SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc. (Industrial Chemistry)
Semester: 3
Syllabus with Effect from: June 2019

Paper Code: PS03CICH27		**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: PS03CICH28		**Total Credit: 4**
Title Of Paper: Synthesis Planning - II		
Unit	**Description in Detail**	**Weightage (%)**
	Details of practical to be worked out by department.	100

Paper Code: PS03CICH29		**Total Credit: 4**
Title Of Paper: Spectroscopy & Instrumental Techniques		
Unit	Description in detail	Weightage (%)
1	Absorption Spectroscopy: Introduction, Theory and Instrumentation of ^{1}HNMR and Introduction to ^{13}C NMR.	25
2	Theory and instrumentation of FTIR and Mass Spectrometry.	25
3	Theory of Chromatography and Instrumentation and applications of HPLC.	25
4	Introduction, instrumentation and Application of TGA, DSC & XRD.	25

References:

1. Organic Spectroscopy, William Kemp, ILBS 3rd edition
2. Spectrometric identification of organic compounds, Silver stein,John willey 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. Willey eastern ltd.
7. HPTLC, D.Sethi, CBS 2nd edition

Paper Code: PS03CICH30		**Total Credit: 4**
Title of Paper: Process Safety Management & Transportation of Fluids		
Unit	Description in detail	Weightage (%)
1	Introduction to Industrial hygiene, Process safety management objectives, Lethal dose, IDHL, 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 housekeeping, 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 Poiseulle equation & its applications.	25
4	Motion of particles through fluids: Types of settling, 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, McGraw Hill

Paper Code: PS03CICH31		**Total Credit: 4**
Title Of Paper: Pharmaceutical Technology		
Unit	Description in detail	Weightage (%)
1	Drugs, Drug Targets, Pharmacokinetics, Pharmacodynamics, Preclinical testing & Clinical Trials	25
2	Solid dosage forms, Semi-solid dosage forms Preformulations and its role in development of solid dosage forms. Tablets: Types of tablets and tablet design and production Capsules: Hard & Soft shell capsules, Production of capsules QC of tablets and capsules	25
3	Advanced drug delivery systems: Sustained & Controlled release drug delivery system, Target oriented Drug delivery system, parenteral products	25
4	Regulatory Affairs and QA:GMP, GLP & Validation	25

References:

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

Paper Code: PS03EICH23		**Total Credit: 4**
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, Norwwod Limited
4. Treaties 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

Paper Code: PS03EICH24		**Total Credit: 4**
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 PVC, Poly(vinyl acetate) and its derivatives, Acrylic plastics	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, 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, D.C. Miles & J. H. Briston, 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