilton, Published by: Sheffield Academic Press, England.
3. Handbook of Surfactants by Porter, McGraw Hill Publishers
4. Chemistry and Technology of Surfactants, Edited by, Richard J. Farn, Blackwell Publishing.
5. Manufacture of Soaps, detergents and glycerine, Edgar, Norwood Pub.
6. Soaps and Detergents, By K S Parsuram, Tata McGraw Hill Pub.
7. Soaps their chemistry and Technology, J G Kane, Indian Central Oil seeds Co., Hyderabad.

Paper Code: PS01EICH22

**Total Credit:
4**

Title Of Paper:Water Pollution Control Technology

Unit	Description in detail	Weightage (%)
1	Water quantity: water and its properties, necessity of water, water demand, factors affecting water demand, population forecast by different methods. Water quality: sampling, sample preservation, physical characteristics, chemical characteristics and biological characteristics, drinking water standards, pathogens and disease, nuisance organisms	25
2	Supply of water: sources of water and their characteristics: water from precipitation, surface water, ground water & saline intrusion. Sewerage collection and distribution system (types of sewer, types of traps, types of sewerage system etc.)	25
3	Water treatment: Basic of unit operations: Aeration, limitation of aeration, types of aerators, chemical handling and feeding, coagulation and flocculation, rapid mixing, slow mixing, filtration slow sand, rapid sand pressure. Disinfection: criteria for good disinfection, factors affecting efficiency of disinfection. Chlorination: chlorine chemistry, chlorination practices in India. Introduction to advanced water treatments: Ion exchange, water softening, membrane technology, control of colour, odour, taste	25
4	Waste water minimization by different methods: Recycle, reuse, process modification, product/raw material substitutions, technology change etc. Water conversion by pinch technology	25

References :

1. Water supply and sanitary engineering ,G. S. Birdie & J. S. BirdieDhanpatrypub.Co. Ltd.
2. Ground water assessment and management, K. R. Karanath, Tata Mc Graw hill
3. Advance in waste water treatment tech. vol – 2, R. K. Trivedy & N. S. Roman Globalscience
4. Sewage disposal and air pollution engineering volume – 2 ,Garg S. K.
5. Water supply engineering volume – 1 ,Garg S. K.
6. Environmental Engineering, Howard Peavy