

JCAT Paper 1 Table of Specification (TOS)

- JCAT Paper 1 consists of **100 questions** from basic sciences.
- Basic Sciences include **specified contents of syllabus** from the subjects of Anatomy, Physiology, Biochemistry, Pharmacology, General Pathology, Microbiology, Behavioral Sciences, and Community Medicine.
- **Passing Marks shall be 75%.**

Sr.	Subject	Number of MCQs
1.	Anatomy	20
2.	Physiology	20
3.	Biochemistry	10
4.	Pathology	13
5.	Microbiology	07
6.	Community Medicine	09
7.	Behavioral Sciences	05
8.	Pharmacology	16
	Total	100

Sr. No.	Subject	Topic	Sub-topics	Number of MCQs
1	Anatomy	General Anatomy	Musculo-Skeletal system Types of bones and joints Structures related to muscles and joints; tendons, ligaments, aponeurosis Cardiovascular System Classification of blood vessels Anastomosis Applied aspects of lymphatic system	20 (Min. two Max. three MCQs from each topic)
		Embryology	Cell division and gametogenesis Fertilization, cleavage, blastocyst formation and implantation of the embryo Stages of early embryonic development in second and third week of intrauterine life Development of embryo and foetus Foetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta) Teratology	
		Histology	Epithelium & Cell Junctions Connective Tissue Bones & Cartilage	
		Upper Limb	Neuro-vasculature Brachial Plexus Dermatomes Major muscle groups of clinical and surgical importance	

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	<p>Joints of upper limb Common Upper limb injuries and deformities Surface anatomy</p>
Lower Limb	<p>Neuro-vasculature Lumbar and Sacral Plexus Dermatomes Major muscle groups of clinical and surgical importance Joints of lower limb Common Lower limb injuries and deformities Surface anatomy</p>
Head & Neck	<p>Muscles of Facial expression and mastication Joints Neuro-vasculature Common facial injuries and deformities (Cleft lip and palate) Danger area of face and scalp</p>
Thorax, Abdomen and Pelvis	<p>Anatomy of Heart and Lungs Abdominal viscera Neuro-vasculature Muscles of pelvic floor Applied anatomy</p>
Neuroanatomy	<p>Blood Supply of Brain and Spinal Cord Overview Disorders Cerebral Cortex Common features Blood Supply Homunculus Lobes and their functions Spinal Cord General Features Spinal Cord Tracts Spinothalamic Tract Dorsal Column-Medial Lemniscus UMN-LMN Spinocerebellar Pathways Spinal Cord Lesions Brown-Sequard Syndrome Poliomyelitis Tabes Dorsalis Anterior Spinal Artery occlusion Ventricular System Overview CSF Production, Barrier and drainage Abnormalities and diseases Brain Stem Organization</p>

		<p>General features</p> <p>Cerebellum</p> <p>Functions</p> <p>Blood Supply</p> <p>Diseases</p> <p>Basal Ganglia</p> <p>Functions</p> <p>Common diseases</p> <p>Autonomic Nervous System</p> <p>Organization</p> <p>Parasympathetic Nervous System</p> <p>Overview</p> <p>Neurotransmitters</p> <p>Ganglions and their location</p> <p>Distribution</p> <p>Sympathetic Nervous System</p> <p>Overview</p> <p>Ganglia and their location</p> <p>Distribution</p> <p>Somatic Nervous System</p> <p>Organization</p> <p>Overview</p> <p>Distribution and effect</p>	
2	Physiology	<p>Fluid Distribution and Edema</p> <p>Distribution of Fluid within the body</p> <p>Body compartments</p> <p>Forces of filtration and absorption</p> <p>Edema</p> <p>Types of edema and their pathophysiology</p> <p>Systemic Edema; its stages</p> <p>Vascular Overfill Edema</p> <p>Pulmonary edema</p>	<p>20 (Min. two and Max. three MCQs from each topic)</p>
		<p>Excitable tissue</p> <p>Overview</p> <p>Membrane potential</p> <p>Electrochemical gradient</p> <p>Equilibrium potential</p> <p>Conductance</p> <p>Ion Channels</p> <p>Ungated (Leak)</p> <p>Voltage Gated</p> <p>Ligand Gated</p> <p>NMDA Receptors</p> <p>Neuron Action Potential and Synaptic Transmission</p> <p>Voltage Gated Na⁺ Channels</p> <p>Voltage Gated K⁺ Channels</p> <p>Action Potential</p> <p>Different Phases</p> <p>Threshold Stimulus</p> <p>Properties of Action Potential; Refractory periods, Conduction velocity of Action Potential</p>	

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		<p>Action Potential</p> <ul style="list-style-type: none"> Different Phases Threshold Stimulus Properties of Action Potential; Refractory periods, Conduction velocity of Action Potential <p>Synaptic Transmission</p> <ul style="list-style-type: none"> Neuromuscular Junction Synapses between neurons Electrical synapses 	
	Cardiovascular Physiology	<p>Electrical Activity of Heart</p> <ul style="list-style-type: none"> Properties of Cardiac Tissue Automaticity Conduction Contraction Contraction pathway Cardiac Action Potentials Membrane Channels Phases of Action potential in non-nodal cells Action Potential in Nodal Cells; Phases and difference from non-nodal Action potential Effect of Autonomic activity on heart Electrocardiography Leads Correlation of different phases of Action Potential with normal ECG. Axis Deviation; Normal, Right and Left axis deviation 	

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	Respiratory Physiology	<p>Lung Mechanics</p> <ul style="list-style-type: none"> Lung Volumes and Capacities Ventilation <ul style="list-style-type: none"> Conducting and Respiratory Zones Muscles of Respiration Lung Compliance and Elasticity Pulmonary Function Testing <ul style="list-style-type: none"> FVC, FEV1 FVC:FEV1 Flow Volume Loops Obstructive vs Restrictive patterns Alveolar-Blood Gas Exchange <ul style="list-style-type: none"> Partial pressures Factors affecting partial gas pressures Diffusion capacity (DLCO) Transport of O₂ and CO₂ <ul style="list-style-type: none"> Hemoglobin and O₂ molecules O₂-Hb dissociation Curves Carbon Monoxide and Hb Transport of CO₂ in blood <ul style="list-style-type: none"> Different ways of transport Chloride shift Neural Regulation of Ventilation <ul style="list-style-type: none"> Central Chemoreceptors <ul style="list-style-type: none"> Location Role in regulation Effect of partial gas pressure Peripheral Chemoreceptors <ul style="list-style-type: none"> Location Role and effect of partial pressures Unusual Environments <ul style="list-style-type: none"> High Altitude High Pressure environment Acclimatization Hypoxemia <ul style="list-style-type: none"> Ventilation-Perfusion differences <ul style="list-style-type: none"> Regional differences Relationship of ventilation and perfusion Mismatch Causes of Hypoxemia <ul style="list-style-type: none"> Hypoventilation Diffusion Impairment 	
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	Hematology	Blood and its components Plasma Proteins Erythrocytes and Erythropoiesis White Blood Cells Platelets Hemostasis Coagulation Clotting pathways and Factors Blood Grouping Transfusion Reactions Erythroblastosis Foetalis	
	Renal Physiology	Renal structure and Glomerular Filtration Functional organization of the kidney Functions of a nephron Filtration Reabsorption Secretion Excretion Glomerular Filtration Factors determining net filtration pressure Filtering membrane Materials filtered Filtration Fraction Effect of Sympathetic tone Renin Angiotensin Aldosterone System Solute Transport Net movement Clearance Transport Maximum Tubular Reabsorption Transport Maximum Tubular Secretion Clearance as an estimate of GFR Clearance of some specific substances Inulin Glucose Creatinine Free Water clearance Sodium Urea Regional Transport Proximal Tubule Substances reabsorbed, secreted and energy requirements Loop of Henle Movement of different substances in different segments and role of urea Distal Tubule Substances Reabsorbed Effect of different hormones Collecting Duct	

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		<p>Types of cells and their functions Hormonal effects Acid-Base Disturbances Buffering Systems Primary disturbances and compensation Respiratory Acidosis Metabolic Acidosis Respiratory Alkalosis Respiratory Alkalosis Metabolic Alkalosis</p>	
	<p>Endocrine Physiology</p>	<p>General aspects Lipid vs Water soluble hormones Protein bound vs Free circulating Hormone receptors Hormone specificity; exceptions Hormone activity Resistance to hormone action (Down Regulation) Permissive Action Measurement of Hormone Levels; Plasma and Urine analysis Disorders of Endocrine System; Hypofunction, Hyperfunction, Gland structure and size Hypothalamic-Anterior Pituitary System Hormones; source, regulation and effect Disorders Posterior Pituitary Hormones; regulation, effect Disorders Adrenal Cortex Regions and Zones; Hormones produced by different regions and zones and their regulation Physiological Actions of Glucocorticoids Stress Hormones Metabolic Actions of Cortisol Permissive Actions of Cortisol Physiological Actions of Aldosterone; its regulation, effect on electrolytes Disorders of Glucocorticoid and Mineralocorticoid synthesis Adrenal Medulla Hormones Epinephrine; actions on Liver, Skeletal muscles and adipose tissue Disorders; Pheochromocytoma Endocrine Pancreas Hormones Insulin; Actions on carbohydrate metabolism, protein metabolism, fat metabolism</p>	



		<p>Peripheral uptake of glucose and tissues that are insulin dependent for glucose uptake; Adipose, Resting skeletal muscle, Liver (Glucokinase Stimulation)</p> <p>Insulin effect on Potassium</p> <p>Glucagon; Actions and effect on Liver glycogenolysis, Liver gluconeogenesis, Liver ketogenesis and lipogenesis, Ureagenesis, insulin secretion, Liver lipolysis</p> <p>Thyroid Hormones</p> <p>Synthesis</p> <p>Storage</p> <p>Circulation, Regulation</p> <p>Peripheral Action</p> <p>Hyper and Hypothyroidism</p> <p>Male Reproductive Physiology</p> <p>Hypothalamic-Pituitary-Gonadal axis</p> <p>Functions of Testosterone</p> <p>Spermatogenesis</p> <p>Age related hormonal changes</p> <p>Female Reproductive System</p> <p>Menstrual Cycle; phases, hormonal regulation and effects</p> <p>Pregnancy; physiological changes</p> <p>Lactation; hormones involved, regulation</p> <p>Functions of Estrogen and Progesterone</p>	
	Gastrointestinal Physiology	<p>Overview</p> <p>Nervous control</p> <p>Endocrine Control</p> <p>Secretions</p> <p>Motility</p> <p>Composition and formation of Bile acid</p> <p>Digestion; enzymes (their source), absorption of different products of digestion, Electrolyte absorption</p>	
3	Genetics	<ul style="list-style-type: none"> • Comparison of DNA and RNA synthesis • Major enzymes involved in DNA and RNA synthesis • DNA repair <ul style="list-style-type: none"> ➢ Thymine Dimer ➢ Mismatched base ➢ Cytosine deamination • Diseases associated with DNA repair <ul style="list-style-type: none"> ➢ Xeroderma Pigmentosum ➢ Hereditary Non-polyposis, colorectal cancer • Role of P-53 and Rb in cell cycle and DNA repair • Regulation of Gene Expression • Protein Synthesis (Translation) • Biotechnology and Human disease 	(10) Min. Two Max. three from each topic
	Biochemistry		


Page 8 of 21

	<p>Amino Acids, Proteins and Enzymes</p>	<ul style="list-style-type: none"> • Amino Acids <ul style="list-style-type: none"> ➤ General Structure ➤ Essential Amino Acids ➤ Non-essential Amino Acids • Nitrogen Balance • Biochemical reactions <ul style="list-style-type: none"> ➤ Enzyme kinetics ➤ Vmax (rate max) ➤ Km (affinity) • Enzymes <ul style="list-style-type: none"> ➤ Inhibitors and Activators <ul style="list-style-type: none"> ❖ Competitive vs Non-Competitive inhibitors ❖ Allosteric vs Active site • Transport Kinetics • Vitamins <ul style="list-style-type: none"> Water soluble and lipid soluble vitamins Common Vitamin deficiencies 	
	<p>Hormones and Signal Transduction</p>	<ul style="list-style-type: none"> • Classes of Hormones <ul style="list-style-type: none"> ➤ Water Soluble ➤ Lipid soluble • Mechanism of action of water soluble hormones <ul style="list-style-type: none"> ➤ Pathways <ul style="list-style-type: none"> ❖ cAMP ❖ PIP-2 ❖ cGMP ❖ Insulin ❖ Growth Factors • G-Proteins in Signal transduction <ul style="list-style-type: none"> ➤ Abnormal G-Proteins and diseases <ul style="list-style-type: none"> ❖ Cholera toxin ❖ E.Coli Toxin ❖ Pertussis Toxin ❖ Oncogenic mutations • Mechanism of action of lipid soluble hormones 	
	<p>Overview of energy metabolism</p>	<ul style="list-style-type: none"> • Pathways of glucose metabolism <ul style="list-style-type: none"> ➤ Glycolysis ➤ Pyruvate dehydrogenase ➤ Kreb's Cycle ➤ Electron Transport Chain • Metabolic profile of well-fed (Absorptive State) • Metabolic profile of Post-absorptive state • Prolonged Fasting (Starvation) • Lipid synthesis and Storage <ul style="list-style-type: none"> ➤ Lipid digestion ➤ Fatty Acid biosynthesis ➤ Lipoprotein metabolism ➤ Chylomicrons, LDL, VLDL, HDL, VLDL remnants • Hyperlipidemias 	

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		<ul style="list-style-type: none"> • Cholesterol metabolism • Lipid mobilization and Catabolism <ul style="list-style-type: none"> ➤ Lipid mobilization ➤ Fatty Acid oxidation ➤ Ketone body metabolism 	
4	Cell Injury	<p>Ischemia, Hypoxia, Infarction and Autolysis. Irreversible and reversible injury Apoptosis and its significance. Necrosis and its types Exogenous and endogenous pigmentation. Dystrophic and metastatic calcification along with clinical significance Cellular adaptations (hypertrophy, hyperplasia, atrophy, metaplasia)</p>	2
	Inflammation and Repair	<p>Role of inflammation in the defense mechanisms of the body. Vascular changes of acute inflammation and their relation to morphological and tissue effects. Process of Chemotaxis, Opsonization and Phagocytosis. Role of cellular components in inflammatory exudate. Exudates and transudate. Important chemical mediators of inflammation. Role of products of Arachidonic acid metabolism in inflammation. Mechanism for development of fever, with reference to exogenous and endogenous pyrogens. Chronic inflammation including Granulomatous diseases Systemic effects of acute and chronic inflammation and their possible outcomes. Significance of ESR.</p>	2
	Wound Healing	<p>Repair and regeneration. Wound healing by first and second intention. Factors that influence the inflammatory reparative response. Wound contraction and cicatrization. Formation of granulation tissue. Complications of wound healing.</p>	1
	Haemodynamics	<p>Thrombo-embolic disorders and their modalities Etiology and pathogenesis of thrombosis. Possible consequences of thrombosis Difference between thrombi and clots Classification of emboli according to their composition. Difference between arterial and venous emboli. Hemorrhage, Hyperemia and Congestion</p>	2
	Pathology		

	<p>Definitions of common types of Hemorrhage</p> <p>Types of hyperemia</p> <p>Difference between hyperemia and congestion</p> <p>Infarction</p> <p>Types of infarction</p> <p>Difference between anemic and hemorrhagic infarct</p> <p>Morphological picture of infarction in different organ systems</p> <p>Disorders of the circulation and shock</p> <p>Edema, ascites, hydrothorax and anasarca.</p> <p>Pathophysiology of edema with special emphasis on CHF.</p> <p>Pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal & septic) and their causes.</p> <p>Compensatory mechanisms involved in shock.</p>	
Neoplasia	<p>Dysplasia, Neoplasia, Anaplasia.</p> <p>Cell cycle and cell types (stable, labile, permanent)</p> <p>Mechanisms controlling cell growth</p> <p>Classification systems of tumors.</p> <p>Characteristics of benign and malignant tumors</p> <p>Difference between Carcinoma and Sarcoma.</p> <p>Grading and staging system of tumors.</p> <p>Biology of tumor growth</p> <p>Process of carcinogenesis</p> <p>Mechanism of local and distant spread.</p> <p>Local and systemic effects of tumors.</p> <p>Tumor markers used in the diagnosis and management of cancers.</p> <p>Common chemical, physical agents and viruses related to human cancer.</p> <p>Epidemiology of common cancers in Pakistan.</p> <p>Radiation and its effects on tissues.</p> <p>Cancer screening.</p> <p>Biomarkers of common cancers</p> <p>Paraneoplastic syndromes</p>	3
Genetics	<p>Genes and human being</p> <p>Mendelian disorder</p> <p>Complex Multigenic Disorders</p> <p>Single-Gene Disorders with Nonclassic Inheritance</p> <p>With focus on:</p> <p>Diseases Caused by</p> <p>Common sex linked, autosomal recessive and autosomal dominant disorders.</p> <p>Common genetic mutations.</p> <p>Diseases associated with consanguineous marriages.</p>	1

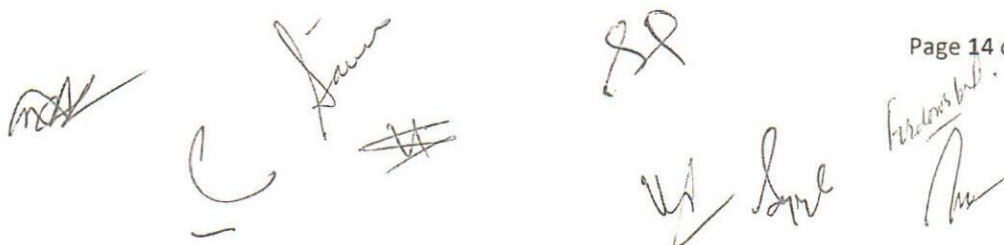


		Immunology	<p>Antigen, antibody, epitope, hapten and adhesion molecules.</p> <p>Difference between innate and acquired immunity.</p> <p>Mechanism of humoral and cell mediated immunity.</p> <p>Hypersensitivity reactions, Type I, Type II, Type III and Type IV.</p> <p>Autograft, homograft, allograft and xenograft.</p> <p>Mechanism involved in allograft rejection and steps that can be taken to combat rejection.</p> <p>Classification of Immunodeficiency disorders</p> <p>Basis of autoimmunity.</p> <p>Tissue transplantation</p> <p>Lab diagnosis of immunological diseases.</p>	2
5	Microbiology	Bacteriology	<p>General Bacteriology</p> <p>Pathogenicity</p> <p>Colonization; methods</p> <p>Avoiding immune defense</p> <p>Antigenic Variation</p> <p>Toxins; Endotoxins and Exotoxins</p> <p>Culture of Micro-organisms; Stains, Special Media</p> <p>Bacterial genetic material</p> <p>Antibiotic resistance; mechanisms</p> <p>Sterilization</p> <p>Medically Important Bacteria</p> <p>Mycobacterium Tuberculosis</p> <p>Salmonella</p> <p>Staphylococcus</p> <p>Streptococcus</p> <p>Neisseria</p> <p>Traponema pallidum (syphilis)</p> <p>Clostridia</p> <p>E.coli</p> <p>Pseudomonas</p> <p>H.pylori</p> <p>Acinetobacter</p> <p>Atypical</p>	3




		Virology	Structures Host resistance to viral infection; INF, Complements, Natural Killer cells Medically important Viruses Viral Hepatitis; types, transmission, role of different antigens (Focus of HepB), infectivity and mortality, diagnostic criteria of different Hepatitis viruses HIV; life cycle, transmission, diagnosis, complications, role of CD-4 levels Other medically important viruses Influenza Virus SARS-COV-2 Dengue	2
		Parasitology	Medically important parasites; transmission, infections, diagnosis Malaria Entamoeba Histolytica Ancylostoma Giardia Ascaris Lumbricoides Enterobius Vermicularis	2
6	Community Medicine	Biostatistics	Basic/Descriptive Biostat Data presentation Data summarization; Mean, Median, Mode, Standard Deviation, Variance, Range) Sample and population Sampling techniques	2
			Basics of Inferential Biostats Z-Test Student's t-test Chi-square test Alpha and Beta errors Hypothesis testing steps Correlation and regression (simple linear) P-value and confidence interval	1
		Epidemiology	Infectious disease epidemiology Primary, secondary, tertiary prevention Incidence and prevalence Epidemiological triad Iceberg phenomenon Chain of disease transmission Modes of disease transmission	2






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		Chronic/non communicable disease epidemiology Levels of prevention Preventable cancers Preventable blindness Cardiovascular diseases Nutritional disease	1
	Research methodology	Quantitative Study Design Cross-Sectional Case-Control Cohort Experimental Randomized Controlled Trial Non-Randomized Controlled Trial Measures of Risk Odds ratio Relative risk Association and Causation Validity and Reliability Screening tests Research Ethics	3
7	Behavioral Sciences	Introduction to behavioral sciences and its importance in health Bio-Psycho-Social Model of Health Care and the Systems Approach Normality vs Abnormality Link of Health with Behavioural Sciences (Psychology, Sociology, Anthropology) Importance of behavioral sciences in health Correlation of brain, mind and Behavioural Sciences Roles of a doctor Desirable Attitudes in Health Professionals	5 (Max. one MCQ from each topic)
	Understanding Behavior	Sensation and sense organs Perception Attention and concentration Memory Thinking Communication	
	Stress and stressors	Classification of stress and stressors Stress management Relationship of stress and stressors with illness Concept of life events and their relationship with stress and illness coping skills Psychological defense mechanism Conflict and frustration Concept of adjustment and maladjustment	
	Doctor-Patient relationship	Doctor-patient relationship What is the concept of boundaries and psychological reactions in doctor patient relationship (such as transference and counter transference)	


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		Psychological reactions	Grief and bereavement Family and illness Dealing with difficult patients Symptoms presentation and culture Illness and Behavior (sick-roles, stigma, Somatization), Treatment Adherence (Compliance) Psychosocial aspects of illness, hospitalization, rape, torture, terminal illness, death and dying	
8	Pharmacology	General Pharmacology	Pharmacokinetics Permeation Ionization and Renal clearance of drugs Absorption Bioavailability First-Pass effect Distribution Special Barriers to Distribution Redistributiion Biotransformation & classification Elimination Zero-Order First-Order Pharmacodynamics Graded Dose-Response curves Full and Partial agonists Antagonism and Potentiation Quantal Dose-Response Curves Toxicity and Therapeutic Index	2
		Autonomic Nervous System	Anatomy of ANS Location of Ganglia Types of Receptors and Neurotransmitters Cholinergic Pharmacology Muscarinic receptors; types, effect produced, agonists and antagonists Adrenergic Pharmacology Receptors; types, locations, effect produced, agonists and antagonists Norepinephrine and Epinephrine; effect produced at different doses	2

	Central Nervous System	<ul style="list-style-type: none"> • Anticonvulsants <ul style="list-style-type: none"> ➤ Phenytoin <ul style="list-style-type: none"> ❖ Uses ❖ Side-effects ❖ Teratogenicity ➤ Carbamazepine <ul style="list-style-type: none"> ❖ Uses ❖ Side-effects ❖ Teratogenicity ➤ Valproic Acid <ul style="list-style-type: none"> ❖ Uses ❖ Side-effects ❖ Teratogenicity • Opioid Analgesics <ul style="list-style-type: none"> ➤ Morphine <ul style="list-style-type: none"> ❖ Uses ❖ Toxicity ❖ Antidote; naloxone • Status Epilepticus <ul style="list-style-type: none"> ➤ First-Line drugs ➤ Route of administration ➤ Side-effects 	2
	Chemotherapy	<ul style="list-style-type: none"> • Anti-Bacterial Agents (2 MCQ) <ul style="list-style-type: none"> ➤ Bactericidals ➤ Bacteriostatics ➤ Synergy ➤ Resistance ➤ Broad-Spectrum antibiotics • Anti-Tubercular Agents <ul style="list-style-type: none"> ➤ Treatment duration ➤ Side-Effects of different Anti-Tubercular Agents • Anti-Viral Agents <ul style="list-style-type: none"> ➤ Uses and Side effects • Treatment of HIV/AIDS • Anti-Fungal Agents • Anti-Protozoal Agents <p>Drugs used in Malaria</p> <p>Cancer Chemotherapy (1 MCQ)</p>	3
	Respiratory Pharmacology	<ul style="list-style-type: none"> • Asthma & COPD <ul style="list-style-type: none"> ➤ First Line treatment for Asthma and COPD 	1

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			<ul style="list-style-type: none"> ➤ Beta Receptor Agonists; their contraindication, bronchodilator reversibility test (albuterol): role and mechanism ➤ Muscarinic Antagonists; their role and side effects ➤ Methacholine Challenge Test; its mechanism ➤ Glucocorticoids; their role and long-term use, side-effects. • Theophylline <ul style="list-style-type: none"> ➤ Uses ➤ <u>Drug Interactions:</u> Erythromycin, Cimetidine and Fluoroquinolones; (CYP450 Inhibition) • Aminophylline <ul style="list-style-type: none"> ➤ Uses and role of IV Aminophylline in Status Asthmaticus • Antileukotrienes <ul style="list-style-type: none"> ➤ LTD-4 receptor blockers; Zafirlukast and Montelukast ➤ Lipooxygenase inhibitors; Zileuton; role in using as an adjunct to steroids • Status Asthmaticus <ul style="list-style-type: none"> ➤ First Line Drugs ➤ Complications and side-effects. • Glucocorticoids <ul style="list-style-type: none"> ➤ Synthetic Glucocorticoids and their Potency. ➤ Glucocorticoid versus Mineralocorticoid effect of different synthetic glucocorticoids ➤ Side effects on: <ul style="list-style-type: none"> ❖ ACTH levels ❖ Gluconeogenesis ❖ Bones; Osteoporosis ❖ Electrolyte imbalance; Na⁺/Water retention, edema, hypokalemic alkalosis, hypocalcemia ❖ Skeletal growth of children ❖ Wound Healing ➤ Contraindications. ➤ Long-term use and withdrawal
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	Gastrointestinal Pharmacology	<ul style="list-style-type: none"> • <u>Drugs used for constipation</u> <ul style="list-style-type: none"> ➤ Laxatives, types, mechanism of action, indications and side effects • <u>Anti helminthic drugs</u>, indications and side effects • <u>Anti emetic drugs</u>, indications and side effects <ul style="list-style-type: none"> ➤ <u>5-HT3 Antagonists</u>; Role in cancer chemotherapy induced vomiting. ➤ <u>Dopamine antagonists</u>; Their pro-kinetic effects and role in cancer chemotherapy induced vomiting. Complications and management, especially Extrapyrmidal Symptoms. • <u>Anti-Diarrheal Drugs</u>; <ul style="list-style-type: none"> ➤ <u>Opiate anti-diarrheals</u>; Loperamide. Its safety, advantages and use in cholera endemics. • <u>Antacids</u> <ul style="list-style-type: none"> ➤ Uses ➤ Side-effects: Constipation (Al+++), Diarrhea (Mg++) and Alkalosis (Ca++). <p><u>Anti tumor necrosis factors (TNF) drugs</u> for inflammatory bowel disease, mechanism of action, indications, pre-requisite for initiating treatment, monitoring and resistance.</p>	1
	Cardiac and Renal Pharmacology	<p>Diuretics Types Mechanism of Action Uses Adverse effects</p> <p>Anti-Hypertensives ACE inhibitors and ARBs Mechanism of Action Uses Adverse effects</p> <p>Calcium Channel Blockers Types Mechanism of Action Uses Adverse effects</p> <p>Drugs altering Sympathetic Activity Beta Blockers Alpha-1 blockers</p>	3

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		<p>Alpha-2 agonists</p> <p>Direct Acting Vasodilators</p> <p>Hydralazine; MOA, Adverse effects</p> <p>Nitroprusside; Uses, Adverse effects and antidote</p> <p>Potassium Channel Openers</p> <p>Uses</p> <p>Adverse effects</p> <p>Treatment of Pulmonary Hypertension</p> <p>Drugs used</p> <p>Adverse effects</p> <p>Contraindications</p> <p>Drugs for Heart Failure</p> <p>Inotropes</p> <p>Types</p> <p>MOA</p> <p>Adverse effects</p> <p>Contraindications</p> <p>Antidotes</p> <p>Antiarrhythmic Drugs</p> <p>Class 1 Drugs</p> <p>MOA</p> <p>Adverse effects</p> <p>Class 2 Drugs</p> <p>MOA</p> <p>Adverse effects</p> <p>Class 3 Drugs</p> <p>MOA</p> <p>Adverse effects</p> <p>Class 4 drugs</p> <p>MOA</p> <p>Adverse effects</p> <p>Anti-Anginal Drugs</p> <p>Nitrates</p> <p>MOA, Use</p> <p>Adverse effects</p> <p>Calcium Channel Blockers</p> <p>Use in vasospastic angina</p> <p>Anti-Hyperlipidemics</p> <p>HMG Co-A Reductase Inhibitors</p> <p>Bile Acid Sequestrants</p>	
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	Drugs used in Blood disorders	<p>Anticoagulants</p> <p>Heparin</p> <ul style="list-style-type: none"> Types MOA Uses Toxicity Antidote <p>Warfarin</p> <ul style="list-style-type: none"> MOA Uses Toxicity Antidote <p>Thrombolytics</p> <p>Streptokinase and Alteplase</p> <ul style="list-style-type: none"> Differences Use Toxicity <p>Anti-Platelet Drugs</p> <p>Aspirin</p> <ul style="list-style-type: none"> MOA Uses Adverse Effects <p>Clopidogrel</p> <ul style="list-style-type: none"> MOA Uses Adverse effects <p>• Direct Activated Clotting Factor Inhibitors</p> <ul style="list-style-type: none"> ➤ Direct Thrombin Inhibitors <ul style="list-style-type: none"> ❖ Argatroban, Dabigatran ➤ Direct Factor 10-A Inhibitors <ul style="list-style-type: none"> ❖ Rivaroxaban & other "-xabans" 	1
	Endocrine pharmacology	<p>Thyroid dysfunction</p> <p>Diabetes</p> <p>Infertility</p> <p>Adrenal dysfunction</p> <p>Gonadal dysfunction</p>	1

Recommended Books:

- Clinical Anatomy by Regions – Richard Snell latest edition
- Clinically Oriented Anatomy by Keith L. Moore latest edition
- Clinical Neuroanatomy by Richard Snell latest edition
- General Anatomy by Laiq Hussain Siddiqui
- Langman's Medical Embryology by T.W Sadler latest edition
- Medical Histology Text and Atlas by Laiq Hussain Siddiqui latest
- Junqueira's Basic Histology Text and Atlas
- Katzung's Basic and Clinical Pharmacology latest edition
- Robbins and Cotran Pathological Basis of Diseases latest edition
- Park's Textbook of Preventive and Social Medicine
- Public Health and Community Medicine by Muhammad Irfanullah Siddiqui latest edition
- Review of Medical Microbiology and Immunology by Warren Levinson latest edition
- Lippincott Illustrated Reviews: Biochemistry latest edition
- Harper's Illustrated Biochemistry latest edition
- Guyton And Hall Textbook of Medical Physiology latest editions
- Handbook of Behavioural Sciences by Mowadat H Rana latest edition

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