

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm
SEMESTER: VII

Subject Name: Pharmaceutical Technology I
Subject Code: 2270002

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.	Sterile dosage forms: Definitions, Advantages, Disadvantages, Ideal requirements and Formulation of sterile dosage forms, Water for injection-Preparation and quality control, Design and requirements for production area-Aseptic techniques, sources of contamination and methods of prevention, design of aseptic area, laminar flow benches, services and maintenance, containers and closures, methods of filling including form fill and seal technology. Evaluation of sterile dosage forms, Parenteral suspensions, Prefilled syringes, Parenteral nutrients, Freeze dried products, Nanosuspensions etc, I.P. Products. Ophthalmic preparations: Requirements, formulations, methods of preparations, containers and evaluation. I.P. Products.	12
2.	Liquid dosage forms: Introduction, advantages and disadvantages, types of additives used-vehicles, stabilizers, preservatives, suspending agents, emulsifying agents, solubilizers, colors, flavors etc; manufacturing, packaging and evaluation of clear liquids, suspensions and emulsions (including microemulsion and multiple emulsion) and brief outline of other liquid products such as extracts, tincture, infusion etc., I.P. Products.	7
3.	Semisolid dosage forms: Definition, Advantages and disadvantages, types, mechanisms of drug penetration through skin, factors influencing penetration, semisolid bases, their selection and ideal requirements of bases. General formulation of semisolids, clear gels, suppositories; Manufacturing procedure, evaluation and packaging. I.P. products.	7
4.	Pharmaceutical aerosols: Definition, propellants, general formulation of aerosols, containers, manufacturing (cold filling and pressure filling technique) and packaging methods, pharmaceutical applications, evaluation of aerosol.	6
5.	Cosmeticology and cosmetic preparations Fundamentals of cosmetic science, structure and functions of skin and hair, formulation, preparation and packaging of cosmetics for skin -Sunscreen, moisturizers, cold cream, and vanishing cream, hair - Shampoo and conditioners, dentifrice-powders, gels, paste and manicure preparations like-nail polish, lipsticks, eye lashes, brief introduction to cosmeceuticals, baby care products, shaving cream, hygienic products	6
6.	Good Manufacturing Practice for Pharmaceuticals and validation Brief Introduction to GMP (schedule M) and quality assurance, practice of GMP- Procedure (SOPs), Building, Equipment, Personnel, Components, Documentation, Containers, Labeling, Laboratory Control, Distribution Records, Recovery & Reprocessing. Introduction to validation, validation of selective unit operations (e.g. granulation, compression, mixing) used in tablet manufacturing and steam sterilizer.	7

Practical – 22700P2

1.	Formulation and evaluation of syrup
2.	Formulation and evaluation of oral Liquids (emulsions, liniment, calamine lotion IP/BPC etc)
3.	Formulation and evaluation of milk of magnesia/aluminium hydroxide gel antacid suspension, dry suspension
4.	Formulation and evaluation of diclofenac sodium gel
5.	Preparation and evaluation of face powder
6.	Preparation and evaluation of lipstick
7.	Preparation and evaluation of cold cream
8.	Preparation and evaluation of vanishing cream
9.	Preparation and evaluation of tooth paste/ tooth powder
10.	Formulation and evaluation of dextrose injection
11.	Formulation and evaluation of NaCl injection
12.	Formulation and evaluation of Ascorbic Acid injection
13.	Formulation and evaluation of Diclofenac sodium injection
14.	Formulation and evaluation of any oil based injection.
15.	Formulation and evaluation of eye drops
16.	Formulation and evaluation of multidose injection.
17.	Formulation and evaluation of IV/peritoneal infusion
18.	Formulation and evaluation of microemulsion
19.	Formulation and evaluation of calcium gluconate injection

References Books:

1. The Theory and Practice of Industrial Pharmacy by L Lachman, H Lieberman and J Kanig.
2. Gennaro, Alfonso R., Remington: The Science and Practice of Pharmacy, Vol-I & II, Lippincott Williams & Wilkins, New York
3. Pharmaceutical Dosage Forms and Drug Delivery Systems by Ansel & others.
4. Pharmaceutics: The Science of Dosage Form Design by Michael E. Aulton
5. Pharmaceutical Dosage Forms: Disperse systems: Vol.1, Vol. 2 and Vol.3, Ed. by Lieberman, Leon Lachman and Joseph B. Schwartz, Marcel Dekker Inc., New York.
6. Pharmaceutical Dosage Forms: Parenteral Medication: Vol.1, Vol. 2 and Vol.3, Ed. by Lieberman, Leon Lachman and Joseph B. Schwartz, Marcel Dekker Inc., New York
7. GMP for Pharmaceuticals by S. H. Willig and J. R. Storker.
8. Cosmetics by Poucher
9. Latest editions of IP, BP, USP.