

**SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR**



EFFECTIVE FROM JUNE – 2018-19

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

Paper Code: PS03CICH21

Total Credit: 4

Title Of Paper: Synthesis Planning 1

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

Paper Code: PS03CICH22

Total Credit: 4

Title Of Paper: Synthesis Planning - II

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

Title Of Paper:

Spectroscopy & Instrumental Techniques

Unit	Description in detail	Weightage (%)
1	^1H NMR, ^{13}C NMR	25
2	Theory and instrumentation of FTIR and Mass Spectrometry Introduction to LC-MS/MS	25
3	Theory, Instrumentation and applications of HPLC, GC	25
4	Introduction and instrumentation of TGA, DSC & XRD	25

References:

1. Organic Spectroscopy, William Kemp, ILBS 3rd edition
2. Spectrometric identification of organic compounds, Silverstein, John Wiley pub. 6th edition.
3. Applications of absorption spectroscopy of organic compounds, J.R.Dyer. 10th reprint.
4. Instrumental methods of chemical analysis, B.K. Sharma, Goel pub., 26th edition.
5. Instrumental Methods of analysis, Willard and Dean, CBS, 7th edition.
6. Spectroscopy of organic compounds, P.S.Kalsi. Wiley eastern ltd.
7. HPTLC, D.Sethi, CBS 2nd edition

**Title Of Paper: Process Safety Management &
Transportation of Fluids**

Unit	Description in detail	Weightage (%)
1	Objective of PSM, Lethal dose, Flash point, Auto ignition point, Fire triangle, Fire Extinguishing systems, Pressure Relief valves & rupture discs, Colour Codes, OSHA & WISHA rules & regulations, Various types of Hazards, handling and Storage of flammable & combustible Chemicals, 5S of house keeping, Safety in unit operations and chemical reactors	25
2	Process Safety Information, Process Hazard Analysis, Process Risk Management, Training & Performance, Contractors, Process & Equipment Integrity, Management of Change, Incident Investigation, Compliance Audits, Trade Secrets, Employee Participation, Pre-startup Safety Review, Emergency Planning and Response, Audits & Corrective actions	25
3	Boundary layer concept, Reciprocating and Centrifugal pumps, Use of air vessels in pumps, Vapour locking and NPSH. Design of flow meters, Hagen Poiseuille equation & its applications	25
4	Motion of particles through fluids: Terminal settling velocity of particles settling under Stokes, Intermediate and Newton's range in free & hindered settling, Mechanism of fluidization, Design of fluidized bed columns	25

References :

1. "Plant Guidelines for Technical Management of Chemical Process Safety", by the Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers
2. "Chemical Process Safety, Fundamentals with Applications", Second Edition by Daniel A. Crowl & Joseph F. Louvar, Published by Prentice Hall, Inc. ISBN 0-13-018176
3. Safety and accident prevention in chemical operation, 2nd edition, Howard H.,
4. Handbook of occupational safety and health, Lawrence S
5. Practical Process Management,
6. Process Systems Analysis and Control, Coughanowr, Donald R., 3rd edition, McGraw Hill
7. Process Control, Peter Harriot, Mc Graw Hill

Title Of Paper:
Pharmaceutical Technology

Unit	Description in detail	Weightage (%)
1	Normal dosage forms: Solid dosage forms, Semi solid dosage – ointments, creams and gels, Liquid dosage forms.	25
2	New dosage forms: Control release dosage forms, Biodegradable polymer based microspheres for control drug delivery, Biodegradable nanoparticles, Nasal powder drug delivery, Aerosol drug delivery	25
3	Tablet production: Pharmaceutical pre-formulations, Role of pre-formulation in development of solid dosage forms, Tablet design, Tablet production systems, Tablet compression	25
4	GMP, GLP & Validation	25

References :

1. Handbook of pharmaceutical manufacturing, Edited by Shayne Cox Gad, Willey
2. interscience, USA
3. Remington: The science and practice of pharmacy, 19th edition, A.R. Gennaro, Mack
4. pub. Co.
5. Modern pharmaceuticals, G.S.Banker, Informa healthcare.
6. Ansel's Pharmaceutical dosage forms and drug delivery systems, 8th edition, H.C.Ansel, Lippincott Williams and wilkins publisher

Title Of Paper:

Processing Of Oils & Fats To Utility Products

Unit	Description in detail	Weightage (%)
1	Processes and plants employed for hydrogenation of oils, chemistry of hydrogenation of oils, catalyst for hydrogenation of oils, hydrogen production for hydrogenation of oils	25
2	Raw materials and technology of pea nut butter and edible oil blends	25
3	Raw materials for soap industries, plant & process employed in soap manufacturing	25
4	Raw materials for detergents, plants & processes employed for detergents, detergent additives	25

References :

1. Continuous processing of fats ,M.K.Schwitzer, Chem Pub Comp.,New York
2. Baileys Industrial Oils & fats products, Vol 1-5, John Wiley & Sons
3. Manufacture of soaps, detergents & glycerine, Edgar, Norwood Limited
4. Treatise on fats, fatty acids & oleo chemicals, O P. Narulla, Indl Consultants India Ltd., New Delhi
5. Soaps & Detergents, Parsuram K.S., Tata McGraw Hill Pub, New Delhi
6. Soaps, their chemistry & technology, J.G. Kane, Indian central oil seeds comp, Hyderabad

Title Of Paper:Industrial Polymers

Unit	Description in detail	Weightage (%)
1	Thermoplastics materials: Synthesis of monomers, Polymerization, Structure related properties, general properties and applications of various thermoplastics materials like polyolefin's, viz. Polyethylene, Polypropylene, PVC, Poly(vinyl acetate) and its derivatives, Acrylic plastics, plastics based on Styrene	25
2	Engineering thermoplastics: Intermediates, polymerization technology, structure ,properties & applications of aliphatic Polyamides ,PET and poly carbonates	25
3	Thermoplastic elastomers: Introduction, structure, properties and applications of various thermoplastic elastomers like styrene based elastomers, urethanes and olefinic elastomers	25
4	Introduction, Principle, working and applications of following polymer processing techniques:Injection moulding, extrusion, blow moulding, compression moulding, film casting ,thermoforming and vacuum forming	25

References :

1. Fundamental principles of polymer materials practices for engineers, Plastics Materials, Stephen L. Rosen, Barnes& Noble, New York.
2. Plastics Materials, J. A. Brydson, Butterworths, London.
3. Polymer Technology, Miles &Briston, J. G, Chemical Publishing company, Inc, New York.
4. Plastics Materials and Processes, Seymour S. Schwartz S.H. Goodman, Van Nostrand Reinhold, New York.
5. Plastics Technology, R. V. Milbey, McGraw Hill, Book Company New York,
6. Polymer science and Technology of Plastics and Rubber, P. Ghosh, McGraw hill, New York.
7. Engineering Plastics, R.W. Dyson, Chapman & Hall, New York