GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm

SEMESTER: V

Subject Name: Pharmaceutical Chemistry – VII (Medicinal Chemistry – I)
Subject Code: 2250004

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	Theory		Practical	
				External	Internal	External	Internal
3	0	3	6	80	20	80	20

Theory

Sr No	Course Contents	Total Hrs
1	An introduction to the subject of medicinal chemistry: History and development of medicinal chemistry, Drug therapy	02
2	Physiochemical properties of drug molecules influencing biological activity a) Solubility, Partition coefficient, Hydrogen bonding, Complexation, Ionization, Redox potential, Surface activity and protein binding b) Stereochemical features of drugs: geometric and optical isomers, Bioisosterism.	08
3	Introduction, history, classification, mechanism of action, adverse effects, therapeutic uses, structure activity relationship (SAR) and synthetic procedures of selected drugs and recent developments of following categories to be covered. (Synthesis of drugs mentioned in each category)	
	1) Drugs acting on respiratory tract • Antiasthmatics • Expectorants • Antitussive agents • Respiratory stimulants • Mucolytics • Decongestants	06
	2) Drugs acting on gastrointestinal tract • Antacids • Antisecretary (Synthesis: Ranitidine) • Proton pump inhibitors (Synthesis: Omeprazole) • Antiemetics • Antidiarrheals • Laxatives • Prokinetics • Antispasmodics and drug modifying intestinal motility • Drugs for irritable bowel syndrome	7
	3) Autocoids: a) Histamines and Histamine receptors, Antihistaminics:H_1antagonists (Synthesis:	08

	diphenhydramine, tripelenamine, chlorcylclizine, chlorpheniramine, promethazine, cyproheptadiene, cetrizine) H_2 antagonists b) Eicosanoids: history and discovery, eicosanoids biosynthesis, drug action mediated by eicosanoids, eicosanoids approved for human clinical use	
	4) Diagnostic agents: Radiopharmaceuticals, Radiological contrast media (Synthesis: diphenoxylate, diatrizoic acid)	02
	5) Drugs acting on ANS **a) Parasympathomimetic agents:** SAR- Parasympathomimetics (Synthesis: Neostigmine, Dicyclomine HCl) **b) Parasymatholytic agents:** SAR:- Muscarinic antagonists **c) Sympathomimetic agents:** SAR:- β-Phenylethanolamine class (Synthesis: Adrenaline, Salbutamol and Ephedrine) **d) Smpatholytic agents:** (Synthesis:- Propranolol and atenolol) **e) Neuromuscular blocking agents and ganglionic blockers**	12

Practical – 22500P4

Sr. No.	Content	No. of practical hours
A	**Separation and qualitative analysis of Organic binary mixtures containing having salt, acidic, phenolic, amphoteric, basic and neutral nature (Solid + Solid (Solid), Solid + Solid (Eutectic)) with derivative preparations.** **1. Salts (sodium benzoate, Sodium salicylate etc.)** **2. Acids (Benzoic acid, salicylic acid, cinnamic acid, acetyl salicylic acid etc.)** **3. Phenols (α-Naphthol, β-Naphthol, o/m/p-nitrophenol etc.)** **4. Strong acidic amphoteric (P-amino benzoic acid, o-amino benzoic acid, sulphanilic acid etc.) and weak acidic amphoteric (Sulphanilamide etc.)** **5. Bases (α-Naphthylamine, p-anisidine, diphenyl amine, o/m/p-nitroaniline etc.)** **6. Neutrals (Benzophenone, m-dinitrobenzene, acetanilide, benzamide, naphthalene etc.)**	30
1	Separation and qualitative analysis of organic binary mixture	
2	Separation and qualitative analysis of organic binary mixture	
3	Separation and qualitative analysis of organic binary mixture	
4	Separation and qualitative analysis of organic binary mixture	
5	Separation and qualitative analysis of organic binary mixture	
6	Separation and qualitative analysis of organic binary mixture	
7	Separation and qualitative analysis of organic binary mixture	

8	Separation and qualitative analysis of organic binary mixture	
9	Separation and qualitative analysis of organic binary mixture	
10	Separation and qualitative analysis of organic binary mixture	
B	**Synthesis of some organic compounds including some heterocyclic compounds:**	12
11	Benzimidazole from o-phenylenediamine	
12	2-phenylindole from phenyl hydrazine	
13	Methyl orange from sulphanilic acid	
14	9,10dihydroanthracene-9,10-endo-α,β-succinic anhydride from anthracene (Diels-Alder Reaction)	
15	Workshops on stereo models using some selected drugs	3

References Books:

1. Textbook of organic medicinal and pharmaceutical chemistry, J. N. Delagado and W. A. R. Remers, edn, Wilson and Giswolds , J. Lippincott Co. Philadelphia
2. Principles of medicinal chemistry, W. C. Foye, Lea and febiger, Philadelphia
3. Burgers Medicinal chemistry, John Wiley and sons, H. E. Wolff, edn, New York
4. Strategies for organic drug synthesis and design, Daniel Lednicer, John Wiley and Sons USA
5. B Fundamentals of drug metabolism and disposition. . N. Ladu, H. G. Mandel and E. L. Way.William and Willkins co. Baltimore
6. Organic chemistry Vol. I and Vol. II. I. L. Finar. ELBS/Longman, London
7. Vogels Text books practical organic chemistry, ELBS/Longman, London
8. Practical organic chemistry, Mann and Saunders, Orient Longman, UK
9. The systematic identification of organic compounds, Shriner, Hermann, Morill, Curtin and Fusion. John Wiley and Sons