

STUDY GUIDE
PHARMACOLOGY

PROGRAM

Bachelor of Medicine; Bachelor of Surgery (MBBS)

TOTAL CONTACT HOURS: 300

INFRASTRUCTURE REQUIREMENTS:

- Lecture Hall
- Pharmacology Laboratory

CONTACT HOURS/ YEAR

- 1st Year MBBS: 10 hours
- 2nd Year MBBS: 20 hours
- 3rd Year MBBS: 180 hours
- 4th Year MBBS: 85

FACULTY RESPONSIBLE FOR COURSE CONDUCTION

1. Prof Dr Asma Shaukat: Professor and HoD
2. Dr Tariq Mahmood: Associate Professor
3. Dr Salma Rashid: Senior Lecturer
4. Dr Asma Shah: Lecturer
5. Dr Shamsa Nazir: Lecturer
6. Dr Rabail Ali: Lecturer
7. Dr Zarnam Ashfaq Shah: Lecturer

SUPPORTING STAFF

1. Mr Syed Dilawar Hussain Shah: Laboratory Technician
2. Mrs Nausheen: Computer Operator
3. Mr Yasir Hussain: Lab Assistant and Animal House Attendant
4. Mr Taimur Khan: Office Attendant

OBJECTIVES AND LEARNING STRATEGIES

Sr no	Topic	Module	Learning Outcomes	Contact Hours	Mode of Teaching	Assessment Tools
<u>1st YEAR MBBS</u>						
1	Introduction to Pharmacology & its Role in Modern Medicine	Foundation 1	Define pharmacology and its role in medicine. Define the pharmaco dynamics and pharmacokinetics	1	LGF	Summative MCQs
2	Routes of Administration Receptors	Foundation 1	Enlist the route of administration of a drug Enlist the types of drug receptors	1	LGF	Summative MCQs
3	Transmembran Drug Transport	Foundation 1	Explain how drugs are transported across cell membrane and factors affecting it	1	LGF	Summative MCQs
4	Drug treatment of anemias	Blood & Immunology I	Enlist the drugs used in the treatment of iron deficiency, Megaloblastic anemia Describe the pharmacological basis of iron in iron deficiency anemia Describe the pharmacological basis of vit B12 and folic acid in megaloblastic anemia Describe the role of Erythropoietin in the treatment of Anemia	1	LGF	Summative MCQs
5	Coagulation Modifying Drugs	Blood & Immunology I	Identify the site of action of following drugs in coagulation cascade: Aspirin, Heparin, Vit. K, Tranexamic acid	1	LGF	Summative MCQs
6	Drugs Used in MSK	MSK I	Define & classify NSAIDS Classify NM blockers Enlist commonly used analgesics Classify glucocorticoids	1	LGF	Summative MCQs

7	Drugs for CAD	CVS I	Enlist the groups of drugs used in treatment of CAD Enlist the groups of lipid lowering drugs	1	LGF	Summative MCQs
8	Drugs for Hypertension	CVS I	Describe mechanisms of drugs used in the treatment of HTN	1	LGF	Summative MCQs
9	Anti Asthma Drugs	Respiratory I	Enlist Antiasthmatic drugs	1	LGF	Summative MCQs
10	Anti TB Drugs	Respiratory I	Classify Antituberculous drugs	1	LGF	Summative MCQs
<u>2nd YEAR MBBS</u>						
11	Drugs Acting on Neuromuscular Endings	Neuroscience 1a	Describe drugs acting on neuromuscular endings and its mechanism of action.	1	LGF	Summative MCQs
12	Drugs Acting on SNS	Neuroscience 1a	Enlist the drugs acting on SNS and describe their mechanism of actions	2	LGF	Summative MCQs
13	Drugs Acting on PNS	Neuroscience 1a	Enlist the drugs acting on PNS and describe their mechanism of action	2	LGF	Summative MCQs
14	Drugs used in Parkinson's disease	Neuroscience 1a	Describe the groups of drugs used in Parkinson's disease and their mechanism of actions	1	LGF	Summative MCQs
15	Drugs used for schizophrenia	Neuroscience 1a	Describe drugs used for schizophrenia and their mechanism of actions	1	LGF	Summative MCQs
16	Drugs used in Peptic ulcer	GIT, Hepato Biliary I	Classify the drugs used in Peptic ulcer Describe mechanism of action of drugs used in Peptic ulcer	2	LGF	Summative MCQs
17	First Pass Hepatic Metabolism of Drugs	GIT, Hepato Biliary I	Describe mechanism of action of drugs, detoxification and metabolism in the liver	1	LGF	Summative MCQs
18	Hepatotoxic Drugs	GIT, Hepato Biliary I	Enlist some of the commonly used hepatotoxic drugs and their toxicities	1	LGF	Summative MCQs

19	Anti-diarrheal Drugs	GIT, Hepato Biliary I	Classify anti-diarrheal drugs and their mechanism of action	1	LGF	Summative MCQs
20	Drugs for Constipation	GIT, Hepato Biliary I	Classify drugs used in constipation & their mechanism of action	1	LGF	Summative MCQs
21	Nephrotoxic Drugs	Renal I	Describe the mechanism of drug excretion Enlist nephrotoxic drugs	1	LGF	Summative MCQs
22	Drugs Acting on Renal System	Renal I	Classify diuretics Describe the mechanism of action of diuretic drugs	2	LGF	Summative MCQs
23	Anti Thyroid Drugs	Endocrine I	Describe the types and mechanism of action of Antithyroid drugs	1	LGF	Summative MCQs
24	Anti Diabetic Drugs	Endocrine I	Explain the mechanism of action of oral antidiabetic drugs Explain the mechanism & complications of Insulin therapy	2	LGF	Summative MCQs
25	Oral Contraceptives	Reproduction I	Describe the types, mechanism of action & physiological effects of Estrogens & Progesterone containing OCs	1	LGF	Summative MCQs
<u>3rd YEAR MBBS</u>						
26	Introduction to the subject	Foundation II	Define pharmacology, drug, Clinical Pharmacology, Therapeutics, medicine, prodrugs, prototype drugs, Materia medica, formulary, poisons, toxins, pharmacopoeia, national formulary, pharmacokinetics, PD, excipient, compounding and dispensing Describe Pharmacy, toxicology, posology, Pharmacognosy, pharmacogenetics Define prescription drugs, OTC drugs, WHO essential drugs and Orphan drugs with examples	2	LGF	Summative MCQs Viva

27	Nomenclature of the drugs	Foundation II	Describe how drugs are named: chemical, generic, approved, official and trade names of drugs with examples	1	LGF	Summative MCQs Viva
28	Sources of the drugs	Foundation II	Enlist various sources of drugs Give examples of drugs obtained from plants, animals, mineral and synthetic sources Describe the genetic engineering source of drugs with examples	1	LGF	Summative MCQs Viva
29	Active principles of crude drugs	Foundation II	Enlist important principles of crude drugs with examples	1	LGF	Summative MCQs Viva
30	Routes of drug administration	Foundation II	Enlist various routes of drug administration Describe the merits and demerits of oral, sublingual, rectal, intramuscular, subcutaneous, intravenous, intra-arterial, inhalational, spinal, topical and transdermal routes of drug administration	2	LGF	Summative MCQs Viva
31	Absorption of the drugs	Foundation II	Define drug absorption. Describe various mechanisms of drug absorption like simple diffusion, facilitated diffusion, active transport, ion-pair transport, endocytosis and filtration with examples. Describe ionization of drug molecules and clinical significance of ion trapping. Describe factors affecting drug absorption	2	LGF	Summative MCQs Viva
32	Bioavailability Bioequivalence	Foundation II	Define bioavailability, bioequivalence and pharmaceutical equivalence. Explain Time-Concentration curve. Describe AUC (Area Under the Curve). Describe the factors affecting bioavailability.	1	LGF	Summative MCQs Viva
34	First pass effect & enterohepatic circulation	Foundation II	Describe hepatic first-pass effect (Pre systemic elimination) and its clinical significance. Define enterohepatic circulation. Describe enterohepatic circulation & its significance	1	LGF	Summative MCQs Viva
35	Distribution of Drugs	Foundation II	Define distribution of drugs. Define redistribution of drugs with example. Describe plasma protein binding and its clinical significance in	1	LGF	Summative

			diseased conditions. Describe factors affecting drug distribution.			MCQs Viva
36	Volume of Distribution	Foundation II	Define volume of distribution. Enlist drugs with small volume of distribution. Enlist drugs with large volume of distribution. Apply formula for calculating volume of distribution. Describe volume of distribution with reference to its clinical significance.	1	LGF	Summative MCQs Viva
37	Loading dose	Foundation II	Define loading dose of a drug. Enlist some drugs whereby loading dose is administered. Apply formula for calculating loading dose.	1	LGF	Summative MCQs Viva
38	Biotransformation	Foundation II	Define biotransformation. Define xenobiotics. Describe the objectives of biotransformation and fate of drugs after biotransformation. Name major sites of biotransformation. Describe major drug metabolizing enzymes microsomal (P450) and non-microsomal enzymes. Describe the phases and reactions of biotransformation. Describe the factors affecting drug biotransformation.	3	LGF	Summative MCQs Viva
39	Pharmacogenetics Pharmacogenomics	Foundation II	Define pharmacogenetics and pharmacogenomics. Define idiosyncrasy with examples. Describe the genetic factors influencing biotransformation of drugs with examples	1	LGF	Summative MCQs Viva
40	Enzyme induction Enzyme inhibition	Foundation II	Define enzyme induction. Enlist enzyme inducers. Describe enzyme induction and its clinical significance. Define enzyme inhibition. Enlist enzyme inhibitors. Describe enzyme inhibition and its clinical significance. Describe suicide inhibition with examples of drugs.	1	LGF	Summative MCQs Viva
41	Excretion and clearance of drugs	Foundation	Define drug excretion, clearance. Enlist major and minor routes of drug excretion. Differentiate between excretion,	1		Summative MCQs

		II	elimination and clearance. Apply the formula for calculating drug clearance.		LGF	Viva
42	Maintenance Dose and Plasma half life and steady state conc, First Order & Zero order kinetics	Foundation II	Define maintenance dose of a drug. Apply the formula for calculating the maintenance dose. Apply Young's, Dilling's and Clark's formula for calculating doses of drugs. Define plasma half-life. Enlist drugs with short half-life. Enlist drugs with long half-life. Apply the formula for calculating plasma half life. Explain the clinical significance of half life. Define steady-state concentration of drugs. Describe the time to reach steady-state concentration of drugs. Describes the importance of steady-state concentration in clinical practice. Define first- and zero-order kinetics. Differentiate between first- and zero-order kinetics with examples. Explain the clinical significance of first- and zero-order kinetics	2	LGF	Summative MCQs Viva
43	Bioassay and Standardization	Foundation II	Define bioassay and standardization. Describe the relative importance of bioassay compared with physical or chemical assays. Describe the most common type of bioassay, i.e. three-point assay.	1	LGF	Summative MCQs Viva
44	Pharmacodynamics	Foundation II	Define pharmacodynamics. Define agonist, antagonist, partial agonist and inverse agonist with examples. Describe receptors. Define orphan receptors, serpentine receptors and spare receptors. Describe the biochemical and cellular sites of drug targets. Describe intracellular 2 nd messenger system and enlist some important Second-messengers. Describe up regulation and down regulation of receptors with examples. Define drug selectivity and specificity.	3	LGF	Summative MCQs Viva

45	Adverse drug reactions, Tachyphylaxis and Tolerance	Foundation II	<p>Define Tolerance, cross tolerance, reverse tolerance (sensitization), innate tolerance, tachyphylaxis and drug resistance. Describe the mechanisms of development of tolerance and tachyphylaxis.</p> <p>Define drug holidays with example. Define adverse drug effect, secondary effect and intolerance to a drug.</p> <p>Classify ADRs</p> <p>Describe dose-related adverse effects</p> <p>Describe non-dose-related adverse effects with examples.</p> <p>Describe causes of adverse drug reactions.</p> <p>Enlist some drugs causing hepatotoxicity.</p> <p>Enlist some drugs causing renal toxicity.</p> <p>Enlist some cardio toxic drugs.</p> <p>Enlist some drugs causing adverse effects on reproduction.</p>	2	LGF	Summative MCQs Viva
46	Drug Antagonism	Foundation II	<p>Describe the clinical importance of efficacy compared to potency. Define drug antagonism. Enlist types of antagonism.</p> <p>Describe chemical, physiological and pharmacological (competitive/surmountable and non-competitive) antagonisms with examples.</p>	1	LGF	Summative MCQs Viva
47	Dose Response Curves	Foundation II	<p>Define dose response curve, graded dose-response curve and quantal dose-response curve.</p> <p>Describe graded dose-response curve and quantal dose-response curve.</p> <p>Describe the limitations of graded dose-response curve and its remedy in a quantal dose-response curve.</p> <p>Describe the significance of constructing dose-response curves.</p> <p>Explain the advantages of taking log dose values on the dose axis.</p> <p>Define therapeutic index.</p> <p>Describe therapeutic index with reference to its clinical importance.</p> <p>Apply formula for calculating therapeutic index</p> <p>Define median lethal dose, median toxic dose and median effective dose.</p>	3	LGF	Summative MCQs Viva

			<p>Enlist some drugs with narrow therapeutic index.</p> <p>Enlist some drugs with broad therapeutic index.</p> <p>Define protective index.</p> <p>Differentiate between therapeutic index and protective index.</p> <p>Define therapeutic window.</p> <p>Describe therapeutic window with reference to its clinical importance.</p> <p>Define potency and efficacy.</p> <p>Describe potency and efficacy with examples.</p> <p>Describe the clinical importance of efficacy compared to potency</p>			
48	Drug Interactions	Foundation II	<p>Define drug interaction.</p> <p>Define drug incompatibilities with examples.</p> <p>Describe pharmacokinetic drug interactions with examples and its clinical significance.</p> <p>Describe pharmacodynamics drug interactions with examples and its clinical significance.</p> <p>Describe drug-food interactions and drug-disease interactions with examples.</p> <p>Define summation, synergism and potentiation with examples.</p>	1	LGF	Summative MCQs Viva
49	New Drug Development	Foundation II	<p>Describe the processes involved in drug discovery and development.</p> <p>Define lead compound and drug screening.</p> <p>Describe pre-clinical and clinical studies.</p> <p>Define no-effect dose and minimum lethal dose.</p> <p>Describe phases: clinical trials.</p> <p>Define post-marketing surveillance.</p> <p>Define single-blind, double-blind, crossover and ADME studies.</p> <p>Describe the role of FDA in the drug development process.</p> <p>Differentiate between IND and NDA</p>	1	LGF	Summative MCQs Viva
50	Lab Protocols & Apparatus Used in Pharmacy	Foundation II	<p>Identify and name common apparatus used in pharmacy laboratory.</p> <p>Identify and label common apparatus used in the field of Pharmacy.</p>	1.5	Practical	Summative OSPE
51	Dosage Forms of drugs, Searching Formulary	Foundation II	<p>Define dosage form.</p> <p>Enlist the types of dosage forms.</p> <p>Describe the characteristic properties of each dosage form.</p>	1.5	SGF	Summative OSPE

			Identify dosage forms administered through different routes. Define formulary. Describe National Formulary. Demonstrate searching accurate information quickly in a formulary			
52	Metrology, Medical Abbreviations	Foundation II	Define metrology. Describe metric and imperial systems of measurements. Calculate the equivalency of metric system with imperial system. Describe the common medical abbreviations. Apply these abbreviations correctly in medical docs	1.5	Practical	Summative OSPE
53	Demonstration of intramuscular route of drug administration on mannequin	Foundation II	Describe the general protocols for IM and IV injection of a drug Demonstrate standard protocols during administration of a drug through IM route.	1.5	Practical	Summative OSPE
54	Demonstration of intravenous route of drug administration on mannequin	Foundation II	Describe the general protocols for IM and IV injection of a drug Demonstrate standard protocols during administration of an IV drug through Intravenous route.	1.5	Practical	Summative OSPE
55	Overview to anti inflammatory drugs	Infection & Inflammation	Classify anti inflammatory drugs Describe the role of DMARDs and glucocorticoids as anti inflammatory drugs	1	LGF	Summative MCQs
56	NSAIDs	Infection &	Classify NSAIDs Differentiate between non-selective COX inhibitors and selective COX-2 inhibitors based on mechanism of action Name the prototype non-selective COX inhibitor Describe the pharmacokinetics of Aspirin Describe the mechanism of action of aspirin as anti-platelet, analgesic, antipyretic and anti-inflammatory agent Give the dose of Aspirin as anti-platelet, analgesic/antipyretic and as anti-inflammatory drug. Describe clinical uses of NSAIDs. Describe the adverse effects of NSAIDs.	LGF	2	Summative

		Inflammation	<p>Describe the drug treatment of Aspirin poisoning</p> <p>Describe the pharmacokinetics with emphasis on dosage, duration of action and elimination of Diclofenac, Ibuprofen, Indomethacin, Mefenamic acid and Piroxicam in contrast to Aspirin</p> <p>Relate PK & PD of NSAIDs to their clinical applications</p> <p>Describe the mechanism of action of selective COX-2 inhibitors.</p> <p>Describe the clinical uses of selective COX-2 inhibitors</p> <p>Describe adverse effects of selective COX-2 inhibitors</p> <p>Describe the merits and demerits of selective COX-2 inhibitors and non-selective COX inhibitors.</p> <p>Describe the pharmacokinetics of Paracetamol</p> <p>Describe the mechanism of action clinical uses, adverse effects of Paracetamol.</p> <p>Give its therapeutic and fatal doses</p> <p>Describe the drug treatment of Paracetamol poisoning</p>			MCQs Viva
57	Histamine and Anti Histamine	Infection & Inflammation	<p>Classify anti-histamines</p> <p>Differentiate between first and second generation anti-histamines</p> <p>Describe the pharmacologic effects of H1-receptor antagonists.</p> <p>Describe the clinical uses of H1-receptor antagonists.</p> <p>Enlist the adverse effects of H1-receptor antagonists.</p> <p>Describe the drug interactions of H1-receptor antagonists</p>	LGF	1	Summative MCQs Viva
58	Serotonin Agonists and Antagonists	Infection & Inflammation	<p>Enlist serotonin agonists</p> <p>Classify serotonin antagonists</p> <p>Describe the mechanism of action of serotonin</p> <p>Describe the organ system effects of serotonin.</p> <p>Describe the clinical uses of serotonin agonists and antagonists</p> <p>Describe the pharmacological basis of ondansetron in chemotherapy induced vomiting</p>	LGF	1	Summative MCQs Viva

59	Introduction to Chemotherapy	Infection & Inflammation	<p>Define basic terms like chemotherapy, antibiotic, antimicrobial, MIC, MBC, chemoprophylaxis, empirical therapy and post-antibiotic effect, bacteriostatic and bactericidal antimicrobials.</p> <p>Explain advantages of drug combinations.</p> <p>Describe mechanisms of bacterial resistance against antibiotics.</p> <p>Differentiate between concentration and time dependent killing with examples. Classify antimicrobials on the basis of mechanism of action</p>	LGF	3	Summative MCQs Viva
60	Penicillins	Infection & Inflammation	<p>Classify beta-lactam antibiotics</p> <p>Enlist narrow and broad spectrum Penicillins.</p> <p>Enlist anti-pseudomonal, anti staph/ beta lactamase resistant Penicillin.</p> <p>Enlist long & short acting Peni</p> <p>Describe anti-bacterial spectrum of Penicillins.</p> <p>Describe pk in respect of emphasis on route of administration and excretion of Penicillins</p> <p>Describe mechanism of action, principal mechanism of bacterial resistance, clinical uses, adverse effects and contraindications of Penicillins</p> <p>Describe drug interactions of Penicillins</p> <p>Apply formula for interconversion of milligram and units of Penicillin G.</p> <p>Relate pharmacokinetics & clinical applications</p>	LGF	2	Summative MCQs Viva
61	Cephalosporins	Infection & Inflammation	<p>Classify Cephalosporins</p> <p>Describe anti-bacterial spectrum of Cephalosporins.</p> <p>Describe pharmacokinetics with special emphasis on route of administration and excretion.</p> <p>Describe clinical uses, adverse effects, drug interactions, mechanism of resistance of Cephalosporins</p> <p>Relate pharmacokinetics and pharmacodynamics of</p>	LGF	1	Summative MCQs Viva

			Cephalosporin with their clinical applications			
62	Beta Lactamase Inhibitors Monobactams and Carbapenems	Infection & Inflammation	Enlist beta-lactamase inhibitors Explain the rationale for using beta lactamase inhibitors in combination with β -lactam antibiotics Describe antibacterial spec of Monobactams Carbapenem Describe the clinical uses of Monobactams and Carbapenem	LGF	1	Summative MCQs Viva
63	Vancomycin Fosfomycin Bacitracin Cycloserine	Infection & Inflammation	Describe the MOA,clinical use of Vancomycin. Describe the use of vancomycin in MRSA Describe adverse effects of Vancomycin Describe "Red man/Red neck" syndrome Enlist clinical uses of Fosfomycin, Bacitracin & Cycloserine	LGF	1	Summative MCQs Viva
64	Tetracyclines	Infection & Inflammation	Classify bacterial protein synthesis inhibitors Classify Tetracyclines. Describe anti-bacterial spectrum of Tetracyclines. Describe the PK of Tetracycline with special emphasis on absorption Describe mechanism of action, mechanism of resistance, uses,adverse effects of Tetracyclines. Describe Black Bone disease Describe the teratogenic effects of Tetracyclines. Describe drug interactions of Tetracyclines. Describe the adverse effect related to the use of outdated (expired)Tetracycline products. Relate pharmacokinetics and pharmacodynamics of Tetracycline with their clinical applications	LGF	1	Summative MCQs Viva
65	Aminoglycosides	Infection & Inflammation	Enlist Aminoglycosides. Describe anti-bacterial spectrum of Aminoglycosides. Describe the pharmacokinetics of Aminoglycosides with special emphasis on route of administration, concentration-dependent killing and post-	2	LGF	Summative MCQs Viva

			<p>antibiotic effect.</p> <p>Describe mechanism of action of Aminoglycosides.</p> <p>Describe the principal mechanism of resistance to Aminoglycosides.</p> <p>Describe clinical uses of Aminoglycosides.</p> <p>Describe adverse effects of Aminoglycosides.</p> <p>Describe the drug interactions of AGs</p> <p>Relate pharmacokinetics and PD of Ags with their clinical applications</p>			
66	Macrolides	Infection & Inflammation	<p>Enlist Macrolides.</p> <p>Describe anti-microbial spectrum of Macrolides</p> <p>Describe pharmacokinetics of Macrolides</p> <p>Describe the mechanism of action of Macrolides</p> <p>Describe the principal mechanism of resistance to Macrolides</p> <p>Describe clinical uses of Macrolides</p> <p>Describe adverse effects of Macrolides.</p> <p>Describe drug interactions of Macrolides</p> <p>Relate pharmacokinetics and pharmacodynamics of Macrolides with their clinical applications</p>	1	LGF	Summative MCQs Viva
67	Linezolid, Clindamycin, Streptogramins	Infection & Inflammation	<p>Describe mechanism of action of Linezolid</p> <p>Describe clinical uses of Linezolid with special emphasis on methicillin-resistant staphylococci and vancomycin-resistant enterococci</p> <p>Describe mechanism of action of Clindamycin.</p> <p>Enumerate clinical uses of Clindamycin.</p> <p>Describe antibiotic-associated pseudomembranous colitis.</p> <p>Enumerate Streptogramins.</p> <p>Describe clinical use of Quinupristin-Dalfopristin in VRE (Vancomycin-resistant enterococci).</p>	1	LGF	Summative MCQs Viva
68	Chloramphenicol	Infection & Inflammation	<p>Describe anti-microbial spectrum of Chloramphenicol</p> <p>Describe mechanism of action of Chloramphenicol</p> <p>Enlist clinical uses of Chloramphenicol</p> <p>Describe the reason for obsoleting the systemic use of Chloramphenicol</p>	1	LGF	Summative MCQs Viva

			Enlist adverse effects of Chloramphenicol			
69	Sulphonamides Trimethoprim	Infection & Inflammation	Classify Sulfonamides Describe anti-microbial spectrum of Sulfonamides Describe mechanism of action and resistance of Sulfonamides and Trimethoprim Describe their clinical uses Describe their adverse effects Describe the advantages of combining sulfamethoxazole with trimethoprim Describe the drug interaction of Sulphonamides with Phenytoin	2	LGF	Summative MCQs Viva
70	Quinolones	Infection & Inflammation	Describe Gray baby syndrome. Classify Quinolones. Describe the pharmacokinetics of Fluroquinolones with special emphasis on half- life of Moxifloxacin Enlist respiratory Quinolones. Describe anti-microbial spectrum of Fluoroquinolones. Describe mechanism of action of Fluoroquinolones. Describe the principal mechanism of resistance to Fluroquinolones, Describe clinical uses of Fluroquinolones Describe adverse effects of Fluroquinolones Describe drug interactions of Fluroquinolones Relate PK and PD of Fluoroquinolones with their clinical applications	1	LGF	Summative MCQs Viva
71	Antimalarials	Infection & Inflammation	Describe terms like chemoprophylaxis, causal prophylaxis, terminal prophylaxis and radical cure with examples of drugs. Classify antimalarial drugs. Enlist drugs used for chemoprophylaxis of malaria. Enlist drugs used for radical cure of malaria. Describe the pharmacokinetics of Chloroquine with special emphasis on volume of distribution and dosing Describe mechanism of action of Chloroquine, Quinine, Mefloquine,	3	LGF	Summative MCQs Viva

			<p>Halofantrine, Primaquine, Pyrimethamine and Artemisinins. Describe adverse effects of antimalarials Describe Cinchonism and Blackwater fever. Enlist the antimalarial drugs relatively safe in pregnancy. Describe the antimalarial drugs contraindicated in G6PD deficiency. Relate pharmacokinetics and pharmacodynamics of antimalarial drugs with their clinical applications</p>			
72	Antifungals	Infection & Inflammation	<p>Classify Antifungal drugs. Describe the pharmacokinetics of Amphotericin B and Ketoconazole Describe the advantages of liposomal preparation of Amphotericin B Describe mechanism of action of Azoles, Amphotericin B, Griseofulvin, Terbinafine, and Nystatin. Describe their clinical uses Describe adverse effects of Azoles, Amphotericin B, Griseofulvin, Terbinafine, and Nystatin. Describe drug interactions of Ketoconazole and Amphotericin B</p>	3	LGF	Summative MCQs Viva
73	Antivirals	Infection & Inflammation	<p>Classify antiviral drugs Enlist anti- Herpes drugs Describe the pk, MoA, clinical uses, adverse effects of Acyclovir Describe the role of Ganciclovir in CMV retinitis. Classify anti-HIV drugs. Describe the role of entry inhibitors, integrase inhibitors, protease inhibitors, NRTIs and NNRTIs in HIV treatment Describe adverse effects of Zidovudine and Indinavir Describe the rationale of HAART therapy.</p>	3	LGF	Summative MCQs Viva
74	Prescription Writing	Infection & Inflammation	<p>Define a medical prescription. Describe its components Describe how to reduce medication errors. Define compliance to the prescribed treatment. Write down the basic format of drug prescription</p>	2	SGF	Summative OSPE

75	Prescription	Infection & Inflammation	Construct prescription of acute tonsillitis	1.5	SGF	Summative OSPE Formative CBL
76	Prescription	Infection & Inflammation	Construct prescription of malaria	1.5	SGF	Summative OSPE Formative CBL
77	Introduction to Pharma of ANS	Multisystem	<p>Enlist major autonomic neurotransmitters.</p> <p>Enlist various types of cholinergic, adrenergic and dopaminergic receptors discovered so far.</p> <p>Describe the organ system distribution of autonomic receptors.</p> <p>Describe presynaptic receptors.</p> <p>Describe inotropy, chronotropy and dromotropy.</p>	2	LGF	Summative MCQs Viva
78	Cholinergic System	Multisystem	<p>Classify cholinomimetic drugs.</p> <p>Enlist the naturally-occurring cholinomimetic alkaloids.</p> <p>Enlist major organophosphate compounds.</p> <p>Enlist the organophosphates used as "Nerve gases"</p> <p>Describe the PK of cholinomimetics with emphasis on metabolism and duration of action</p> <p>Describe the mechanism of action of directly acting and indirectly acting cholinomimetics.</p> <p>Describe the organ system effects of directly-acting and indirectly- acting cholinomimetics with special reference to their effects on receptors.</p> <p>Describe the clinical uses of cholinomimetics.</p> <p>Describe the cholinomimetics used in glaucoma and Alzheimer's disease.</p> <p>Describe the use of Edrophonium to differentiate between cholinergic crisis and Myasthenic crises.</p> <p>Describe the adverse effects of cholinomimetics.</p> <p>Describe the clinical manifestations of organophosphate poisoning.</p> <p>Describe the clinical manifestations of mushroom poisoning.</p> <p>Explain the pharmacological rationale of prophylactic use of Pyridostigmine in situations where chemical warfare with nerve gases</p>	3	LGF	Summative MCQs Viva

			is anticipated. Enlist the contraindications of cholinomimetics.			
79	Anticholinergic Drugs	Multisystem	Classify anticholinergic drugs Describe belladonna alkaloids with reference to their natural sources. Describe the pharmacokinetics of antimuscarinic drugs with emphasis on metabolism and duration of action. Describe the mechanism of action of antimuscarinic drugs. Describe the organ system effects of antimuscarinic drugs with special reference to their effects on receptors. Describe the clinical uses of antimuscarinic drugs. Describe the drug treatment of organophosphate poisoning. Enlist cholinesterase regenerating compounds. Describe “aging” of the phosphorylated enzyme complex and its clinical importance regarding the management of organophosphate poisoning. Describe the drug treatment of mushroom poisoning. Describe the adverse effects of antimuscarinic drugs. Describe atropine fever. Name the antidote for atropine poisoning. Describe the contraindications of antimuscarinic drugs.	2	LGF	Summative MCQs Viva
80	Ganglion Blockers	Multisystem	Enlist major ganglion-blocking drugs. Describe the mechanism of action of ganglion-blocking drugs. Describe the organ system effects of ganglion-blocking drugs. Enlist the clinical uses of ganglion blocking drugs Enlist the adverse effects of ganglion blocking drugs	1	LGF	Summative MCQs Viva
81	Sympathomimetic Drugs	Multisystem	Classify sympathomimetic drugs according to the spectrum of adrenoceptors they affect and on the basis of their mode of action Define Catecholamines with examples. Describe the pharmacokinetics of sympathomimetic drugs with emphasis on their metabolism.	3	LGF	Summative MCQs Viva

			<p>Describe their mechanism of action</p> <p>Describe the organ system effects of sympathomimetics with special reference to their effects on receptors.</p> <p>Compare the effects of Adrenaline, Noradrenaline, Phenylephrine and Isoprenaline on heart rate and blood pressure.</p> <p>Describe the clinical uses of sympathomimetics.</p> <p>Describe the drug treatment of Anaphylactic shock.</p> <p>Describe the dose-dependent effects of Dopamine and its clinical importance.</p> <p>Describe the sympathomimetic drugs used in the management of glaucoma.</p> <p>Describe the role of mannitol and acetazolamide in the treatment of Glaucoma</p> <p>Describe their adverse effects</p>			
82	Beta Adrenergic Antagonists	Multisystem	<p>Name the prototype β-blocker.</p> <p>Enlist the β-blockers with intrinsic sympathomimetic activity (partial agonist activity).</p> <p>Enlist the β-blockers with membrane stabilizing activity (Na channel-blocking activity).</p> <p>Enlist the β-blockers which have proved to be inverse agonists</p> <p>Enlist the β-blockers which are relatively safe in chronic stable heart failure.</p> <p>Enlist the β-blockers which are relatively safe in asthmatic patients.</p> <p>Describe the pharmacokinetics of propranolol.</p> <p>Describe the mechanism of action of β-blockers.</p> <p>Describe the organ system effects of β-blockers with special reference to their effects on recep.</p> <p>Describe the clinical uses of β-blockers.</p> <p>Describe β-blockers used in the management of glaucoma.</p> <p>Describe stage fright and name the β-blocker used for its management.</p> <p>Describe the adverse effects of β-blockers.</p> <p>Name the antidote for β-blockers' toxicity.</p> <p>Enlist the contraindications of β-blockers.</p>	2	LGF	Summative MCQs Viva

			Describe the limitations of beta-blockers in patients with Diabetes Mellitus, Hyperlipidemias, Bronchial Asthma and peripheral arterial disease. Enlist mixed adrenoceptor antagonists Describe the clinical uses of mixed adrenoceptor antagonists.			
83	Alpha Adrenergic Antagonists	Multisystem	Classify sympatholytic drugs (adrenoceptor antagonists) on the basis of spectrum of adrenoceptors they affect. Name the prototype α -blocker. Name the α -blocker having more specificity for prostate muscle. Describe the mechanism of action of α -blockers. Describe the organ system effects of α -blockers with special reference to their effects on rec. Describe the phenomenon of epinephrine reversal. Describe the clinical uses of α -blockers. Describe the adverse effects of α -blockers.	2	LGF	Summative MCQs Viva
84	Anti cancer Drugs	Multisystem	Describe terms like cell cycle-specific drugs and cell cycle-nonspecific drugs. Describe the role of P-glycoprotein in relation to the development of resistance to cytotoxic drugs. Classify anticancer drugs. Describe their general adverse effects Describe mech of action of alkylating agents. Describe the clinical uses and adverse effects of Busulfan and Cyclophosphamide. Describe the mechanism of action, clinical uses and adverse effects of Cisplatin. Describe in general the mechanism of action of antimetabolites. Describe the mechanism of action, clinical uses, adverse effects and contraindications of antimetabolites Describe the drug interaction of Azathioprine and 6-Mercaptopurine with Allopurinol. Describe the natural source of plant alkaloids Describe mechanism of action, clinical uses and adverse effects of	3	LGF	Summative MCQs Viva

			<p>Vinblastine and Vincristine.</p> <p>Describe the mechanism of action, clinical uses and adverse effects of Doxorubicin, Daunorubicin, Dactinomycin and Bleomycin.</p> <p>Enlist the anticancer mechanism of action and uses of hormonal agents like Tamoxifen, Flutamide, Goserelin and Aminoglutethimide.</p> <p>Enlist the drugs of choice for ALL, AML, CLL, CML, Hodgkin's disease, Non-Hodgkin's lymphoma, Ca breast, Ca lung, Ca prostate and Ca stomach.</p> <p>Describe cancer treatment modalities (primary induction, adjuvant, neo-adjuvant and maintenance chemotherapy)</p> <p>Describe the antidotes of Methotrexate, Cyclophosphamide and Doxorubicin toxicity.</p>			
85	Eicosanoids/ Prostaglandins	Multisystem	<p>Classify eicosanoids</p> <p>Describe the mechanism of action of Prostaglandins.</p> <p>Describe the organ system effects of Prostaglandins.</p> <p>Describe the clinical uses of Prostaglandins.</p> <p>Describe the prostaglandins used in the management of glaucoma.</p> <p>Describe the pharmacologic effects of Thromboxane A₂.</p>	2	LGF	Summative MCQs Viva
86	Dermatological Preparations	Multisystem	<p>Describe dermatologic formulations like creams, ointments, gels, lotions, pastes, powders, tinctures and wet dressings.</p> <p>Describe the choice of dermatologic formulation with reference to the nature of the lesion.</p>	1	LGF	Summative MCQs Viva
87	Herbal Medications	Multisystem	<p>Describe the terms like herbal medications, botanicals and nutritional supplements with special reference to drug regulatory factors.</p> <p>Describe the pharmacologic effects and intended uses of Garlic</p> <p>Describe the drug interactions of Garlic with Warfarin and Aspirin.</p> <p>Describe the possible medicinal use of Kalonji</p> <p>Describe the pharmacologic effects and intended uses of Ginseng.</p> <p>Describe the drug interactions of Ginseng with antipsychotic and hypoglycemic medications.</p> <p>Describe the intended clinical uses</p>	2	LGF	Summative MCQs Viva

			of Coenzyme Q10. Describe the drug interactions of Coenzyme Q10 with Warfarin.			
88	Drug Treatment of Scabies	Multisystem	Enlist the drugs used for the treatment of Scabies Describe the method of application of Permethrin, Crothamiton and Benzyl benzoate for scabies	1	LGF	Summative MCQs Viva
89	Drug Treatment of Psoriasis	Multisystem	Enlist the drugs used for treating Psoriasis Describe the teratogenicity of Acitretin	1	LGF	Summative MCQs Viva
90	Drug Treatment of Acne vulgaris	Multisystem	Enlist the drugs used for treating Acne Describe the mechanism of action and adverse effects of Benzoyl peroxide, Tretinoin, Isotretinoin. Describe the teratogenicity of Isotretinoin.	1	LGF	Summative MCQs Viva
91	Introduction to experimental Pharmacology (experiments on isolated piece of rabbit's Ileum)	Multisystem	Differentiate between Qualitative and Quantitative experiments. Recognize various parts of Tissue Organ Bath and describe their functions. Describe the ingredients and their quantities required for preparing the Tyrode's Solution. Describe the technique of slaughtering of rabbit and removal of a piece of ileum. Describe the fixation of piece of ileum in the inner organ bath. Enumerate the causes of tissue death.	1.5	Practical	Summative OSPE
92	Ceiling effect Parasympathomimetic drug	Multisystem	Demonstrate ceiling effect for Ach on the isolated piece of rabbit's ileum Interpret the recording of Ach induced ileal activity on the drum. Demonstrate washing of the inner organ bath for the subsequent doses of Ach Construct tables and graphs for inference of the results	1.5	Practical	Summative OSPE
93	Antagonism between acetylcholine and atropine	Multisystem	Demonstrate surmountable antagonism between Ach and atropine on piece of rabbit's ileum Interpret the recording of Ach and Atropine- induced ileal activity on the revolving drum.	1.5	Practical	Summative OSPE

			Construct tables and graphs for inference of the results.			
94	Ceiling effect for Histamine	Multisystem	Demonstrate ceiling effect for Histamine on the isolated piece of rabbit's ileum Interpret the recording of Histamine induced ileal activity Construct tables and graphs for inference of the results.	1.5	Practical	Summative OSPE
95	Antagonism between Histamine and antihistamine	Multisystem	Demonstrate surmountable antagonism between Histamine & antihistamine on piece of rabbit's ileum Interpret the recording of Histamine & antihistamine induced ileal activity Construct tables and graphs for inference of the results.	1.5	Practical	Summative OSPE
96	To identify an unknown drug on rabbit's ileum with the help of two known antagonists	Multisystem	Demonstrate ceiling effect for the known agonist drug on the isolated piece of rabbit's ileum Demonstrate surmountable antagonism between the agonist drug and the unknown antagonists on piece of rabbit's ileum Interpret the recording of drug induced ileal activity Construct tables and graphs for inference of the results.	1.5	Practical	Summative OSPE
97	Introduction to experimental Pharmacology (effects of drugs on rabbit's Eye)	Multisystem	Demonstrate measuring the pupil size. Demonstrate corneal and light reflex.	1.5	Practical	Summative OSPE
98	Effects of Parasympathomimetic drug on rabbit's eye	Multisystem	Demonstrate the effect of Pilocarpine on the size of the pupil, light reflex, colour of conjunctiva and corneal reflex in the test eye in comparison with the control eye.	1.5	Practical	Summative OSPE
99	Effect of sympathomimetics (ephedrine) on rabbit's eye	Multisystem	Demonstrate the effect of Ephedrine on the size of the pupil, colour of conjunctiva, corneal reflex and light reflex in the test eye in comparison with the control eye.	1.5	Practical	Summative OSPE
100	Effects of Parasympatholytic drug on rabbit's eye	Multisystem	Demonstrate the effect of Tropicamide on the size of the pupil, colour of conjunctiva, light reflex and corneal reflex in the test eye in comparison	1.5	LGF	Summative OSPE

			with the control eye			
101	Effects of local anaesthetic (Lignocaine) on rabbit's eye	Multisystem	Demonstrate the effect of Lignocaine on the size of the pupil, colour of conjunctiva, light reflex and corneal reflex in the test eye in comparison with the control eye	1.5	LGF	Summative OSPE
102	Drugs for Anemias	Blood and Immunology	<p>Classify the drugs used in anemia</p> <p>Describe pk of Iron</p> <p>Describe the various oral and parenteral formulations of iron</p> <p>Describe the adverse effects of iron therapy</p> <p>Describe the drug treatment of Iron toxicity</p> <p>Describe the various oral and parenteral preparations of cyanocobalamin</p> <p>Describe the clinical use of cyanocobalamin</p> <p>Describe the clinical use of Folic acid</p> <p>Describe the rationale of combining B12 with folic acid and iron</p> <p>Describe the role of GSF (Filgrastim) and GMSF in the treatment of leucopenia.</p> <p>Describe the role of oprelvekin in thrombocytopenia.</p>	2	LGF	Summative MCQs
103	Immunomodulators	Blood and Immunology	<p>Classify immunomodulators</p> <p>Describe the role of corticosteroids as immunosuppressants</p> <p>Describe mechanism of action clinical uses and adverse effects of immunophilin ligands</p> <p>.Describe mechanism of action clinical uses and adverse effects of enzyme inhibitors.</p> <p>Describe mechanism of action clinical uses and adverse effects of cytotoxic agents as immunosuppressant</p> <p>Describe mechanism of action clinical uses and adverse effects of immunosuppressive antibodies</p>	3	LGF	Summative MCQs

			Describe mechanism of action clinical uses and adverse effects of monoclonal antibodies Describe mechanism of action clinical uses and adverse effects of immunostimulant drugs Describe the advantages and disadvantages of various combinations of Immunomodulating drugs			
104	Anti plasmin Drugs, Drug Treatment of Hemophilia	Blood and Immunology	Describe mechanism of action clinical uses and adverse effects of Anti- plasmin drugs Describe the drug treatment for various types of Haemophilia Describe the role of Desmopressin in the treatment of haemophilia	1	LGF	Summative MCQs
105	Iron Deficiency anemia	Blood and Immunology	Write prescription for a patient at risk of developing iron- deficiency anemia Write Chart order for treating an in-door patient with iron- deficiency anemia	1.5	SGF	Summative OSPE Formative CBL
106	NSAIDs	MSK II	Describe the clinical applications of NSAIDs in the treatment of musculoskeletal disorders	1	LGF	Summative MCQs Viva
107	Drugs for Bone and Mineral Homeostasis	MSK II	Classify drugs used in metabolic bone disorders Enlist calcium preparations Describe clinical uses of calcium salts Enlist vitamin D preparations Describe actions of vitamin D on intestine, Kidney and Bone Describe clinical uses of vitamin D Describe the mechanism of action, clinical uses and adverse effects of Bisphosphonates Describe the mechanism of action, clinical uses and adverse effects of calcitonin	2	LGF	Summative MCQs Viva
108	Osteoporosis Treatment	MSK II	Classify drugs used to treat osteoporosis Explain the mechanism of action of SERM & RANK ligand (Denosumab)	1.5	SGF	Summative MCQs Formative CBL

109	Pharmacotherapy of Gout	MSK II	<p>Classify anti gout drugs</p> <p>Describe the role of NSAIDs in the treatment of gout</p> <p>Describe the role of Glucocorticoids in the treatment of gout</p> <p>Describe the mechanism of action of various drugs (Colchicine, Probenecid, Allopurinol, Febuxostat) used in the treatment of Gout</p> <p>Discuss the adverse effects of anti- gout drugs</p> <p>Describe the drug interactions of Allopurinol and Probenecid</p>	2	LGF	<p>Summative MCQs</p> <p>Viva</p> <p>Formative Assignment</p>
110	Drugs for Rheumatoid Arthritis	MSK II	<p>Classify drugs used in Rheumatoid arthritis</p> <p>Discuss the role of NSAIDs in Rheumatoid Arthritis</p> <p>Discuss the role of Glucocorticoids in Rheumatoid Arthritis</p> <p>Define and classify DMARDs</p> <p>Enlist biological and non-biological agents used to treat rheumatoid arthritis</p> <p>Describe pharmacokinetics mechanism of action, clinical uses and adverse effects of methotrexate.</p> <p>Enlist adverse effects and therapeutic uses of DMARDs</p>	3	LGF	<p>Summative MCQs</p> <p>Viva</p>
111	Skeletal Muscle Relaxants	MSK II	<p>Classify skeletal muscle relaxants.</p> <p>Describe the mechanism of action of Non-depolarizing and depolarizing neuromuscular blockers.</p> <p>Discuss the differences between depolarizing and non-depolarizing skeletal muscle relaxants</p> <p>Describe the therapeutic uses and adverse effects of skeletal muscle relaxants</p> <p>Describe centrally acting skeletal muscle relaxants</p> <p>Name drugs causing malignant hyperthermia</p> <p>Discuss the rationale for use of Dantrolene in the treatment of malignant hyperthermia</p> <p>Discuss succinylcholine apnea and its management</p>	3	LGF	<p>Summative MCQs</p> <p>Viva</p>

112	Drugs Used for Dermatological Disorders	MSK II	<p>Classify dermatological preparations</p> <p>Enlist topical antibacterial, antifungal & antiviral preparations.</p> <p>Describe clinical uses and adverse effects of these preparations</p> <p>Discuss oral treatment of candidiasis, dermatophytosis and onychomycosis.</p> <p>Describe various acne preparations</p> <p>Enlist clinical uses of immunomodulators related to skin diseases.</p> <p>Enlist ectoparasiticides</p> <p>Enlist clinical uses and adverse effects of Permethen.</p> <p>Discuss drug treatment of Scabies & Pediculosis.</p> <p>Describe the mechanism of action and adverse effects of various agents used for pigmentation disorders</p> <p>Describe clinical uses and adverse effects of topical corticosteroids</p> <p>Enlist dermatological disorders responsive to topical corticosteroids ranked in order of sensitivity.</p> <p>Discuss keratolytic agents, antipruritic agents, trichogenic and antitrichogenic agents and use of antineoplastic agents in topical conditions</p>	3	LGF	Summative MCQs Viva
113	Gout	MSK II	Write prescription for Gout	1.5	SGF	Summative OSPE Formative CBL, Assignment
114	Rheumatoid Arthritis	MSK II	Write prescription for Rheumatoid Arthritis	1.5	SGF	Summative OSPE Formative CBL, Assignment
115	Drugs used to treat Dermatological Disorders	MSK II	Write down prescription for scabies.	1.5	SGF	Summative OSPE Formative CBL, Assignment
116	Drugs used to treat Dermatological Disorders	MSK II	Write down prescription for Psoriasis	1.5	LGF	Summative OSPE

117	Antianginal Drugs	CVS II	<p>Classify antianginal drugs</p> <p>Explain mechanism of action, pharmacokinetics and adverse effects of organic nitrates and calcium channel blockers</p> <p>Explain the rationale for use of β-adrenergic blockers and sodium channel blocker in the management of angina pectoris</p>	2	LGF	<p>Summative MCQs Viva</p> <p>Formative Seminar</p>
118	Lipid Lowering Drugs	CVS II	<p>Briefly describe the types of dyslipidemias</p> <p>List the lipid lowering drug classes</p> <p>Explain the mechanism of action, effect on serum lipid profile and adverse effects of each of the five drug classes</p> <p>Discuss their drug-drug interaction</p>	2	LGF	Summative MCQs
119	Anti Coagulant Drugs	CVS II	<p>Classify anticoagulant drugs</p> <p>Discuss mechanism of action, uses of Unfractionated heparin</p> <p>Compare low molecular weight and unfractionated heparin</p> <p>Describe adverse effects of heparin and treatment of heparin overdose</p> <p>Describe mechanism of action and uses of direct Xa and IIa inhibitors</p> <p>Describe mechanism of action and uses of warfarin</p> <p>Describe adverse effects of warfarin and treatment of warfarin overdose</p> <p>Compare heparin and warfarin in terms of mechanism and onset of action</p> <p>Explain monitoring of anticoagulant therapy and important diet and drug interactions of warfarin</p>	2	LGF	Summative MCQs Viva
120	Anti Platelet & Thrombolytic Drugs	CVS II	<p>Classify antiplatelet drugs</p> <p>List indications of antiplatelet therapy</p> <p>Explain the mechanism of action and adverse effects of each antiplatelet drug group</p> <p>Name thrombolytic drugs and explain their mechanism of action, uses and adverse effects</p>	1	LGF	<p>Summative MCQs Viva</p> <p>Formative Seminar</p>

121	Anti Hypertensive Drugs	CVS II	<p>Classify antihypertensive drugs</p> <p>Discuss role of diuretics in the management of hypertension</p> <p>Discuss in HTN the role of ACE inhibitors, angiotensin receptor-blockers, renin inhibitors in hypertension</p> <p>Explain the rationale for the use of β-blockers, α-blockers, centrally acting sympatholytic drugs</p> <p>Describe the direct vasodilators in relation to antihypertensive drug therapy</p> <p>Describe the role of Calcium channel blockers in hypertension</p>	3	LGF SGF	Summative MCQs Viva Formative Seminar
122	Drugs Used in CCF	CVS II	<p>Define the different classes of the drug used in the treatment of heart failure</p> <p>Explain the pharmacological effects, clinical uses, adverse effects and drug interactions of digitalis glycosides</p> <p>Explain the signs symptoms and treatment of digoxin overdose</p> <p>Enlist positive inotropic drugs (other than digoxin) that are used in heart failure</p>	2	LGF	Summative MCQs Viva
123	Diuretics	CVS II	<p>Classify 5 major groups of diuretic drugs and relate them to their site of action</p> <p>Discuss their mechanism of action, clinical applications and adverse effects</p>	2	LGF	Summative MCQs Viva
124	Drugs for Arrhythmia	CVS II	<p>Classify antiarrhythmic drugs</p> <p>Describe the effect of different classes of antiarrhythmic drugs on membrane potential of cardiomyocytes</p> <p>Explain the mechanism of action of all the classes of antiarrhythmic drugs</p> <p>Discuss the adverse effects and clinical uses of antiarrhythmic drugs</p> <p>Discuss workup and management of pulmonary edema</p>	3	LGF	Summative MCQs

125	MI	CVS II	Construct a prescription for a patient with MI	1.5	SGF	Summative OSPE Formative CBL
126	Hypertension	CVS II	Construct a prescription for a patient with HTN	1.5	SGF	Summative OSPE Formative CBL
127	CCF	CVS II	Construct a prescription for a patient with CCF	1.5	SGF	Summative OSPE Formative CBL
128	Antitussives, Expectorants, Cough Suppressants	Respiratory II	Classify Anti-tussives Describe pharmacology of cough suppressants Describe pharmacology of expectorants, mucolytic agents in cough	1	LGF	Summative MCQs Viva Formative Seminar
129	Anti TB Drugs	Respiratory II	Classify Anti tuberculous drugs Describe the pharmacology of First line & 2 nd line antituberculosis drugs Discuss the drug treatment & duration of newly diagnosed pulmonary TB patient Discuss the development of resistance to mycobacterium tuberculosis against conventional antibiotics Discuss the classification & duration of therapy in patients with MDR TB Discuss the drug treatment & duration of antitubercular therapy in pregnant woman & patients having hepatic & renal insufficiency Describe the rationale for the use of multi drug therapy against pulmonary tuberculosis	2	LGF	Summative MCQs Viva Formative Seminar
130	Anti asthmatic Drugs	Respiratory II	Classify the Drugs used in the asthma Describe the role of beta 2 agonists & antimuscarinic agents used in asthma Describe the role of methylxanthines and corticosteroids used in asthma Describe the PK & PD aspects of Mast cell stabilizers, Anti IgG	2	LGF	Summative MCQs Viva Formative Seminar

			antibodies and leukotriene antagonists in asthma Describe drug treatment of acute and chronic asthma and status asthmatics			
131	Pulmonary TB	Respiratory II	Write the prescription for Pulmonary Tuberculosis	1.5	LGF	Summative OSPE Formative CBL
132	Inhaler	Respiratory II	Demonstrate the proper stepwise use of metered dose inhaler	1.5	LGF	Summative OSPE Formative CBL
133	Asthma	Respiratory II	Write the proper prescription for Acute & Chronic Asthmatic patients	1.5	LGF	Summative OSPE Formative CBL, Seminar
134	Asthma	Respiratory II	Write the proper prescription for patients with status Asthmaticus	1.5	LGF	Summative OSPE Formative CBL, Seminar

4th YEAR MBBS

135	Introduction to the Pharmacology of CNS	Neuroscience II	Describe basic terms like neurotransmitters, neuromodulator /neurotropic factors, withdrawal symptoms (abstinence syndrome), cross-tolerance, reverse tolerance (sensitization) and cross-dependence Describe the blood-brain barrier and its clinical significance Enlist the principal neurotransmitters and their receptors in the CNS Describe voltage-gated, ligand-gated, ion channels and metabotropic receptors on the neuronal membrane Classify the drugs acting on the CNS	2	LGF	Summative MCQs Viva
136	Sedative-hypnotics Benzodiazepine	Neuroscience II	Classify broadly the Sedative-Hypnotics Classify Benzodiazepines Describe the pharmacokinetics of Benzodiazepines Describe the mechanism of action and pharmacological effects of Bzds Describe clinical uses & adverse effects of	2	LGF	Summative MCQs Viva Formative Seminar

			<p>Benzodiazepines</p> <p>Describe the tolerance and dependence on Benzodiazepines</p> <p>Describe their drug interactions</p> <p>Name the antidote to Benzodiazepines</p>			
137	<p>Barbiturates</p> <p>Bupirone</p> <p>Ramelteon</p>	<p>Neuroscience</p> <p>II</p>	<p>Classify barbiturates</p> <p>Describe the mechanism of action and clinical uses of barbiturates</p> <p>Describe the difference regarding the mechanism of action of Barbiturates in comparison to Benzodiazepines</p> <p>Describe the mechanism of action and clinical use of Bupirone</p> <p>Describe the merits and demerits of Bupirone in comparison to Benzodiazepines</p> <p>Describe the mechanism of action and clinical use of Ramelteon</p>	1	LGF	<p>Summative</p> <p>MCQs</p> <p>Viva</p>
138	<p>CNS</p> <p>Stimulants:</p> <p>Respiratory</p> <p>Analeptics</p> <p>Methylxanthine</p> <p>Sibutramine</p>	<p>Neuroscience</p> <p>II</p>	<p>Classify CNS stimulants</p> <p>Describe the mechanism of action, clinical uses & adverse effects of respiratory analeptics</p> <p>Describe the mechanism of action, clinical uses and adverse effects of Methyl xanthine</p> <p>Describe the mechanism of action and clinical use of Sibutramine</p>	1	LGF	<p>Summative</p> <p>MCQs</p> <p>Viva</p>
139	<p>Anti</p> <p>Depressants</p>	<p>Neuroscience</p> <p>II</p>	<p>Describe the Monoamine hypothesis of depression</p> <p>Classify antidepressants</p> <p>Enlist SSRIs</p> <p>Describe the pharmacokinetics, mechanism of action, clinical uses, adverse effects and drug interactions of SSRIs</p> <p>Enlist TCAs</p> <p>Describe the mechanism of action, clinical uses, adverse effects and drug interactions of TCAs</p> <p>Enlist MAOIs</p> <p>Describe the pharmacokinetics, mechanism</p>	3	LGF	<p>Summative</p> <p>MCQs</p> <p>Viva</p> <p>Formative</p> <p>Seminar</p>

			<p>of action, clinical use, adverse effects and drug interactions of MAOIs</p> <p>Describe Serotonin syndrome</p> <p>Describe Hypertensive Cheese reaction</p> <p>Describe St John's Wort</p> <p>Describe the procedure of switching-over from one category of antidepressants to another one</p> <p>Describe "Augmentation" of antidepressant therapy</p> <p>Describe Electroconvulsive Therapy (ECT) for depression</p>			
140	Antipsychotics	Neuroscience II	<p>Describe the Dopamine hypothesis of Schizophrenia</p> <p>Classify Antipsychotics</p> <p>Describe the advantages of Atypical antipsychotics over the Typical agents</p> <p>Describe the mechanism of action pharmacological effects, clinical uses adverse effects and drug interactions of Antipsychotics</p> <p>Explain the drug treatment of extrapyramidal syndrome</p>	2	LGF	Summative MCQs Viva
141	Mood Stabilizing Drugs: Lithium Carbonate	Neuroscience II	<p>Describe the concept of "mood-stabilization" in Bipolar affective disorder</p> <p>Enlist Mood-stabilizing drugs</p> <p>Describe pk, mechanism of action, clinical uses, adverse effects and drug interactions of Lithium carbonate</p>	1	LGF	Summative MCQs Viva
142	Alcohols	Neuroscience II	<p>Describe alcoholism</p> <p>Describe pk of Ethanol</p> <p>Describe the mechanism of Action, pharmacological effects, clinical uses and adverse effects of Ethanol</p> <p>Describe Disulfiram-like reaction with example of drugs causing it</p> <p>Describe the management of Ethanol intoxication</p> <p>Describe the management of Ethanol withdrawal symptoms</p> <p>Describe the treatment of alcoholism</p> <p>Describe briefly Methanol poisoning</p>	1	LGF	Summative MCQs Viva

143	Opioids	Neuroscience II	<p>Differentiate between Opioids and Opiates</p> <p>Describe the term narcotic</p> <p>Describe the source of Opium</p> <p>Enlist the “brain’s own Morphine”</p> <p>Classify Opioids</p> <p>Enlist Opioids with mixed agonist antagonist properties</p> <p>Enlist Opioids with partial agonist activity</p> <p>Describe the pharmacokinetics, mechanism of action, pharmacological effects, clinical uses, adverse effects and drug interactions of Opioids</p> <p>Describe the use of opioids as palliative care in terminal illness</p> <p>Describe opioid rotation</p> <p>Describe treatment of Opioid over dose</p> <p>Describe the Opioid antagonists</p> <p>Describe Opioid dependence</p> <p>Describe the management of Opioid dependence</p> <p>Describe contraindications of Opioids</p> <p>Enlist the drugs used for pain in opioid addicts</p> <p>Describe the mechanism of action and clinical use of Tramadol</p>	3	LGF	Summative MCQs Viva
144	Drugs of Abuse	Neuroscience II	<p>Describe substance abuse, drug dependence, addiction and habituation</p> <p>Describe the Dopamine hypothesis of addiction</p> <p>Enlist the drugs causing addiction</p> <p>Enlist the non-addictive drugs of abuse</p> <p>Describe “Club drugs”</p> <p>Enlist the drugs having high-risk of addiction</p> <p>Enlist the drugs having moderate-risk of addiction</p> <p>Describe the drug treatment of Nicotine, Alcohol, Cannabis and Opioid abuse</p> <p>Describe the drug abuse in sports with examples</p>	1	LGF	Viva

145	Depression	Neuroscience II	Formulate a prescription for a newly diagnosed case of depression	1	SGF	Summative OSPE Formative CBL
146	Antiepileptics	Neuroscience II	<p>Classify anti-seizure drugs</p> <p>Enlist the “Broad-spectrum” anti-epileptics</p> <p>Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Carbamazepine</p> <p>Describe the pharmacokinetics of Phenytoin with reference to the phenomenon of zero-order kinetics</p> <p>Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Phenytoin</p> <p>Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Valproate</p> <p>Describe the mechanism of action, clinical uses and adverse effects of Ethosuximide</p> <p>Describe briefly the historic role of phenobarbitone in the management of epilepsy</p> <p>Name the benzodiazepines used in the management of epilepsy</p> <p>Name the new antiepileptic drugs</p> <p>Describe the mechanism of action, clinical uses and adverse effects of Lamotrigine and Topiramate</p> <p>Describe the use of antiepileptics during pregnancy</p> <p>Describe drug interaction of antiepileptics with oral contraceptives</p> <p>Describe the management of status epilepticus</p>	3	LGF	Summative MCQs Viva Formative Seminar
147	General Anesthetics	Neuroscience II	<p>Describe the stages of general anaesthesia</p> <p>Describe balanced anaesthesia</p> <p>Describe pk of Inhaled anaesthetics</p> <p>Discuss the clinical significance of Blood: Gas partition coefficient of</p>	2	LGF	Summative MCQs Viva

			<p>Inhaled anaesthetics</p> <p>Describe the mechanism of action of Inhaled anaesthetics</p> <p>Define and describe the significance of MAC50</p> <p>Describe pharmacological effects and adverse effects of Inhaled anaesthetics</p> <p>Describe second gas effect and diffusion hypoxia</p> <p>Describe Malignant hyperthermia and its management</p> <p>Describe the properties of ideal inhaled anaesthetics</p> <p>Describe the mechanism of action, clinical use and adverse effects of intravenous anaesthetics</p> <p>Describe re-distribution of Thiopentone</p> <p>Define neuroleptanalgesia and neuroleptanaesthesia</p> <p>Describe dissociative anaesthesia</p> <p>Describe TIVA technique</p>			
148	Preanesthetic Drugs	Neuroscience II	<p>Describe the drugs used as Pre-anesthetic medications</p> <p>Describe the drugs for obstetric analgesia</p>	1	LGF	Summative MCQs Viva
149	Prescription of Epilepsy	Neuroscience II	<p>Formulate prescriptions for patients with Tonic-Clonic and Petit-mal epilepsy</p>	1	SGF	Summative OSPE Formative CBL
150	Antiparkinsonian Drugs	Neuroscience II	<p>Classify drugs for Parkinsonism</p> <p>Describe pk, mechanism of action, adverse effects, contraindications and drug interactions of Levodopa</p> <p>Discuss the rationale of combining Carbidopa with Levodopa</p> <p>Describe the on-off , drug holidays and end-of-dose phenomenon</p> <p>Describe the mechanism of action, clinical uses and adverse effects of Bromocriptine</p> <p>Describe the mechanism of action and clinical uses of Selegiline and apomorphine</p> <p>Describe the differentiating point regarding the use of Selegiline as antiparkinsonian</p>	2	LGF	Summative MCQs Viva

			<p>drug and its use as an antidepressant drug</p> <p>Enlist the drugs causing Parkinsonism-like symptoms</p> <p>Enlist the drugs used in the management of drug-induced Parkinsonism</p> <p>Describe the rationale of avoiding Levodopa in drug-induced Parkinsonism</p>			
151	Drug Treatment of Migraine and Cluster Headaches	Neuroscience II	<p>Classify drugs used for the treatment of Migraine and Cluster headaches</p> <p>Enlist the drugs used for the prophylaxis of Migraine and Cluster headaches</p> <p>Describe the mechanism of action, clinical use and adverse effects of Sumatriptan</p> <p>Enlist Ergot alkaloids</p> <p>Describe pharmacological effects, mechanism of action, clinical use and adverse effects of Ergotamine</p>	1	LGF	Summative MCQs Viva
152	Migraine Prescription	Neuroscience II	<p>Formulate prescription for a patient with migraine headache</p>	1	SGF	Summative OSPE Formative CBL
153	Local Anesthetics	Neuroscience II	<p>Classify Local anaesthetics</p> <p>Enlist the Local anaesthetics used for surface anaesthesia</p> <p>Enlist the Local anaesthetics used for infiltration anaesthesia, nerve block, spinal anaesthesia and epidural anaesthesia</p> <p>Describe EMLA and its clinical use</p> <p>Describe pk, mechanism of action, pharmacological Effects and clinical uses of Local anaesthetics</p> <p>Describe the differential blockade of peripheral nerves by Local anaesthetics</p> <p>Describe the major advantages of adding Adrenaline to Lignocaine for infiltration anaesthesia</p> <p>Calculate the quantity of Adrenaline/ml in the traditionally used combinations of Adr & LA</p> <p>Describe the adverse effects of LAs</p>	1	LGF	Summative MCQs Viva

154	Antiemetics	GIT & Hepatobiliary II	<p>Classify anti-emetic drugs</p> <p>Describe the mechanism of serotonin antagonists as anti-emetic agents.</p> <p>Enlist the clinical uses (anti-emetic) and adverse effects of serotonin antagonists.</p> <p>Describe the pharmacological basis of serotonin antagonists in chemotherapy induced vomiting</p> <p>Describe the mechanism of H1-antagonists as anti-emetic agents.</p> <p>Enlist the clinical uses (anti-emetic) of H1-antagonists.</p> <p>Describe the clinical uses and mechanism of anticholinergic drugs as anti-emetic agents</p> <p>Describe pharmacological basis of scopolamine in motion sickness</p> <p>Describe anti-emetic mechanism of D2-receptor blockers</p> <p>Enlist the clinical uses (anti-emetic) and adverse effects of D2-receptor blockers.</p> <p>Compare pharmacological features of metoclopramide & Domperidone.</p> <p>Describe drug interaction of metoclopramide with levodopa.</p> <p>Describe the mechanism of neuroleptics as anti-emetic agent.</p> <p>Enumerate the clinical uses of neuroleptic drugs.</p> <p>Describe antiemetic mechanism of Bzds</p> <p>Describe antiemetic mechanism of GCs</p> <p>Enumerate indications of glucocorticoids.</p> <p>List anti-emetic drugs used in morning sickness.</p> <p>List anti-emetic drugs used in chemotherapy induced vomiting.</p>	2	LGF	Summative MCQs Viva
155	Drugs Used in Variceal Hemorrhage	GIT & Hepatobiliary II	<p>Enlist the drugs used in variceal hemorrhage</p> <p>Describe the mechanism of beta blockers, somatostatin, Vasopressin, Terlipressin & octreotide in variceal</p>	1	LGF	Summative MCQs Viva

			hemorrhage			
156	Drugs Used in the Treatment of Peptic Ulcer Disease and Gastritis	GIT & Hepatobiliary II	<p>Classify the drugs used in Peptic ulcer disease</p> <p>Describe the mechanism of action, indications and adverse effects of proton pump inhibitors (PPIs).</p> <p>Describe the pharmacokinetics of PPIs with special emphasis on time of administration</p> <p>Describe the drug interaction of Omeprazole & H2 blockers with Sucralfate</p> <p>Describe the drug interaction of Omeprazole with Clopidogrel</p> <p>Describe the mechanism of action, indications and adverse effects of H-2 blockers.</p> <p>Compare/differentiate H2-blockers in terms of bioavailability & involvement in drug interactions</p> <p>Describe the mechanism of action, indications and adverse effects of Antacids.</p> <p>Enumerate the properties of an ideal antacid.</p> <p>Describe pharmacokinetics of antacids with special emphasis on time of administration</p> <p>Describe the drug interactions of antacids with tetracyclines, iron and fluoroquinolones.</p> <p>Describe the mechanism of sucralfate in the treatment of peptic ulcer</p> <p>List the indications of sucralfate.</p> <p>Discuss drug interaction of sucralfate with digoxin, ketoconazole & tetracycline</p> <p>Describe pk of sucralfate with special emphasis on time of administration.</p> <p>Describe the mechanism, indications and adverse effects of bismuth compounds</p> <p>Describe the role of anticholinergic drugs in</p>	3	LGF	Summative MCQs Viva Formative Seminar

			<p>peptic ulcer. List the indications (anti-peptic ulcer) of anticholinergic drugs. Discuss the pharmacological basis for the use of prostaglandin analogues in the treatment of peptic ulcer. List the contraindications of misoprostol. Describe triple therapy and quadruple therapy for the eradication of H.pylori infection.</p>			
157	Prescriptions: Emesis	GIT & Hepatobiliary II	<p>Construct prescriptions for motion sickness, morning sickness, post-operative patient Construct prescriptions for cancer chemotherapy-induced vomiting</p>	2	SGF	Summative OSPE Viva Formative CBL
158	Prescription PUD	GIT & Hepatobiliary II	Construct prescription for H. Pylori peptic ulcer disease (Triple therapy & Quadruple therapy)	1	SGF	Summative OSPE Formative CBL
159	Hepatotoxic Drugs	GIT & Hepatobiliary II	<p>Describe first pass hepatic metabolism Enlist hepatotoxic drugs Explain drug treatment of paracetamol poisoning.</p>	1	LGF	Summative MCQs Viva
160	Drugs used in the treatment of hepatitis B	GIT & Hepatobiliary II	<p>Classify the drugs for hepatitis B virus Describe the duration and adverse effects of drugs used in the treatment of chronic hepatitis B.</p>	1	LGF	Summative MCQs Viva
161	Drugs used in the treatment of hepatitis C	GIT & Hepatobiliary II	<p>Classify the drugs for hepatitis C virus Describe the duration and adverse effects of drugs used in the treatment of chronic hepatitis C.</p>	1	LGF	Summative MCQs Viva
162	Anti Diarrheal Agents	GIT & Hepatobiliary II	<p>Define and classify antidiarrheal agents Describe the mechanism of action of different antidiarrheal agents</p>	1	LGF	Summative MCQs Viva
163	Laxatives	GIT & Hepatobiliary II	<p>Define and classify laxative drugs Describe the mechanism of action of different laxatives Describe pharmacological</p>	1	LGF	Summative MCQs Viva

			basis of Lactulose in the treatment of hepatic encephalopathy			
164	Anti Amoebic Drugs	GIT & Hepatobiliary II	Classify anti-amoebic drugs Describe mechanism of actions of Metronidazole & Dialoxanide Furoate Enlist indications, adverse effects of Metronidazole & Dialoxanide Furoate Describe drug interaction of Metronidazole with Alcohol.	1	LGF	Summative MCQs Viva
165	Anti Helminthic Drugs	GIT & Hepatobiliary II	Classify Anti-Helminthic drugs Enumerate clinical use, adverse effects and contraindications Describe their mechanism of action	2	LGF	Summative MCQs Viva
166	Anti Salmonellosis Drugs	GIT & Hepatobiliary II	List the drugs used in enteric fever Describe the basis for selection of antibiotics in enteric fever based on age, pregnancy and resistance Describe clinical use of FQs in treatment of GIT disorders	1	LGF	Summative MCQs Viva
167	Anti amoebics: Prescription	GIT & Hepatobiliary II	Construct a prescription for a patient suffering from amoebic dysentery	1	LGF	Summative OSPE
168	Anti Salmonella, Anti Helminthics: Prescription	GIT & Hepatobiliary II	Construct a prescription for a patient suffering from Enteric fever Write a prescription for a patient suffering from Ascariasis	2	LGF	Summative OSPE Viva Formative CBL
169	Drugs used in the treatment of Irritable Bowel Syndrome (IBS)	GIT & Hepatobiliary II	Enlist drugs used in IBS Describe MoA of antispasmodics, 5-HT receptor antagonists	1	LGF	Summative MCQs Viva
170	Drugs used in the treatment of IBD	GIT & Hepatobiliary II	Classify the drugs used in IBD. Describe the MOA of various drugs used in IBDs. Explain the adverse effects of drugs used in the treatment of IBD	1	LGF	Summative MCQs Viva
171	Drugs for UTIs	Renal II	Describe the clinical pharmacology of drugs used in the management of acute and chronic UTI	1	LGF	Summative MCQs Viva

172	Prescription	Renal II	Formulate prescriptions for acute and chronic UTI	1	SGF	Summative OSPE Formative CBL, Seminar
173	Drugs for BPH	Renal II	Classify the drugs used in the management of BPH Enlist the alpha-adrenergic blocking drugs with special reference to those having specific affinity for prostate muscle. Describe the role of alpha blockers, 5-alpha reductase inhibitors (Finasteride) and combination therapy in BPH. Enlist the adverse effects of the drugs used to treat BPH.	1	LGF	Summative MCQs Viva
174	Drugs for Ca Prostate	Renal II	Enlist the hormonal agents used in the management of Prostatic carcinoma. Describe the mechanism of action of Gonadotropin-releasing hormone (Goserelin) and anti-androgens (Cyproterone acetate and Flutamide) in the management of Prostatic carcinoma. Enlist the anticancer chemotherapeutic agents used in the management of Prostatic carcinoma	1	LGF	Summative MCQs Viva
175	Growth Hormone and Growth Hormone Antagonists	Endocrine & Reproduction II	Describe the sources of Growth hormone Describe the mechanism of action, clinical uses and adverse effects of Growth hormone Enlist Growth hormone antagonists Describe the clinical role of Octreotide in acromegaly Describe the route of administration, dosage and adverse effects of octreotide in acromegaly and gigantism	2	LGF	Summative MCQs Viva
176	Bromocriptine	Endocrine & Reproduction II	Describe the mechanism of action, clinical uses and adverse effects of Bromocriptine	1	LGF	Summative MCQs Viva
177	Thyroid Hormones	Endocrine & Reproduction II	Enlist thyroid preparations Describe the mechanism of action, pharmacological effects, clinical use, and adverse effects of	1	LGF	Summative MCQs Viva

			Thyroxine (T4) and Triiodothyronine (T3)			
178	Anti Thyroid Drugs	Endocrine & Reproduction II	<p>Classify Antithyroid drugs</p> <p>Describe the mechanism of action, clinical use, and adverse effects of Thioamides</p> <p>Describe the mechanism of action, clinical use, and adverse effects of Potassium iodide</p> <p>Describe Lugol's iodine solution</p> <p>Describe the mechanism of action, clinical use, and adverse effects of Radioactive iodine (¹³¹I)</p> <p>Describe the use of β-blockers in hyperthyroid patients</p>	2	LGF	Summative MCQs Viva
179	Grave's Disease Prescription	Endocrine & Reproduction II	Formulate prescription for a patient with Graves' Disease	1	LGF	Summative OSPE
180	Insulin	Endocrine & Reproduction II	<p>Classify Insulins</p> <p>Describe the sources of Insulin</p> <p>Describe the differences between the human, bovine and porcine insulins</p> <p>Describe the mechanism of action, clinical uses of and complications of Insulin therapy</p> <p>Describe management of hypoglycemia caused by Insulin</p> <p>Describe management of diabetic ketoacidosis</p>	2	LGF	Summative MCQs Formative Seminar
181	Oral Hypoglycemic Drugs	Endocrine & Reproduction II	<p>Classify oral hypoglycemic drugs</p> <p>Enlist euglycaemic drugs</p> <p>Describe the mechanism of action and adverse effects of Sulphonylureas</p> <p>Describe the mechanism of action and clinical use of Meglitinides</p> <p>Describe the mechanism of action, clinical use, and adverse effects of Biguanides</p> <p>Describe the mechanism of action, clinical use, and adverse effects of Thiazolidinediones</p>	2	LGF	Summative MCQs Formative Seminar

			Describe the mechanism of action, clinical use and adverse effects of α -glucosidase inhibitors Describe the mechanism of action and clinical use of Pramlintide, Exenatide and Sitagliptin			
182	Glucagon Desmopressin	Endocrine & Reproduction II	Describe the mechanism of action and clinical use of Glucagon Describe the mechanism of action, clinical use and adverse effects of Desmopressin Enlist the drugs used in nephrogenic diabetes insipidus	1	LGF	Summative MCQs Viva
183	Diabetes Mellitus Prescription	Endocrine & Reproduction II	Formulate prescription for a patient with type 1 and type 2 Diabetes Mellitus	1	LGF	Summative OSPE
184	Glucocorticoid	Endocrine & Reproduction II	Classify Glucocorticoids Describe the mechanism of action, pharmacological effects, clinical uses, and adverse effects of glucocorticoids Describe dexamethasone suppression test	2	LGF	Summative MCQs Viva
185	Glucocorticoid antagonists Aldosterone Antagonists	Endocrine & Reproduction II	Enlist Glucocorticoid antagonists/synthesis inhibitors Describe the mechanism of action, clinical uses and adverse effects of Mifepristone, Ketoconazole & Aminoglutethimide Describe the mechanism of action, clinical uses, and adverse effects of Spironolactone	1	LGF	Summative MCQs Viva
186	Gonadotropins and human chorionic gonadotropin Gonadotropin- releasing hormone and analogues	Endocrine & Reproduction II	Describe the mechanism of action, clinical uses, and adverse effects of Gonadotropins (FSH & LH) and human chorionic gonadotropin (hCG) Describe the role of gonadotropins in male infertility Describe the mechanism of action, clinical uses and adverse effects of Gonadotropin-releasing	2	LGF	Summative MCQs Viva

			hormone and analogues (Gonadorelin and others)			
187	Oxytocin	Endocrine & Reproduction II	Describe the mechanism of action, clinical uses and adverse effects of Oxytocin	1	LGF	Summative MCQs Viva
188	Estrogens	Endocrine & Reproduction II	Classify Oestrogens Describe their mechanism of action, organ system effects, clinical uses, adverse effects and contraindications	1	LGF	Summative MCQs Viva
189	Progestins	Endocrine & Reproduction II	Classify Progestins Describe the mechanism of action, organ system effects, clinical uses, adverse effects and contraindications of Progestins	1	LGF	Summative MCQs Viva
190	Oral Contraceptives	Endocrine & Reproduction II	Classify OCPs Describe MoA, effects, uses, adverse effects & contraindications of OCP Describe mini pills with their advantages and disadvantages Describe post-coital contraceptives and use of parenteral, implantable contraceptives	2	LGF	Summative MCQs Viva
191	Clomiphene Mifepristone Danazol	Endocrine & Reproduction II	Describe the mechanism of action, clinical use and adverse effects of Clomiphene Describe the mechanism of action, clinical uses and adverse effects of Mifepristone and Danazol	1	LGF	Summative MCQs Viva
192	Androgens, Antiantrogens, Male Contraception	Endocrine & Reproduction II	Enlist Androgens and anabolic steroids Describe the mechanism of action, clinical uses and adverse effects of androgen preparations Classify antiandrogens Describe the role of Ketoconazole as steroid synthesis inhibitor, its clinical uses and adverse effects Describe the mechanism of action and clinical use of Finasteride Describe the mechanism of action and clinical use of Cyproterone acetate Describe the role of Spironolactone as androgen	2	LGF	Summative MCQs Viva

			receptor blocker and its use in this context Enlist the drugs used for male contraception Describe the role of Gossypol as male contraceptive agent			
193	Selective Estrogen Receptor Modulators (SERMs)	Endocrine & Reproduction II	Enlist Selective Estrogen Receptor Modulators (SERMs) Describe the mechanism of action and clinical uses of Tamoxifen	1	LGF	Summative MCQs Viva

LEARNING RESOURCES:

- Basic and Clinical Pharmacology by Bertram G Katzung 15th Edition (Text Book)
- Lippincott Illustrated Pharmacology (Text Book)
- The Pharmacological Basis of Therapeutics by Goodman & Gilman (Reference book)
- Clinical Pharmacology by Morris J. Brown (Reference book)

ADDITIONAL LEARNING RESOURCES:

- Skill Lab (IM/IV Injections)
- Practicals and Lectures Videos

MODEL QUESTIONS:

MCQ 1:

A 60 years old female, a known patient of rheumatoid arthritis being treated with ibuprofen is recently put on another drug for slowing down the progression of her condition. Few months later she comes to her physician for followup visit, she tells that though her joint symptoms are well controlled she experiences dizziness, tinnitus and blurring of vision. Eye examination shows corneal opacities and slight pigmentation in the retina. Diagnosis of drug induced adverse effects was formed. Which is the drug most likely added to the therapy in the last visit responsible for these effects?

- Auranofin
- Cyclophosphamide
- Etanercept
- Hydroxychloroquine
- Methotrexate

MCQ 2:

A patient is brought to the emergency intoxicated and in aggressive state with abnormal disinhibited behavior. His vision is blurred and his breath has characteristic formaldehyde like smell. Which of the following drugs he has most likely abused?

- a. Cocaine
- b. Ethanol
- c. Heroin
- d. Methanol
- e. Phenobarbitone

OSPE:

TASK:

To demonstrate the effect of the given drug on the light reflex in the left eye of rabbit (Marks: 6)

Equipment Required:

Given drug, torch, cotton swab, rabbits, scissors

Instructions for the Students:

- You are required to demonstrate the effect of given drug on the light reflex in the left eye of rabbit with right eye being the control eye
- You have 5 minutes to complete your task
- Perform all the steps, your actions are being observed

Instructions for the Examiner:

- Enter the name and roll number of the students on the check lists provided
- Student must be observed closely without interruption
- Mark with tick or cross against all the steps provided in the check list
- Final marks of the station will be cumulative points of steps correctly performed

Check List for the Examiner:

- Stabilize the head of rabbit and cut the eyelashes of the rabbit (1)
- Take baseline recording of the light reflex in both the eyes of rabbit (1)
- Torch should be brought from the sides of the head of animal and Pupillary reaction must be observed (1)
- Drug be instilled in the left eye of rabbit (1)
- After 2 minutes torch is shown in the left eye being brought from the side (1)
- Pupillary reaction on light reflex noted (1)

CASE BASED LEARNING:

A 50 year-old male presents for an evaluation of rapid onset of pain and swelling in his right big toe to the extent that he is unable to walk. The patient denies any trauma to the toe, however he reports that he had two similar previous episodes with the same symptoms lasting four to five

days and was treated by emergency physicians. The patient's past medical history is significant for hypertension and is being treated with Hydrochlorothiazide. On examination he has fever of 100 F and appears to be in moderate distress due to pain. Right metatarsophalangeal on examination is found to be swollen, warm, red and tender. Rest of the examination is unremarkable. Synovial fluid is obtained which reveals needle shaped crystals.

Learning outcomes:

Students should be able to:

- Describe differential diagnosis in the above scenario?
- Describe investigations which can be done to make a definite diagnosis.
- Describe pathophysiology of gout.
- Describe the significance of treatment with hydrochlorothiazide in the above scenario
- Classify drugs for acute and chronic gout.
- Describe pharmacokinetics, mechanism of action and adverse effects of colchicine and allopurinol
- Describe the role of NSAIDs and corticosteroids in the treatment of acute gout
- Construct a prescription for this patient if definite diagnosis of Rheumatoid Arthritis is made.

Learning resources:

- Basic and clinical Pharmacology by Bertram G Katzung 14th Edition
- The Pharmacological Basis of Therapeutics by Goodman & Gilman Latest Edition
- Clinical Pharmacology by Morris J. Brown