

Pharmacy: SECTION I
SYLLABUS AND MARKS DISTRIBUTION

Section- I

PHARMACEUTICS

A.	Pharmaceutics - I	----- 20 Questions
B.	Pharmaceutics - II	----- 20 Questions
C.	Pharmaceutical Jurisprudence	----- 10 Questions

PHARMACEUTICS-I

1. Introduction of different dosage forms. Their classifications with examples-their relative applications. Familiarisation with new drug delivery systems.
2. Introduction to Pharmacopieas with special reference to the Indian Pharmacopea.
3. Metrology-Systems of weights and measures. Calculations including conversion from one to another system. Percentage calculations and adjustments of products. Use of allegation method in calculations, Isotonic solutions.
4. Packing of pharmaceuticals-Desirable features of a container-types of containers, study of glass and plastics as materials for containers and rubber as a material for closures-their merits and demerits. Introduction to aerosol packaging.
5. Size reduction Objectives and factors affecting size reduction, methods of size reduction- Study of Hammer mill, ball mill, Fluid Energy Mill and Disintegrator.
6. Size separation- Size separation by sifting Official Standard for powders. Sedimentation methods of size separation. Construction and working of cyclone separator.
7. Mixing and Homogenization-Liquid-mixing and powder mixing. Mixing and semisolid, Study of Siliver –son Mixer-Homogeniser, planetary Mixer, Agitated powder mixer. Triple Roller Mill, Propeller Mixer-Coiloid Mill and Hand Homogeniser. Double cone mixer.
8. Clarification and Filtration-Theory of filtration. Filter media; Filter aids and selections of filters. Study of the following filtration equipments Filter Press, Sintered Filter, Candles , Metafilter.
9. Extraction and Galenicals-(a) Study of percolation and maceration and their modification, continuous hot extraction-Applications in the preparation of tinctures and extracts.
(b)Introduction to Ayurvedic dosage forms.
10. Heat process Evaporation- Definition Factors affecting evaporation Study of evaporation and Evaporating pan.
11. Distillation-simple distillation and Fractional distillation, Steam distillation and vaccum distillation Study of Vaccum still, preparation of Purrified Water I.P and water for Injecion I.P. Construction and working of the still used for the same.
12. Introduction to drying process- Study of Tray Dryers; fluidized Bed Dryer, Vaccum Dryer and Freezer Dryer.
13. Sterlization – Concept of sterilization and its differences from disinfection – Thermal resistance of micro-organism. Detailed study of the following sterilization process.
 - (i) Sterilization with moist heat.
 - (ii) Dry heat sterilization.
 - (iii) Sterilization by radiation.
 - (iv) Sterilization by filtration and
 - (v) Gaseous sterilization

Aseptic techniques. Application of sterilization process in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipments.

14. Processing of tablets-Definition; Different types of compressed tablets and their properties. Processing involved in the production of tablets; Tablets; Physical Standards including Disintegration and Dissolution. Tablet coating-sugar coating; Film coating, enteric coating and, microencapsulation. Tablet coating may be dealt in an elementary manner.
15. Processing of Capsules- Hard and Soft gelatin capsules; different sizes capsules; filling of capsules; handling storage of capsules; Special application of capsules.
16. Study of immunological products likes sera vaccines, toxoids& their preparations.

PHARMACEUTICS - II

1. Dispensing pharmacy:
 - (i) Prescriptions: Reading and understanding of prescription: Latin terms commonly used (Detailed study is not necessary), Modern methods of prescribing, adoption of metric system. Calculations involved in dispensing.
 - (ii) Incompatibilities in Prescriptions – Study of various types of incompatibilities – Physical, chemical and therapeutic.
 - (iii) Posology – dose and Dosage of drugs, Factors influencing dose, Calculations of doses on the basis of age, sex and surface area, Veterinary doses
2. Dispensed Medications:

(Noted: A detailed study of the following dispensed medication is necessary. Methods of preparation with theoretical and practical aspects. Use of appropriate containers and closures, Special labeling requirements and storage conditions should be highlighted).

 - (i) Powders: Types of powders – Advantages and disadvantages of powders. Granules. Cachets and Tablet triturates. Preparation of different types of powders encountered in prescription Weighing methods, possible errors in weighing, minimum weighable amounts and weighing of material below the minimum weighable amount, geometric dilution and proper usage and care of dispensing balance.
 - (ii) Liquid Oral Dosage Forms:
 - (a) Monophasic – Theoretical aspects including commonly used vehicles, essential adjuvant like stabilizers, colourants and flavours, with examples.
Review of the following monophasic Liquids with details of formulation and practical methods.

Liquids of internal	Liquids for external administration or used on mucus membranes
mixtures and concentrates syrups	Gargles Mouth washes Throat Paints Douches

(b) Biphasic Liquid Dosage Forms:

- (i) Suspensions (elementary study)- suspensions containing diffusible solids and liquids and their preparations. Study of the adjuncts used like thickening agents, wetting agents, their necessity and quantity to be incorporated suspensions of precipitate forming liquids like Tinctures, their preparations and stability. Suspension produced by chemical reaction. An introduction to flocculated, non- flocculated suspension system.
- (ii) Emulsions – Types of emulsions, identification of emulsion system formulation of emulsions, selection of emulsifying agents Instabilities in emulsions. Preservation of emulsions.
- (iii) Semi- Solid Dosage Forms:
 - a) Ointments – Types of ointments, classification and selection of dermatological vehicles. Preparation and stability of ointments by the following process.
 - (i) Trituration (Fusion) (ii) Chemical reaction (iii) Emulsification.
 - (b) Pastes –Difference between ointments and pastes. Bases of pastes. Preparation of pastes and their preservation.
 - (c) Jellies-An introduction to the different types of jellies and their preparation.
 - (d) An elementary study of poultice.
 - (e) Suppositories and pessaries -their relative merits and demerits. Types of suppositories, suppository bases, classification, Properties, preparation and packing of suppositories, Use of suppositories for Drug absorption.
 - (iv) Dental and cosmetic Preparations:
 - Introduction to Dentrifices, Facial cosmetics, Deodorants, Antiperspirants, Shampoos, Hair dressings and Hair removers.
 - (v) Sterile Dosage Forms:
 - (a) Parenteral dosage forms- definitions. General requirements for parenteral dosage forms, Types of parenteral formulations, vehicles, adjuvants, processing personnel, facilities and Quality control. Preparation of intravenous fluids and admixtures. Total parenteral nutrition, dialysis fluids.
 - (b) sterility testing, particulate matter monitoring faulty. seal packaging.
 - (c) Ophthalmic products-study of essential characteristics of different ophthalmic preparations. Formulation additives. special precautions in handling and storage of ophthalmic products.

PHARMACEUTICAL JURISPRUDENCE

1. Origin and nature of pharmaceutical legislation in India, its scope and objectives, Evolution of the “Concept of Pharmacy” as an integral part of the Health Care System.
2. Principles and significance of Professional Ethics, Critical study of the code of pharmaceutical Ethics drafted by Pharmacy Council in India
3. Pharmacy Act, 1948 – General study of the Pharmacy Act with special reference to Education Regulations, working of State and Central Councils, constitution of these councils and functions, Registration procedures under the Act.

4. The Drugs and Cosmetics Act, 1940 – General study of the Drugs and Cosmetics Act the Rules hereunder. Definitions and salient features related to retail and wholesale distribution of drugs. The powers of Inspectors, the sampling procedures and the procedure and formalities in obtaining licenses under the rule. Facilities to be provided for running a Pharmacy effectively. General study of the Schedules with special reference of schedules C, C1, F, G, J, H, P and X and salient features of labeling and storage condition of drugs.
5. The Drugs and Magic Remedies (Objectionable Advertisement) Act, 1954 – General study of the Act Objective, special reference to be laid on advertisements. Magic remedies and objectionable and permitted advertisements – disease which cannot be claimed to be cured.
6. Narcotic Drugs and Psychotropic Substances Act, 1985 – A brief study of the act with special reference to its objectives, offences and punishment.
7. Brief introduction of the study of the following acts.
 - i) Latest Drugs (Price Control) Order in force.
 - ii) Poisons Act 1919 (as amended to date)
 - iii) Medicinal and Toilet Preparations (Excise Duties) Act, 1971 (as amended to date)
 - iv) Medical Termination of Pregnancy Act, 1971 (as amended to date)

ANNEXURE III

MODEL QUESTIONS FOR PHARMACY

1. Ball mill works on the principle of
 - 1) Impact
 - 2) Attrition
 - 3) Crushing
 - 4) Compaction
2. B.C.G. Vaccine contains
 - 1) Living culture
 - 2) Non-living culture
 - 3) Natural culture
 - 4) Artificial Culture
3. Acacia is not used as
 - 1) Diluent
 - 2) Suspending agent
 - 3) Emulsifying agent
 - 4) Binder