CURRICULUM PHARMACOLOGY

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3RD YEAR MBBS

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Study Guide

3rd Year MBBS

Pharmacology &

Therapeutics

Abbottabad International Medical College.

PHARMACOLOGY - BLOCK I				
CODE: Y3B1				
Duration: 12 weeks				
By the end of Block I, the students will be able to:				
SNo	**Theme/Block**	**Learning Outcomes**	**Course Content**	**% Weightage**
1	***General Pharmacology***	• Interpret the different pharmacokinetic patterns,their clinicalsignificance andfactors affectingtheseparameters. • Correlatethe concept of molecular mechanistictothetherapeutics. • Identify the genetic principles in drug disposition	• Pharmacology: Introduction, Historical overview • Branches/divisionofPharmacology, • Sources&activeprinciplesofdrugs • Routesofadministrationofdrugs • Pharmacokinetics: • Absorption ofdrugs: processes • Factorsmodifyingdrugabsorption • Distribution &plasma protein binding ofdrugs • Biotransformation ofdrugs • Factors modifying biotransformation • Bioavailability:clinicalsignificance& factors affecting • Half-life of drugs: factors affecting &clinical significance • Excretionofdrugs:Drugclearance • Pharmacodynamics: Mechanism of drug action • Factorsmodifyingactions&dosesof drugs	**25**
2	***Drug sactingon ANS***	• Correlate the physiology of autonomic receptors with the therapeutic application	• A N S:Introduction • Parasympathomimetics or cholinergic Drugs • Anti Cholinesterases, Myesthenia gravis • Organophosphate poisoning & Oximes • Cholinergic blockers: Natural alkaloids, Comparison between Hyoscine &Atropine • Catecholamines: Adrenaline.,Nor adrenaline, Dopamine& Dobutamine	**25**

			• Non Catecholamines: Ephedrine, Amphetamines α/β2 receptor agonists etc • Adrenergic Blockers: Alpha-receptor Blockers, Beta receptor Blockers • Central Sympathoplegics • Skeletal MuscleRelaxants • Drug treatment of glaucoma	
3	***Drug sactingon CVS***	• Relate the pathophysiology of heart and vessels to its treatment modalities	• Revisiting physiology of CVS • Cardiotonicdrugs:Managementof cardiotoxicity of cardiac glycosides • Antihypertensivedrugs • Drug Treatmentof IHD • Anti arrhythmicdrugs	**20**
4	**Blood**	• Justify the management plan of anemia, coagulation disorders and dyslipidemias by correlating it to the patho-physiologicalbasisofdisease	• Haematinics • Anticoagulants • Thrombolytic • Anti-platelets • Anti Hyperlipidemics	**15**
5	**Diuretics**	• Recollect the anatomical physiologicalbasisofrenalsystem. • Differentiate therapeutic application of differentdiuretics	Thiazide,loop,Ksparing,osmotic, CarbonicAnhydraseinhibitors	**15**
				100%
End Block Assessment		**Endblockassessment is tobe taken . Assessment tools: MCQs & SAQs/SEQs**		

PHARMACOLOGY - BLOCK II				
CODE: Y3B2				
Duration: 10 weeks				
By the end of Block II, the students will be able to:				
SNo	**Theme/Block**	**Learning Outcomes**	**Course Content**	**% Weightage**
1	**Central Nervous System**	• Correlate the patho-physiology of psychiatric illnesses to their management • Differentiate between different pharmacological agents (LA, GA, opioids, NSAIDs) used in the pain management • Justify the use of antiparkinson drugs correlating it to the underlying pathophysiology of the disease • Analyze the effects of anti-epileptic drugs in relation to neuro-excitatory illnesses • Strategize the management of • migraine in accordance with the underlying disease mechanism • Correlate the effects of substances of abuse (alcohol, opioids, heroin) on body to its plan for aversion therapy • Critique on the pharmacological effects of sedative /hypnotics	• Central Neurotransmission • Gen Anesthetics • Local Anesthetics(LA) • Aliphatic Alcohols • Sedatives/Anxiolytics & Hypnotics • Anti-epilepsy drugs • Antipsychotic drugs • Anti-depressants • Drugs used in Parkinsonism • Drug treatment of Migraine • Non Narcotic Analgesics a. Non-steroidal Anti-inflammatory drugs (NSAIDs) b. Drugs used in gout. c. DMARDs/ Biological Agents • Opioids • Drug Dependence	**50**
2	***Chemotherapy-I***	• Justify the treatment modalities for various microbes (bacteria, viruses) according to mode of action, resistance patterns and regional current practices • Appraise the principles of cancer chemotherapy in relation to its current therapeutic modalities	Introduction & General Principles of Chemotherapy • Mechanism of Resistance • Penicillins • Cephalosporin • Sulfonamides • Macrolides • Tetracyclines • Chloramphenicol • Aminoglycosides • Quinolones	**50**

			• Anti- tuberculosisdrugs • MiscDrugs:Clindamycin, Fusidic acids,vancomycin, Nitrofurantoin,Linezolid	
				100%
	End Block Assessment	**Endblockassessment is tobe taken . Assessmenttools: MCQs & SAQs/SEQs**		

PHARMACOLOGY - BLOCK III				
CODE: Y3B3				
Duration: 10 weeks				
By the end of Block III, the students will be able to:				
SNo	**Theme/Block**	**Learning Outcomes**	**Course Content**	**% Weightage**
1	***Chemotherapy-II***	• Justify the treatment modalities forvariousmicrobes(helminths, parasites)accordingtomodeof action, resistance patterns and regionalcurrentpractices-II	• Anti fungaldrugs • Anti viraldrugs • Anti Malarial • Anti Amoebics • Anthelmintics	**30**
2	***Endocrinology***	• Correlatethepathophysiological basisofpituitary,thyroid and adrenal hormones with their therapeutics. • Correlate types of diabetes mellitus to their different treatment modalities • Justify the clinical useof sex hormones in relation to reproductivephysiology • Correlatethepatho-physiological basis of osteoporosis to its pharmacological management.	• Antidiabetic drugs • Thyroid/Anti-thyroid drugs • Adrenal Hormones • Sex Hormones: Estrogens& Progestins, Anabolic steroids • Drugusedintreatmentof Infertility • Hormonal contraceptives • Oxytocicdrugs&UterineRelaxants • Drugtreatmentofosteoporosis	**43**

3	**Respiratory System**	• Develop and justify the management plan of obstructive pulmonary disorders (Asthma, COPD).	• Expectorants & Antitussives • Drugs used in Bronchial Asthma • Antihistamines (H1 antagonists) Prostaglandins	**10**
4	**Drugs acting on GIT**	• Develop and justify the management plan of common disorders of gastrointestinal tract (peptic ulcer, vomiting, constipation, gastropathies, diarrhea).	• Anti emetics • Antidiarrhoeals • Purgatives/laxatives Drugs used in Peptic Ulcer	**15**
5	**Miscellaneous Topics**	• Outline the essential pharmacological principles of toxicology.	• Heavy Metal Poisoning & Antidotes (Chelating Agents) • Drug – Drug interactions	**02**
				100%
	End Block Assessment	**End block assessment is to be taken .** **Assessment tools: MCQs & SAQs/SEQs**		

LIST OF PRACTICALS 3RD YEAR MBBS
(PHARMACY/EXPERIMENTAL PHARMACOLOGY)

1. **INTRODUCTION TO PHARMACOLOGY PRACTICALS:**

- Weights and measures
- Definitions and conversions (metric system, imperial system)
- Identification of apparatus
- Routes of drug administration
- Dosage form of drugs

2. **PHARMACY:-**

- Carminative mixture
- Sulphur ointment
- $KMnO_4$ solution
- ORS
- Saline expectorant
- APC Powder
- Castor oil emulsion
- Bismuth chalk suspension

3. **DOSE CALCULATIONs:-**

- Young's formula:
  Age /age + 12 X adult dose
- Dilling's formula:
  Age/20 X adult dose
- Clark's formula:
  Infant dose = weight in pounds/ 150 X adult dose
- Calculation of half life, clearance and volume of distribution
- Calculation of loading dose and maintenance dose

4. **PRESCRIPTION WRITING:-**

- Tuberculosis, bacillary dysentery, amoebic dysentery, asariasis, tapeworm infection, ac.streptococcal infection, pharyngitis, iron deficiency anemia, malaria, cerebral malaria, typhoid fever, bronchial asthma, migraine, scabies, ccf, hypertension, watery diarrhea, allergic rhinitis

5. **P-DRUGS:-**

- HTN with bronchial asthma, iron deficiency, allergic rhinitis, enteric fever, peptic ulcer, bacillary dysentery, amoebic dysentery, tonic clonic epilepsy, parkinsonism, malaria, streptococcal pharyngitis, UTI, ac.gout, ankylostomiasis, vaginal candiasis, bronchial asthma

6. BIOSTATISTICS:-

- SEM/SD
- Frequency table
- T-test
- Normal distribution curve

7. EXPERIMENTAL PHARMACOLOGY:-

- Effect of known and unknown drugs on frog heart
- Effect of drugs on frog rectusabdoninus muscle
- Effect of drugs on rabbit eye
- Study the effect of different concentrations of ACH on rabbit ileum and
    - **I.** Make dose response curve
    - **II.** Study drug antagonism on rabbit's ileum

LIST OF TUTORIALS

1. Pharmacokinetics
2. Pharmacodynamics
3. Sympathomimetics
4. Sympatholytics
5. Parasympathomimetics
6. Parasympatholytics
7. Anticoagulants
8. Diuretics
9. HTN
10. CCF, Angina
11. Sedative hypnotics
12. Local anesthetics
13. Anti epileptics
14. General anesthetic
15. Antidepressants
16. Cephalosporins
17. Tetracyclines, macrolides, chloramphenicol

Table of Specification

S.No	Topic	Academic Week	Number of Lectures	Description
1	General Pharma	1st – 3rd Week	17	Definition in pharmacology
				Sources of Drugs
				Routes of Drugs administration
				Drug Absorption
				Distribution of Drugs
				Bio trans formation of Drugs
				Plasma Half life of drugs
				Drugs excretion & Mechanism of Drug Action
				Advers drug reaction
				Drug Dry Interactions
2	ANS	4th & 5th Week	16	Cholinergics Drugs
				Anti Cholinergic Drugs
				Sympathometics & Sympatholytics
3	Auto-coids & Alkaloids	6th Week	03	Introduction
				Autocoids
				Alkaloids
4	Skeletal Muscle Relaxants	6th Week	05	Neuromuscular Blocking agents
				Skeletal Muscle Relaxants
				Directly acting skeletal muscles relaxants
5	CVS	7th Week	13	Antithrombotic Drugs
				Isotropic drugs / drugs used in cardiac failure
				Anti hypertensive drugs
				Anti anginal drugs
				Thrombolytic drugs / anti coagulants
				Anti hyplipidemic drugs
6	Diuretics	8th Week	03	Introduction
				Different Diuretics & their MOA
				Drug Interaction with diuretics
S.No	**Topic**	**Academic Week**	**Number of Lectures**	**Description**
7	GIT	8th Week	04	Anti Emetics, Purgatives laxatives.
				Drug affecting motility, ulcer healing drug
8	CNS	9th, 10th , & 11th week	17	Sedative Hypnotics, Anti-epileptics
				General anesthetics, local anesthetics
				Drugs for movements disorders, Anti parkinsonian drugs
				Alcohol, Drugs for migraine ,
9	Analgesics	12th week	08	Opioids, Anti gout drugs
				NSAIDS DMARDS
10	Drugs Acting on Respiratory system	13th Week	03	Drugs for Asthma, Expectorants, Mucolytic drugs, Anti Tussives
11	Drugs Acting on Respiratory system	13th, 14th & 15th Week	18	Pituiatary-hypothalmic drugs

				Adrenocorticoids, sex hormones contraceptives
				Thyroid/Para thyroid drugs
				Anti diabetics, drugs used in fertility
12	Drugs Acting on uterus	16th week	02	Ergometime, terbutaline, oxytocin, uses & side effects
13	Antimicrobials	17th to 21st week	30	Sulphonamides, Pencillins, cephalosporisms
				Amino glycosides, Tetraycline's Macrolides,
				Quinolones, Anti-T.B, Anti fingal, Anti viral, Anti protozoal, Anti malarial, Anti-amoebic, Anti cancec, Miscullaneous drugs
14	Clincal Pharma/ Therapeutics Drugs Treatment	22nd Week to 25th week	25	Peptic ulcer, Bronchial Asthma, Epilepsy, Parkinsonism syndrome, Rhamatic disease, Hypertension CCF Hyperlipidemia, Metal poisoining, Oedema, shock
15a	Experimental Pharmacology	To be covered in practicals classes throughout the academic weeks	150	Effects of drugs on reflex time CNS, heart, blood vessels, eye, isolated tissue of ileum
b	Prescription writing			General principles Guideline prescriptions of common infectious diseases, anemia, hypertension, migraine, cardiac failure & shock.

REFER

HARMACOLOGY

PRE-ANNUAL/ANNUAL 3RD PROFESSIONAL EXAMAMINATION: THEORY

Time Allowed =03hrs (Including MCQs)

Marks of theory paper =135

Internal assessment Total marks =15

=150

Pass Marks =75

40 x MCQs (40Marks) Time=50Min

Q. No. 1,2,3,4,5,6,7,8,9
(6x SAQs/SEQs (C1 & C2) =10 marks each

3xSAQs/SEQs (C3) =2x12marks and 1x11marks) (95 Marks) Time = 2 hrs 10 Min

TOPIC	NUMBER OF MCQs(40) (C1=16, C2=16, C3=08) 1 mark each	NUMBER OF SAQs/SEQs (09) • 6xSAQs/SEQs(C1&C2) = 10marks each • 3xSAQs/SEQs (C3) =2x12marksand1x11marks
General pharmacology	05	01
Drugs acting on Autonomic Nervous System (ANS)	05	01
Drugs acting on Central Nervous System (CNS)	07	01
Drugs acting on Cardiovascular System (CVS)/Diuretics	07	01
Chemotherapy	07	01
Endocrinology	03	01
Blood	02	01
Respiration/Misc topics	02	01
Gastrointestinal System(GIT)	02	01
Total	**40 (40Marks)**	**09 (95 marks)**

Table of specifications for Pre-Annual/ Annual Professional Exam: Practical

Practical = 135

InternalAssessment = 15

Totalmarks = 150

PassMarks = 75

Gen Viva Voce		Practical		Gen Viva + Practical	Internal Evaluation	Total
Int Examiner	Ext Examiner	Lab Work	Notebook	135	15	**150**
35	35	60	5			

***Labwork:03Observedstations(Pharmacodynamics)of10markseach=30Marks 05**

Unobservedstationsof06markseach = 30Marks

Theory: Internal Assessment (IA) Calculation

A	B	C	D
Roll No.	Name	All Blocks/ Pre annual Exams or any other exam	Total Marks of internal assessment Out of 15
Total Marks		Sum of Marks obtained x15/ sum of total marks in all Internal exams	

Practical: Internal Assessment Calculation

A	B	C	D
Roll No.	Name	OSPE /All Class tests throughout the year /Pre annual practical Examsoranyotherexam	Total Marks of internal assessment Out of 15
Total Marks		Sum of Marks obtained x15/ sum of total marks in all Internal exams	

Reference BOOKS

1. Basic and Clinical Pharmacology (Bertram G.Katzung)
2. Pharmacology (Lippincott Illustrated Review)
3. A manual of Experimental Pharmacology and Pharmacy by Prof.Dr.Shabbir Ali Bhatti