



SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Sathy Main Road, SNS Kalvi Nagar,
Saravanampatti Post, Coimbatore - 641 035,
Tamil Nadu.



ER20-12T: PHARMACEUTICAL CHEMISTRY

I – D. PHARM

CHAPTER 1

DETAIL ANSWERS (5M)

1. Write the principle, reaction and procedure involved in the Limit test for Iron
2. Define impurity and explain its effect on pharmaceutical preparations.
3. Enlist the various sources of impurities found in pharmaceutical substances.
4. Describe the principle, reaction and procedure involved in the Limit test for Chloride.
5. Discuss Arsenic Limit Test IP along with the apparatus used and reactions involved.
6. Give the principle and reaction involved in the limit test for Arsenic with a neat diagram of the apparatus used for it.
7. Write briefly about the different types of Errors and methods to minimize the Errors.
8. Explain principle involved in the limit test for lead IP with reactions.
9. Write short notes on significant figure.
10. Explain the importance of use of the following reagents: (i) Thioglycolic acid in iron limit test IP (ii) Barium chloride in sulphate limit test IP. (iii) Mercuric Chloride Paper in Arsenic Limit Test IP.
11. Write the principle involved in the limit test of Sulphates.
12. Define Error. Classify them.
13. What are the sources of Error?
14. Give the scope and objectives of pharmaceutical chemistry.

SHORT ANSWERS (3M)

1. Give the principle involved in the Limit test for Iron.
2. Draw a well labeled diagram of apparatus used for limit test for Arsenic. Name it.
3. Define Errors.
4. Define Accuracy.
5. Define Precision.
6. Write four sources of impurities in the pharmaceuticals with examples.
7. Write the principle and reaction involved in the limit test for chloride IP.
8. Explain: (i) Limit tests (ii) Significant figures
9. Explain the role of lead acetate cotton plug and mercuric chloride paper in Arsenic limit test

10. Uses of Citric acid in the limit test of Iron.
11. Use of Silver nitrate in the limit test for Chloride.
12. Define Impurities

CHAPTER 2

DETAIL ANSWERS (5M)

1. Discuss Bronsted and Lowry concept of acids and bases. Explain its advantages over Arrhenius Theory.
2. Explain Arrhenius theory of acids and bases with example. Give its limitations.
3. Explain Lewis acid-base theory with examples.
4. Describe on various steps involved in gravimetric analysis.
5. What is Gravimetry? Explain the steps involved in Gravimetry.
6. Explain the masking and de-masking agents in complexometric titrations.
7. Define Gravimetric analysis. Write a note on Co-precipitation and Post precipitation.
8. Explain on various solvents used in non-aqueous titration.
9. Write the principle of redox titration and give a note on indicators used in redox titration.
10. Discuss in detail about Modified Volhard's method.
11. Define Complexometric titration. Explain the Different types in detail.
12. Write a brief note on pM indicators.
13. Write the principle of Complexometric titration.
14. Classify complexometric titrations with example.
15. Mention the types of redox titrations.
16. Discuss the principle and application of Redox titration
17. Define Titration. Explain the choice of indicators in Acid-base titration.
18. Classify Redox indicator.
19. Estimation of Sodium chloride by Mohr's method.
20. What are the different indicators used in Complexometric titration? Describe the use of Masking and Demasking agents in Complexometry.
21. Briefly describe Mohr's method with its limitations.
22. Briefly describe about Volhard's method.
23. Write the principle involved in Non-aqueous titration.
24. Briefly describe about Fajan's method.
25. Enlist the applications of gravimetric method.
26. Define titration. Explain different types of titrations with principle.

SHORT ANSWERS (3M)

1. Define Indicator and write the different types of Acid Base indicator.
2. Define the terms with examples (i) Lewis Acid and Lewis Base

3. What is masking agent?
4. What are Masking and Demasking agent?
5. What is Co-Precipitation
6. Define Acids and Bases.
7. What is co-precipitation and post precipitation?
8. What are Non aqueous solvents?
9. Explain Bronsted acid-base theory.
10. Explain Lewis Acid - Base theory.
11. Define acid and base as per Arrhenious theory and write drawbacks of it.
12. List out types of solvents used in Non-aqueous titrations.
13. Write notes on pM indicators
14. What is gravimetric analysis
15. What are chelating agents?
16. Define ligands.
17. What is Nernst equation?
18. What is Gravimetric Analysis?
19. Define Non-Aqueous titration with example
20. Write about Self-indicator with examples.
21. Define Assay
22. Distinguish between iodimetry and iodometry.
23. Define titration curve
24. Define primary and secondary standards with example.
25. What is primary standard? Explain with examples.
26. Write about quantitative and qualitative analysis.
27. Explain the principle of back titration
28. Define Amphiprotic solvents with e.g.
29. What are self indicators? Give examples.
30. Solubility product.
31. What are mixed indicators?
32. Differentiate between internal and external redox indicators.
33. What do you mean by Adsorption indicators? Give examples.
34. Define Indicators.
35. Define Precipitation titration.
36. What is primary standard? Give examples.
37. What is Sequestering agent?
38. Define the terms i). Oxidation ii). Reduction

CHAPTER – 3**HAEMATINICS****DETAIL ANSWERS (5M)**

Write the method of preparation, properties, formulations, market preparations, storage conditions and uses of Ferrous Sulphate.

SHORT ANSWERS (3M)

Write synonym, formula and uses of Ferrous sulphate.

Name three official compounds of iron along with their molecular formula.

Define Haematinics.

GASTRO INTESTINAL AGENTS**DETAIL ANSWERS (5M)**

Define with examples (ii) Protectives ii). Antacid iii). Cathartics iv). Acidifying agents v). Adsorbents

Define and classify antacids with examples.

Give synonym, chemical formula, properties, formulations, market preparations, storage conditions and uses of calcium carbonate.

Discuss about the preparation, properties, formulations, market preparations, storage conditions and uses of sodium bicarbonate.

Give the preparation and properties of any one Antacid.

Enlist properties for an ideal antacids. Why antacids are preferred in combination?

Give preparation, properties, formulations, market preparations, storage conditions and uses of Aluminium hydroxide gel.

SHORT ANSWERS (3M)

Define achlorhydria. Give properties, uses and molecular formula of any one agent used to treat achlorhydria.

Give molecular formula for the following: i). Sodium bicarbonate ii). Calcium carbonate

Mention the synonyms and uses of Hydrochloric acid.

TOPICAL AGENTS

DETAIL ANSWERS (5M)

Define the terms with examples (i) Antiseptic (ii) Disinfectant (iii) Germicide (iv) Bacteriostatic v). Astringent

Define different terminologies as antimicrobial agents.

Define and classify gastro intestinal agents with examples.

Define Antimicrobial agents and explain their mechanism of action.

Write about the preparation, synonyms, molecular formula, formulations, market preparations, storage conditions and uses of chlorinated lime.

SHORT ANSWERS (3M)

Define Astringents. Mention their uses.

Write reactions involved in the effect of heat on Boric acid.

Explain preparation, properties, uses and storage conditions of hydrogen peroxide

Give synonyms, molecular formula and uses for Boric acid.

Write the properties, formula and uses of potassium permanganate.

DENTAL PRODUCTS

DETAIL ANSWERS (5M)

Define and classify dental products with examples.

Explain the following terms with examples: (i) Desensitizing agent (ii) Anticaries agent (iii) Polishing agents

SHORT ANSWERS (3M)

Define the following terms i). Anticaries Agent ii). Dental Fluorosis .

Give the role of fluorides in dental products.

Define dentifrices with examples.

MEDICINAL GASES**DETAIL ANSWERS (5M)**

Give properties, uses, storage and labelling of Nitrous oxide and Carbon dioxide gas.

SHORT ANSWERS (3M)

Discuss the role of Oxygen & Carbon dioxide in biological system.

Give properties and uses of oxygen.

Give chemical formula for i). Nitrous oxide ii). Oxygen (iii) Carbon dioxide

CHAPTER-4

Give structure and method of numbering for

- Pyridine
- Acridine
- Furan
- Imidazole
- Thiazole
- Benzimidazole
- Acridine
- Quinoline.
- Pyrazole
- Isoquinoline
- Piperidine

Give the structure of following organic group

- Cyano
- Aniline
- Benzyl
- Acetyl
- Isopropyl
- Anilino

Give the name and structure of drug containing following heterocycle

- Furan
- Pyridine
- Indole
- Pyridazine
- Barbituric acid

- Hydantoins.
- Azole
- Pyrazole
- Piperazine
- Pyrimidine
- Purine
- Quinoline
- Phenothiazine
- Pyrazine
- Imidazole
- Benzodiazepine

CHAPTER-5

DRUGS ACTING ON CNS

ANAESTHETICS

DETAIL ANSWERS (5M)

Define and classify general Anaesthetics based on their route of administration.

List out the ideal characteristics of general anaesthetics

Write the structure, chemical name, formulations, brand names, storage conditions and uses Ketamine HCl.

SHORT ANSWERS (3M)

Name two barbiturates used as General Anaesthetics.

Explain the mechanism of action of general anaesthetics.

Write a note on inhalation anaesthetics with their structure and medicinal uses.

Mention the different stages of anaesthesia.

SEDATIVES AND HYPNOTICS

DETAIL ANSWERS (5M)

Define and classify sedatives and hypnotics with suitable examples.

Write the structure, chemical name, formulations, brand names, storage conditions and uses of Diazepam.

Give structure, chemical name, properties, uses, formulations and brand name of Phenobarbitone.

SHORT ANSWERS (3M)

Mechanism of action of sedatives and hypnotics.

Give the structure, IUPAC name and medicinal uses of alprazolam.

Name the drug present in following brands i). Valium ii). Luminal

ANTIPSYCHOTICS

DETAIL ANSWERS (5M)

Give the structure and uses of i). Haloperidol ii). Chlorpromazine hydrochloride.

Write a short note on anti-psychotic drugs.

SHORT ANSWERS (3M)

Define Antipsychotics.

ANTICONVULSANTS

DETAIL ANSWERS (5M)

Write a brief note on benzodiazepines as anticonvulsant agent.

What is epilepsy? Classify anticonvulsants with example.

SHORT ANSWERS (3M)

Give the structure and uses of Phenytoin.

Write briefly on mechanism of action of phenytoin.

Give the structure of carbamazepine and mention its uses.

What are anticonvulsants?

ANTI-DEPRESSANTS

DETAIL ANSWERS (5M)

Draw structure and give chemical name, types of formulations, brand names and medicinal uses of Imipramine.

SHORT ANSWERS (3M)

Define Thymoleptics / Antidepressant.

Give brand names, type of formulations and uses of Amitriptyline.

CHAPTER-6

DRUGS ACTING ON ANS

SHORT ANSWERS (3M)

What are adrenergic neurotransmitters?

What are cholinergic receptors?

Explain the muscarinic and nicotinic receptors and their distribution.

What are adrenergic receptors?

SYMPATHOMIMETIC AGENTS

DETAIL ANSWERS (5M)

Classify Sympathomimetic agents.

Catecholamines.

Classify Adrenergic drugs. Draw structure of any one Catecholamine.

Write formulations, brand names, storage conditions and uses of Terbutaline

Write formulations, brand names, storage conditions and uses of Salbutamol

Write formulations, brand names, storage conditions and uses of Hydroxy amphetamine

Write formulations, brand names, storage conditions and uses of Adrenaline

SHORT ANSWERS (3M)

Give brand names and uses of Salbutamol.

Draw structure of phenylphrine and mention its uses.

Name any two indirect acting sympathomimetics with its uses.

SYMPATHOLYTIC AGENTS**DETAIL ANSWERS (5M)**

What are sympatholytics? Write structure and uses of Propranolol.

Write formulations, brand names, storage conditions and uses of Tolazoline

Give structure, IUPAC name, formulations, brand names, storage conditions and uses of Atenolol.

SHORT ANSWERS (3M)

Define beta-adrenergic blocking drugs

Give the medicinal uses of (a) Propranolol (b) Tolazoline.

PARASYMPATHOMIMETIC AGENTS**DETAIL ANSWERS (5M)**

Classify parasympathomimetic agents.

Cholinesterase reactivator.

Describe the chemistry of irreversible inhibitors of cholinesterase and their mode of action.

Acetylcholine.

Carbachol

Neostigmine

Pralidoxime

Pilocarpine.

SHORT ANSWERS (3M)

Define Parasympathomimetics.

Give stability and storage conditions of Acetylcholine.

Write the medicinal uses of i). Neostigmine ii) Carbachol

Write the structure and uses of Pilocarpine.

PARASYMPATHOLYTIC AGENTS**DETAIL ANSWERS (5M)**

Give the structure and uses of: (i) Atropine ii). Dicyclomine hydrochloride.

Write a note on synthetic cholinergic blocking agents.

Classify cholinergic blocking agents.

Write a note on cholinergic blocking agents.

Ipratropium bromide.

Tropicamide

SHORT ANSWERS (3M)

Write the medicinal uses of Tropicamide and Ipratropium bromide.

CHAPTER-7**DRUGS ACTING ON CVS****DETAIL ANSWERS (5M)**

Define Cardiovascular agent. Classify them based on their therapeutic uses with examples

Classify Antihypertensive agent with examples.

Classification of anti-arrhythmic drugs.

Classify antianginal drugs. Write the mechanism and uses of Isosorbide dinitrate.

Write the brand names and uses of: a). Lidocaine hydrochloride b). Verapamil c). Nifedipine d). Hydralazine e). Clonidine.

Write a note on calcium channel blockers.

Procainamide

Verapamil

Phenytoin

Lidocaine

Methyldopate HCl.

Hydralazine

Nifedipine

SHORT ANSWERS (3M)

Define the following terms with example. (i) Cardiotonic (ii) Vasodilator

Explain the mechanism of action and therapeutic uses of ACE inhibitors.

Mechanism of action of Anti-arrhythmic drugs.

Define and give example for Vasodilators.

Mention the mechanism of Quinidine sulphate.

Give the names of two drugs from the following categories (i) Antihypertensives (ii) Anti-arrhythmic drugs

Discuss on MOA of Methyldopate HCl.

CHAPTER-8

DIURETICS

DETAIL ANSWERS (5M)

Define and classify diuretics with examples.

Explain the mechanism of action of Diuretics.

What are Potassium sparing Diuretics? Give examples.

Furosemide.

Acetazolamide

SHORT ANSWERS (3M)

Write the clinical importance of potassium sparing diuretics. Give example.

Give any two examples of Thiazide class of Diuretics and discuss its mechanism of action.

Give examples for High ceiling and Carbonic anhydrase inhibitor type diuretics.

CHAPTER-9**HYPOGLYCEMIC AGENTS****DETAIL ANSWERS (5M)**

Define 'Diabetes mellitus'. Discuss storage, precautions and labelling of Insulin preparations.

Classify hypoglycemic agents with examples.

Detail on Insulin and its preparations.

Metformin

SHORT ANSWERS (3M)

Define diabetics and its types

In what dosage form the following drugs are given (i) Insulin ii). Metformin

Give stability storage condition of Insulin

Name three oral hypoglycemic agent.

Explain the mechanism of action of biguanides as antidiabetic drugs.

Give the structure and uses of Metformin.

CHAPTER-10**ANALGESIC AND ANTI-INFLAMMATORY AGENTS & NSAIDs****DETAIL ANSWERS (5M)**

Give structure, chemical name, properties, storage conditions and uses of Aspirin.

What are narcotic analgesics? Give classification of narcotic analgesics with examples.

Write the structure and uses of: i) Aspirin ii) Ibuprofen

Classify anti-inflammatory agents with examples for each class.

Morphine analogues.

Narcotic antagonists.

Piroxicam

Mefenamic acid

SHORT ANSWERS (3M)

Give two brand names of following drugs (i) Paracetamol (ii) Aspirin (iii) Ibuprofen

Give the structure and uses of Paracetamol

Explain the following terms i). Analgesic ii). Anti-inflammatory agent

Enumerate the facts about anti-inflammatory agents.

Write the brand names and uses of: i) Mefenamic acid ii) Diclofenac.

CHAPTER-11**ANTI-INFECTIVE AGENTS****ANTIFUNGAL AGENTS****DETAIL ANSWERS (5M)**

Write a short note on Miconazole

Antifungal agents

Give a note on Azole antifungals.

SHORT ANSWERS (3M)

Write the structure for Ketoconazole

Brief on the mechanism of action of naftifine

URINARY TRACT ANTI-INFECTIVE AGENTS**DETAIL ANSWERS (5M)**

Define and classify drugs used for Urinary tract infection (UTI).

SHORT ANSWERS (3M)

Ciprofloxacin.

ANTI-TUBERCULAR AGENTS**DETAIL ANSWERS (5M)**

Classify antitubercular drugs with examples.

Ethambutol

PAS

Pyrazinamide.

Define Tuberculosis and Anti- tubercular agents. Write structure, mechanism of action and uses of Isoniazid.

Pyrazinamide

Rifampicin.

Write the mechanism of action and structure of any one class of antitubercular agents.

SHORT ANSWERS (3M)

Name the drugs used in Tuberculosis.

ANTIVIRAL AGENTS

DETAIL ANSWERS (5M)

Write the structures and uses of i). Acyclovir ii). Amantadine Hcl

Classification of anti – viral agents.

SHORT ANSWERS (3M)

Define antivirals.

ANTIMALARIALS

DETAIL ANSWERS (5M)

Chloroquine.

Define and classify Antimalarial agents.

Quinine sulphate.

Write a note on Anti – malarial drugs.

Pyrimethamine.

Give an account on biguanide antimalarials

Define malaria and write a note on the causative agents.

SHORT ANSWERS (3M)

Give structure and uses of Chloroquine phosphate.

SULFONAMIDES**DETAIL ANSWERS (5M)**

Give structure, properties and uses of sulphadiazine.

What is Co-trimoxazole? Explain mechanism of action and give two brand names of Co-trimoxazole.

Dapsone.

Sulfamethoxazole

Sulfacetamide

SHORT ANSWERS (3M)

Draw the structure from the chemical name and name the drug: Ni-acetyl Sulfanilamide

CHAPTER-12**ANTIBIOTICS****DETAIL ANSWERS (5M)**

Classify antibiotics with examples.

Penicillin G

Write a short note on Beta lactamase inhibitors.

Write a note on Macrolide antibiotics.

Erythromycin.

Chloramphenicol.

Tetracycline

SHORT ANSWERS (3M)

Give the brand names and medicinal uses of (i) Streptomycin (ii) Tetracycline

Define Antibiotics.

CHAPTER-13**ANTI- NEOPLASTIC AGENTS****DETAIL ANSWERS (5M)**

Define “neoplasm” and classify antineoplastic agents.

Discuss the mechanism of action of its alkylating agents & anti-metabolites.

Methotrexate.

Fluorouracil

Write the name and mechanism of action of plant products as anticancer agents.

Write a note on anticancer antibiotics. Explain chemistry and MOA of any one drug.

Busulfan.

Cisplatin

Explain the mechanism of action of any four major classes of anti-cancer drugs.

Mercaptopurine.

Classify Anticancer drugs with atleast one structure in each class

Cyclophosphamide.

Write a short note on Folate reductase inhibitors.

SHORT ANSWERS (3M)

Define anti-neoplastic drugs.

Write uses of Cyclophosphamide, 5-Fluorouracil and Methotrexate.