

**All the Examining Authorities conducting Pharm.D & Pharm.D
(Post Baccaureate) examinations**

Sub: Inclusion of Pharmacotherapeutics I & II in IVth year for Pharm.D. (Post Baccaureate) students.

Sir

This has a reference to the subject cited above. In this connection, I am directed to state that the subject of Pharmacotherapeutics I & II be included in the course of study and examination of IVth year for Pharm.D. (Post Baccaureate) students. A copy of the Pharmacotherapeutics syllabus I & II is enclosed herewith for your ready reference and also available on Council's website "www.pci.nic.in".

Yours faithfully

Sd/-

(ARCHNA MUDGAL)
Registrar-cum-Secretary

PHARM. D. POST BACCALAUREATE PROGRAM

(Inclusion of Pharmacotherapeutics I & II subject in the fourth year of the program)

SYLLABUS FOR PHARMACOTHERAPEUTICS I & II (THEORY)

Theory: 3Hrs/week

- Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases.

| | | |
|----|---|---|
| 1. | Cardiovascular system: Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, Hyperlipidaemias, Electrophysiology of heart and Arrhythmias | Total = 13 hrs (3+2+2+2+2+2) |
| 2. | Respiratory system : Introduction to Pulmonary function test, Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases | Total = 6 (1+2+2+1) |
| 3. | Endocrine system : Diabetes, Thyroid diseases, Oral contraceptives, Hormone replacement therapy, Osteoporosis | Total = 8 (3+2+1+1+1) |
| 4. | General prescribing guidelines for a. Paediatric patients b. Geriatric patients c. Pregnancy and breast feeding | Total = 4hrs (1+1+2) |
| 5. | Ophthalmology: Glaucoma, Conjunctivitis- viral & bacterial | (3 hrs) |
| 6. | Introduction to rational drug use Definition, Role of pharmacist Essential drug concept Rational drug formulations | Total = 2 hrs (1+1) |

| | | |
|-----|---|---|
| 7. | Infectious disease: Guidelines for the rational use of antibiotics and surgical Prophylaxis, Tuberculosis, Meningitis, Respiratory tract infections, Gastroenteritis, Endocarditis, Septicemia, Urinary tract infections, Protozoal infection- Malaria, HIV & Opportunistic infections, Fungal infections, Viral infections, Gonorrhoea and Syphilis | Total = 18 hrs. (2+1+1+2+1+1+1+2+1+2+1+1+1+1) |
| 8. | Musculoskeletal disorders Rheumatoid arthritis, Osteoarthritis, Gout, Spondylitis, Systemic lupus erythematosus. | Total = 6hrs. (2+1+1+1) |
| 9. | Renal system Acute Renal Failure, Chronic Renal Failure, Renal Dialysis, Drug induced renal disorders | Total = 05hrs. (2+1+1+1) |
| 10. | Oncology: Basic principles of Cancer therapy, General introduction to cancer chemotherapeutic agents, Chemotherapy of breast cancer, leukemia. Management of chemotherapy nausea and emesis | Total = 06 hrs. (2+1+2+1) |
| 11. | Dermatology: Psoriasis, Scabies, Eczema, Impetigo | Total = 4hrs. |

PHARMACOTHERAPEUTICS – I & II (PRACTICAL)

Practicals: 3 Hrs./Week

Practicals:

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at

the end of the course for evaluation. A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments:

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|-------------------|---------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (THEORY)

Theory : 2 Hrs. /Week

- 1. Scope and objectives:** This course mainly deals with fundamentals of Analytical chemistry and also the study of inorganic pharmaceuticals regarding their monographs and also the course deals with basic knowledge of analysis of various pharmaceuticals.
- 2. Upon completion of the course student shall be able to:**
 - a. understand the principles and procedures of analysis of drugs and also regarding the application of inorganic pharmaceuticals;
 - b. know the analysis of the inorganic pharmaceuticals their applications; and
 - c. Appreciate the importance of inorganic pharmaceuticals in preventing and curing the disease.

3. Course materials:

Text books

- a. A text book Inorganic medicinal chemistry by Surendra N. Pandeya
- b. A. H. Beckett and J. B. Stenlake's Practical Pharmaceutical chemistry Vol-I & Vol-II
- c. Inorganic Pharmaceutical Chemistry III-Edition P.Gundu Rao

Reference books

- a. Inorganic Pharmaceutical Chemistry by Anand & Chetwal
- b. Pharmaceutical Inorganic chemistry by Dr.B.G.Nagavi
- c. Analytical chemistry principles by John H. Kennedy
- d. I.P.1985 and 1996, Govt. of India, Ministry of health

4. Lecture wise programme:

1. Errors

Errors in quantitative analysis, classification of errors, concept of accuracy and precision, treatment of analytical results.

2. Volumetric analysis

Principle of volumetric analysis, different methods of analysis, different methods for expressing concentrations of solutions, primary and secondary standards.

3. Acid-base titrations

Acid- base concepts, relative strength of acids and bases, law of mass action, common ion effect, ionic product of water, Henderson-Hasselbalch equation, buffer solutions, theory of indicators, neutralization curves, choice of indicators, mixed and universal indicators.

4. Redox titrations

Concepts of oxidation–reduction reactions, redox reactions, theory of redox titrations, redox indicators, iodometry and iodimetry, titrations involving ceric sulphate, potassium iodate, potassium bromate, potassium permanganate, titanous chloride.

5. Non aqueous titration

Theoretical basis, types of solvents, preparations and standardization of titrant solutions, titration of weak acid, weak bases and indicators. standardisation of perchloric acid, lithium and sodium methoxide, tetra butyl ammonium hydroxide.

6. Precipitation titrations

Introduction, types of precipitation titrations, end point detection.

7. Complexometric titrations

Introduction, principle, types of titrations, endpoint detection.

8. Theory of Indicators

9. Gravimetry

Basic concepts, Precipitation techniques, co-precipitation, post–precipitation, various steps involved in gravimetric analysis, pharmaceutical applications.

10. Limit tests

Definition, importance, general procedure for limit test for chlorides, sulphates, iron, arsenic, lead and heavy metals.

11. Medicinal Gases

Preparation and uses of the following Oxygen, Carbon dioxide, Helium, Nitrogen and Nitrous Oxide.

Method of preparation, assay, storage conditions and uses of inorganic compounds listed in I.P belonging to the following categories.

12. Acidifiers

Dilute hydrochloric acid, Sodium phosphate, Ammonium chloride.

13. Antacids

Classification, Qualities of an ideal antacid, side effects, advantages, combination therapy, acid neutralizing capacity, Sodium bicarbonate, Potassium citrate, Aluminium hydroxide gel, Dried aluminium hydroxide gel, Magnesium hydroxide, Light and heavy magnesium trisilicate, light and heavy magnesium carbonate, Calcium carbonate, Magaldrate and Bismuth carbonate.

14. Cathartics

Magnesium hydroxide, Magnesium sulphate, Magnesium carbonate and Sodium phosphate.

15. Electrolyte replenisher

Electrolytes used for replacement therapy: Sodium chloride, Potassium chloride, Calcium chloride, Calcium gluconate,

Electrolytes used in the acid-base therapy : Sodium acetate, Potassium acetate, Sodium bicarbonate, Potassium bicarbonate, Sodium citrate, Sodium lactate, Ammonium chloride. Electrolyte combination therapy, Compound sodium chloride solution, Sodium chloride injection and Oral rehydration salt.

16. Essential Trace elements

Definition, Physiological role of Iron, Copper, Zinc,

Chromium, Manganese, Molybdenum, Selenium, Sulphur and Iodine.

17. Antimicrobials

Hydrogen Peroxide, Potassium Permanganate, Chlorinated Lime, Iodine, Boric Acid, Silver Nitrate, Selenium Sulphide.

18. Pharmaceutical Aids: Sodium bisulphite, sodium metabisulphite, bentonite, magnesium stearate, zinc stearate, aluminium sulphate, sodium carboxy methyl cellulose, purified water, water for injection and sterile water for injection.

19. Dental products

Anti-caries Agents: Role of Fluorides as anti-caries agents, Sodium fluoride.

Dentifrices: Calcium carbonate, dibasic calcium phosphate, Zinc chloride.

20. Miscellaneous compounds.

Sclerosing agents: Hypertonic saline, Sodium tetra decyl sulphate.

Expectorants: Potassium citrate and Potassium iodide.

Sedative: Potassium bromide.

Antidotes: Sodium nitrite, Sodium thiosulphate and Charcoal

Respiratory stimulant: Ammonium carbonate.

21. Radiopharmaceuticals.

Introduction, measurement of radioactivity, clinical applications and dosage, hazards and precautions.