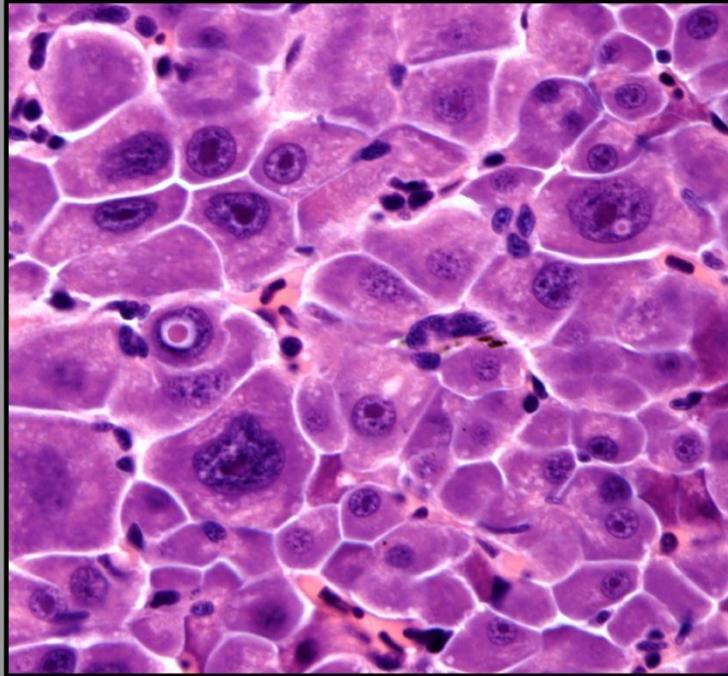


**Pathology Study Guide
(3rd year) M.B.B.S**



STUDY GUIDE
PATHOLOGY

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INTRODUCTION OF PATHOLOGY

Pathology is the branch of medicine concerned with the study of the nature of diseases and its Causes, Processes, development and consequences. The medical specialty that provides microscopy and other laboratory services (e.g. cytology, histopathology) to Clinicians.

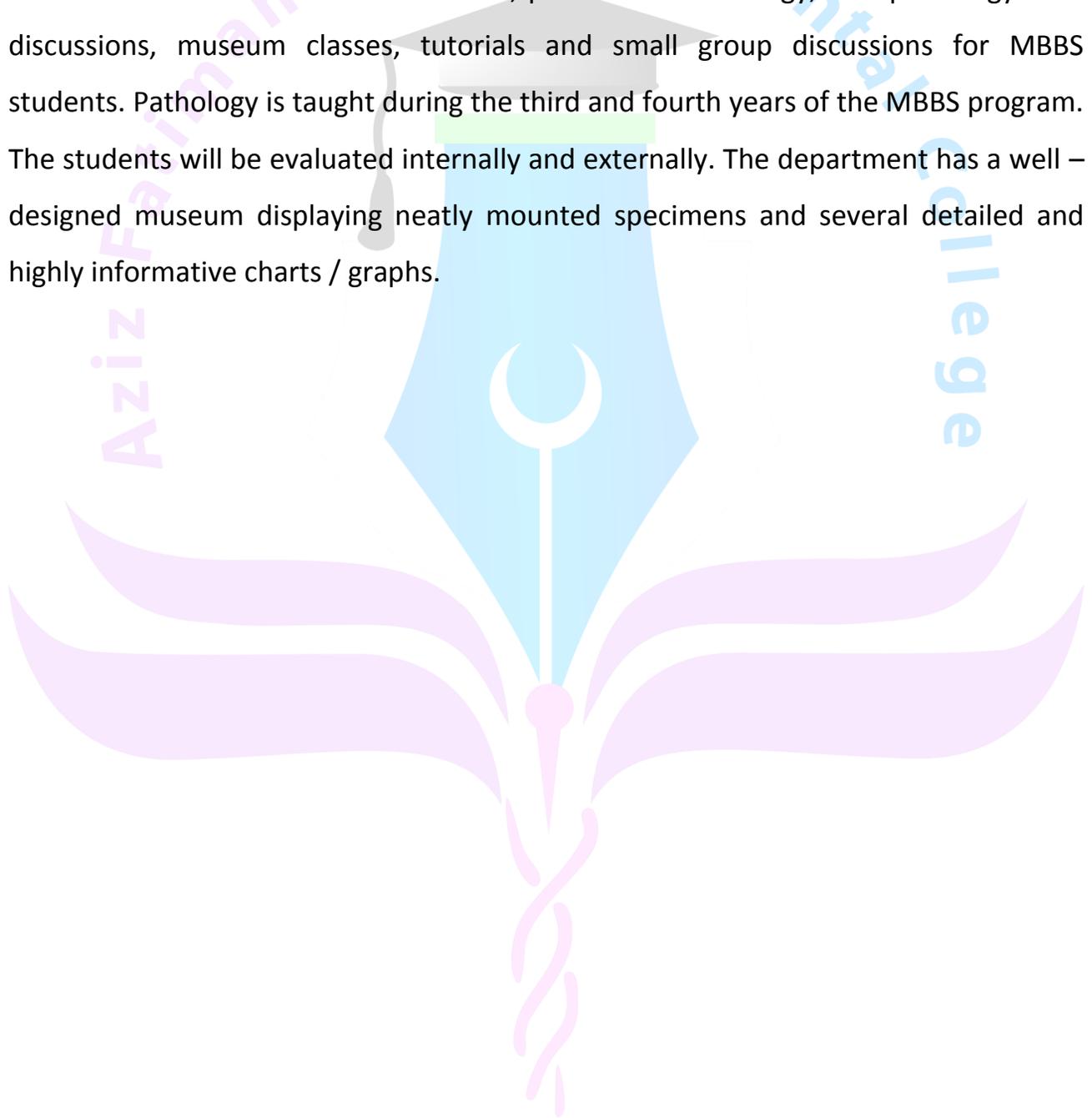
The pathologist is interested not only in the recognition of structural alterations, but also in their significance, i.e. the effects of these changes on cellular and tissue function and ultimately the effect of these changes on the patient. It is a basic approach to a better understanding of disease and therefore a foundation of sound clinical medicine.

The department of pathology is headed by Prof. Tariq Afzal Cheema along with two Associate Professors one Asst Professor and four Demonstrators all of them are actively involved in teaching programs. The department comprises of general and special pathology including histopathology, hematology, microbiology and chemical pathology. Teaching of general pathology principal are supplemented by experimental work by which students are equipped with the skills required for the collection of different specimens for the pathological analysis and then are able to perform commonly used tests done in a side room laboratory. The aim is to produce clinicians with better understanding of the disease process so that they objectively use diagnostic tools designed to help them to reach a conclusive diagnosis in the shortest possible time.

The department has an adequate slide bank and gross specimen collection for the teaching purposes. This department is also equipped with a Penta Head with LCD

display screen and a bihead microscopy for proper explanation of the microscopic slides. Binocular microscopes are also available for students proper training. The department also has two labs along with experienced teachers and technical staff.

The academic session includes lectures, practical microbiology, histopathology slide discussions, museum classes, tutorials and small group discussions for MBBS students. Pathology is taught during the third and fourth years of the MBBS program. The students will be evaluated internally and externally. The department has a well – designed museum displaying neatly mounted specimens and several detailed and highly informative charts / graphs.



Department of Pathology

Designation	Name
Professor	Dr Tariq
Associate Professor	Dr Kashif Dr Usman
Assistant Professor	Dr Azfar
Demonstrators	Dr Iram Dr Madeeha Dr Amna DR Javed
Lab Assistant / Lab Tech	Rehman Dastgeer, M. Mubashar (Lab Tech), M. Asif & M. Haseeb Ahmad lab Assistant
Stenographer / Comp Oper	Junaid Sarwar
Store Keeper	Shahzad Anees

TIME LINE for SYLLABUS COMPLETION

GANTT CHART of 3rd YEAR LECTURES

Topic	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
The Cell, Cellular Response + GB		█								
Cellular Response + GB + SB		█								
Inflammation Repair + SB			█	█						
Hemodynamics + SB			█	█						
Hemodynamics + Neoplasia + SB + Parasitology					█					
Neoplasia + Immune System + Parasitology + Virology						█				
Immune System + Virology							█			
Virology + Revision Lectures									█	
Revision Lectures										█ █ █

Key:

Winter Vacations



Sports Week



Summer Vacations



Eid Ul Adha



Sendup Exam



GB= General Bacteriology

SB= Special Bacteriology

TIME TABLE

Date	1	2	3	4	5	6
	08:00-08:45	08:45-09:30	09:30-10:15	10:15-11:00	11:00-01:00	01:30-03:00
Mon	Patho Test			Lec	Practical	Practical
Tues		Lec				Practical
Wed			Lec			Tutorial
Thur		Lec			Tutorial	Lec
Fri		Lec	Lec		Tutorial	

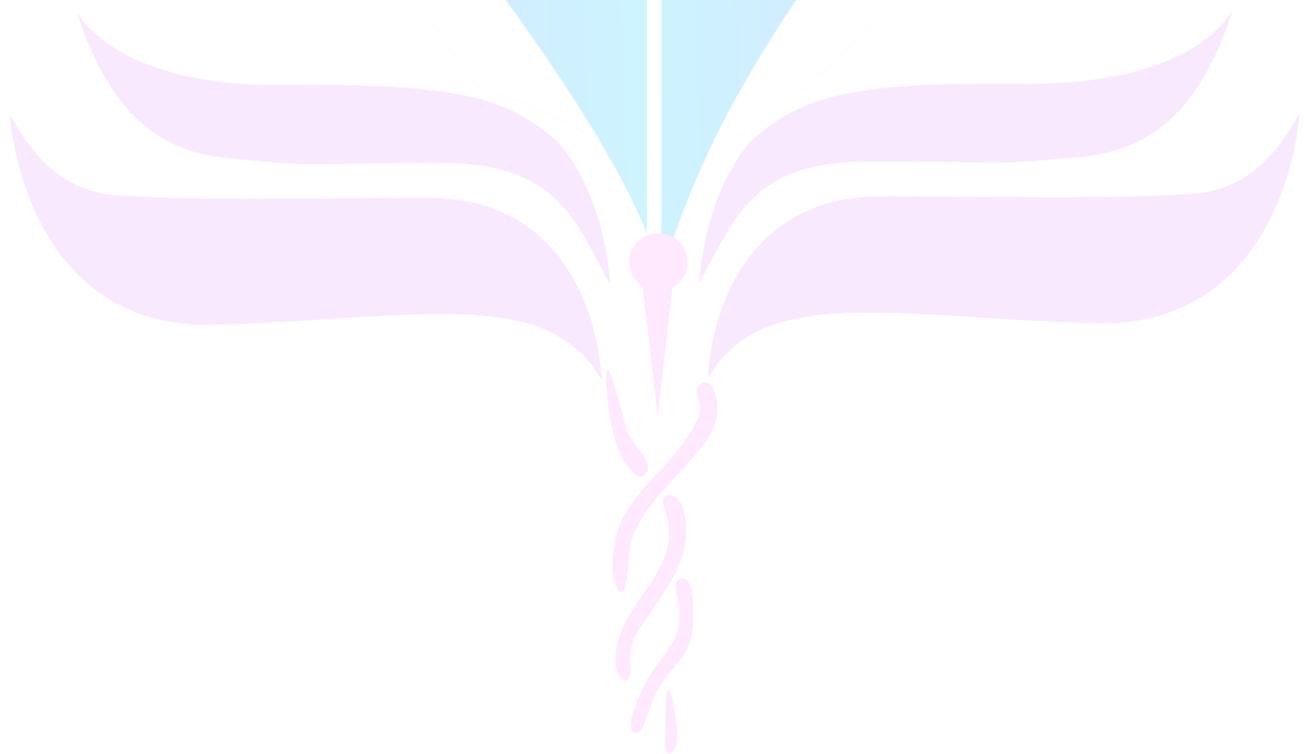


Table of learning outcomes and teaching strategies in General Pathology and Microbiology

TOPIC	SUBTOPIC	LEARNING OBJECTIVES	
The Cell as a Unit of Health and disease	Cellular Housekeeping	Describe the structure of Plasma Membrane	
		Describe the components of Cytoskeleton along with Cell-Cell Interactions	
		Describe the Biosynthetic Machinery of cell (Endoplasmic Reticulum and Golgi)	
		Describe the structure and function of Lysosomes and Proteasomes	
		Describe the Cellular Metabolism along with mitochondrial function	
		Describe Cell Signaling and its mechanism	
	Cellular Activation	Describe various types of Signal Transduction Pathways	
		Enlist various types Growth Factors and Receptors with their function	
		Describe the Interaction of intracellular and the Extracellular Matrix	
	Maintaining Cell Populations	Explain the Proliferation and the Cell Cycle along with role of inhibitors and inducers	
		Describe the role of Stem Cells in recent medicine	
	Cellular Responses to Stress and Toxic Insults: Adaptation, Injury, and Death	Introduction to Pathology	Define pathology
			Describe the four aspects of pathology
			1. Etiology
2. Pathogenesis			
Overview: Cellular Responses to Stress and Noxious Stimuli		3. Morphology	
		4. Clinical manifestations	
Adaptations of Cellular Growth and differentiation		Enlist the Stages of the cellular response to stress and injurious stimuli.	
		Describe the Stages of the cellular response to stress and injurious stimuli.	
		Enlist the types of cellular adaptations	
		Describe the mechanism of hypertrophy with examples	
		Describe the mechanism of hyperplasia with examples	
		Describe the mechanism of atrophy with examples	
Overview of Cell Injury and Cell		Describe the mechanism of metaplasia with examples	
	Enlist various Causes of Cell Injury		
	Describe the mechanism of Reversible Injury		

	death	Define Necrosis
		Describe various Patterns of Tissue Necrosis
		Describe Depletion of ATP with illustration
		Describe Mitochondrial Damage with illustration
		Describe Influx of Calcium and Loss of Calcium Homeostasis with illustration
		Describe the mechanism of Oxidative Stress in the cell and the injury caused by it
	Mechanisms of Cell Injury	Describe the defects in membrane permeability
		Describe the damage to DNA and proteins
		Describe the mechanism of Ischemic and Hypoxic Injury
	Clinicopathologic Correlations	Describe the mechanisms of ischemic cell injury
		Describe the Ischemia-Reperfusion Injury
		Describe the Chemical (Toxic) Injury to cell
	Apoptosis	Define Apoptosis
	Causes of Apoptosis	Describe the process of apoptosis in physiologic situations
		Describe the apoptosis in pathologic conditions
		Describe the following two Mechanisms of Apoptosis with illustrations
	Morphologic and Biochemical Changes in Apoptosis	1. The Intrinsic (Mitochondrial) Pathway of Apoptosis
		2. The Extrinsic (Death Receptor-Initiated) Pathway of Apoptosis
		Describe the the execution phase of apoptosis
		Describe the process of removal of dead cells
	Clinicopathologic Correlations: Apoptosis in Health and Disease	Describe the examples of apoptosis
		Describe the disorders associated with dysregulated apoptosis
		Describe the process of heterophagy and autophagy
		Describe the process of Necroptosis with examples
		Describe the pathogenesis and morphology of following intracellular accumulations
		1. Lipids Steatosis (Fatty Change)
		2. Cholesterol and Cholesterol Esters
		3. Proteins
	Intracellular Accumulations	4. Hyaline Change
		5. Glycogen
		Enlist the types of exogenous pigments and endogenous pigments
	Pigments	Describe the morphological features of various types of pigments
	Pathologic Calcification	Describe the pathogenesis, and morphology of Dystrophic Calcification
		Describe the pathogenesis, and morphology of Metastatic Calcification

		Describe the etiology of Cellular Aging and cellular senescence
		Demonstrate the working of microscope
Inflammation and Repair	Overview of Inflammation: Definitions	Enlist and briefly describe Causes of Inflammation
	and General Features	Explain and Illustrate the Recognition of Microbes and Damaged Cells
	Acute Inflammation	Describe the reactions of blood vessels in acute inflammation
		Describe the changes in vascular flow and caliber
		Explain mechanism of increased vascular permeability (Vascular Leakage)
		Describe the responses of lymphatic vessels and lymph nodes
	Leukocyte Recruitment to Sites of Inflammation	Describe the mechanism of leukocyte adhesion to endothelium
		Describe the mechanism of leukocyte migration through endothelium
		Describe the mechanism of chemotaxis of leukocytes
	Phagocytosis and Clearance of the Offending Agent	Describe the mechanism of Phagocytosis
		Describe the role of Intracellular destruction of microbes and debris
		Define Neutrophil Extracellular Traps
		Describe the Leukocyte-mediated tissue injury and associated defects
	Termination of the Acute Inflammatory Response	Describe the termination of the response
	Mediators of Inflammation	Describe the role and source of mediators;
		1. Vasoactive Amines: Histamine and Serotonin
		2. Arachidonic Acid Metabolites
		3. Cytokines and Chemokines
	Morphologic Patterns of Acute Inflammation	4. Complement System
		Explain the morphological pattern and example of Serous Inflammation
		Explain the morphological pattern and example of Fibrinous Inflammation
		Explain the morphological pattern and example of Purulent (Suppurative) Inflammation, Abscess
	Outcomes of Acute	Explain the morphological pattern and example of Abscess and ulcer
		Summarize the events of Acute Inflammation

	Inflammation	
	Chronic Inflammation	Enlist the Causes of Chronic Inflammation
		Describe the morphologic features of chronic inflammation
	Cells and Mediators of Chronic Inflammation	Explain the role of macrophages in chronic inflammation
		Explain the role of Role of Lymphocytes
	Granulomatous Inflammation	Enumerate the other cells in chronic inflammation
	Granulomatous Inflammation	Describe the etiology,pathogenesis and morphology of granuloma
	Systemic Effects of Inflammation	Enumerate the systemic effects of inflammation
	Tissue Repair	
	Overview of Tissue Repair	Describe the control mechanisms in cell proliferation
		Describe the Mechanisms of Tissue Regeneration
	Repair by Connective Tissue Deposition	Enumerate the Steps in Scar Formation
		Describe the process of angiogenesis
		Explain the Deposition of Connective Tissue in tissue remodelling
		Explain the mechanism of Remodeling of Connective Tissue
	Factors That Influence Tissue Repair	Enumerate allocaland systemic factors for tissue repair
	Selected Clinical Examples of Tissue Repair and fibrosis	Describe Healing of Skin Wounds both primary and secondary
		Explain mechanism of Fibrosis in Parenchymal Organs
	Abnormalities in Tissue Repair	Describe the formion of keloid ad hypertrophic scar
		Descibe the formation of exuberant formation and desmoids
Hemodynamic disorders, Thromboembolic Disease and shock	Edema and Effusions	Discuss the causes of increased hydrostatic pressures
		Discuss the causes of reduced plasma osmotic pressures
		Discuss the causes of sodium and water retention
		Discuss the causes of lymphatic obstruction
		Identify pathophysiological categories of Edema
	Hyperemia and Congestion	Explain the differences of the terms hyperemia and congestion morphologically
	Hemostasis,Hemorrhagic disorders and	Define the term Hemostasis and explain the sequence of events leading to hemostasis
		Relate the role of platelets in maintaining hemostasis

	thrombosis	Revise the coagulation cascade	
		Discuss in detail the significance of Endothelium in maintaining Hemostasis	
		Introduction to the term Hemorrhagic Disorders	
		Explain the etiology,pathogenesis and morphology of thrombosis	
		Discuss the effects of endothelial injury	
		Describe in detail the effects of alternations in normal blood flow	
		Associate hypercoagulability with thrombus formation	
		Discuss in detail the fate of thrombus	
		Explain the process of Disseminated intravascular coagulation	
		Discuss the pathophysiology and morphology of DIC	
		Embolism	Introduction to the term embolism
			Discuss the etiology,pathogenesis and morphology of pulmonary embolism
	Discuss the etiology,pathogenesis and morphology of systemic thromboembolism		
	Discuss the etiology,pathogenesis and morphology of fat and marrow embolism		
	Discuss the etiology,pathogenesis and morphology of air embolism		
	Discuss the etiology,pathogenesis and morphology of amniotic fluid embolism		
	Infarction		Explain the mechanism of infarction
			Discuss the factors that lead to development of infarct and its morphology
	Shock		Discuss the pathogenesis of septic shock
			Describe all stages of shock,morphology and clinical consequences
Genetics	Genes and human diseases		Discuss in detail mutations
			Define Mendelian disorders
	Single gene disorders	Discuss the transmission patterns of autosomal dominant disorders	
		Discuss the transmission patterns of autosomal recessive disorders	
		Discuss the transmission patterns of X-linked disorders	
	Biochemical and molecular	Discuss the enzyme defects and their consequences with example (lysosomal and glycogen storage diseases)	
		Discuss the disorders of structural proteins(Marfan Syndrome,EDS)	
	basis of single gene disorders	Discuss the defects in receptors and transport system with example (familial hypercholesterolemia)	
		Brief review of alteration in structure,function or quantity of nonenzyme proteins	

		Brief review of genetically determined adverse reaction to drugs
	Chromosomal Disorders	Discuss cytogenic disorders involving autosomes(Downs Syndrome,deletion syndrome)
		Discuss cytogenic disorders involving sex chromosomes(Klinefelter Syndrome,Turner syndrome)
		Define the terms hermaphroditism and pseudohermaphroditism
		Define the diseases associated with single genemutations
		Define the diseases associated with single genemutations
	Molecular Genetics Diagnosis	Explain the diagnostic methods (PCR,FISH,MLPA)
		Discuss polymorphic markers and molecular diagnosis,RNA Analysis
Neoplasia	Nomenclature	Explain the terms differentiation and anaplasia
		Explain the terms local invasion and metastasis
		Briefly explain pathways of spread of tumors
		Discuss features of benign and malignant neoplasms
		Differences of benign and malignant neoplasms
	Epidemiology of cancer	Discuss the global impact of cancer
		Discuss the role of environmental factors in development of cancer
		Discuss in detail age,acquired predisposing conditions
		Explain the genetic predisposition and interaction between inherited and environmental factors
		Discuss role of genetic and epigenetic alterations
		Describe cellular and molecular hallmarks of cancer
		Explain the self-sufficiency in growth signals
		Describe the tems,ONCOGENES,PROTO-ONCOGENES,ONCOPROTEINS
		Explain the insensitivity to growth inhibition
		Explain the growth promoting metabolic alterations
		Explain warburg effect
		Discuss in detail the evasion of programmed cell death(APOPOTOSIS)
		Associate limitless replicative potential with tumor growth
		Explain the role of angiogenesis,invasion and metastasis in development of tumor
		Discuss the evasion of host defense,genomic instability
	Illustrate with examples cancer enabling inflammation	
	Molecular basis of cancer	Discuss dysregulation of cancer associated gene(chromosomal changes,epigenetic changes and non-coding RNA's)
		Role of chemical carcinogenesis and steps involved in
	Carcinogenic	Role of chemical carcinogenesis and steps involved in

	Agents	development of cancer
		Describe direct acting carcinogenes
		Describe indirect acting carcinogenes
		Explain the role of radiation carcinogenesis(uv RAYS,IONIZING RADIATION)
		Discuss the microbial carcinogenesis
	Clinical Aspects of Neoplasia	Explain the grading and staging of tumors
		Discuss laboratory diagnosis of cancer
		Explain the tumor markers in detail
General Bacteriology	Introduction	Recall bacteria
		Discuss important features of microbes
		Describe characteristics of prokaryotic and eukaryotic cells
	Structure of bacteria	Discuss shape and size of bacteria
		Discuss cell wall and its components
		Compare cell wall of gram positive and gram negative
		Describe bacterial spores and their importance
		Discuss cytoplasmic structure and its components
	Growth	Define Binary fission
		Discuss growth cycle and curve and its phases
		Discuss aerobic and anaerobic growth
		Discuss fermentation and iron metabolism
	Genetics	Define genetics
		Discuss mutation and its types
		Discuss transfer of DNA within bacterial cell
		Discuss transfer of DNA between bacterial cell
		Discuss recombination and its types
	Classification of important bacteria	Discuss principles of classification
	Normal flora	Classify bacteria on different basis
		Define normal flora
		Enlist normal flora with their anatomical sites
		Discuss medical importance of nomral flora
	Pathogenesis	Define commensals,carrier state,colonization and resistance
		Define pathogen, virulence,infectious dose,parasite and types
		Describe types of bacterial infections
		Enlist stages of bacterial infection
		Discuss determinants of bacteria
Host Defense	Enumerate different strains of bacteria causing disease	
	Define innate and acquired immunity	
	Describe host defenses against bacteria	
Laboratory diagnosis of	Describe components of acquired and innate immunity	
	Discuss approach to laboratory work	
		Discuss approach to serological testing

	bacteria	Describe specimen taking for different cultures
		Discuss commonly used bacterial agars
		Discuss different methods of diagnosis based on nucleic acid analysis
		Enlist general principles of bacterial vaccines
		Describe active and passive immunity
	Bacterial vaccine	Enlist common bacterial vaccine
	Sterilization and Disinfection	Define sterilization and disinfection
		Discuss methods of sterilization and disinfection
		Identify instruments/agents/machine used in sterilization
General virology		Recall virus
		Discuss important properties
	Introduction	Enlist comparison of viruses and cell
		Discuss shape and size of virus
	Structure of virus	Discuss different component of virus
	Classification of virus	Discuss principle of classification
		Enumerate classification of virus
Special virology		Define herpes virus
DNA enveloped virus	Herpesvirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Herpes simplex virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Varicella-Zoster virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Cytomegalovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Epstein-barr virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Human herpesvirus8	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Smallpox	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
DNA NON-enveloped virus	Adenovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Papillomavirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Parvovirus	Recall orthomyxoviruses
RNA enveloped virus	Orthomyxovirus es	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Influenza virus	Define paramyxoviruses
	Paramyxoviruses	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Measles virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Mumps virus	Demonstrate

		features,transmission,pathogenesis,diagnosis,prevention
	Respiratory syncytial virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Parainfluenze virus	Define togavirus
	Togavirus	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Rubella virus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Rhabdovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Rabies virus	Define retrovirus
	Retrovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Human T-cell lymphotropic virus	Define filoviruses
	Filoviruses	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Ebola virus	Define enterovirus
RNA non-enveloped virus	Enteroviruses	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Poliovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Coxsackie viruses	Discuss reovirus
	Reovirus	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Rotavirus	recall hepatitis
Hepatitis virus	Introduction	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis A	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis B	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis C	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis C	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis D	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis E	Demonstrate features,transmission,pathogenesis,diagnosis,prevention
	Hepatitis G	Define abrovirus
Abrovirus	Introduction	Discuss features,transmission,pathogenesis,diagnosis,prevention

	Yellow fever	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Dengue virus	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Chikungunya virus	Discuss features,transmission,pathogenesis,diagnosis,prevention
HIV	Introduction of HIV	Discuss features,transmission,pathogenesis,diagnosis,prevention
Mycology		
Basic mycology	Introduction	Define mycology
		Discuss structure of fungi
		Compare of fungai and bacteria
		Discuss pathogenesis
Cutaneous and subcutaneous mycoses	Introduction	enlist cutaneous and subcutaneous mycoses
	Dermatophytoses ,tinea nigra	Discuss features,transmission,pathogenesis,diagnosis,prevention
	tinea versicolor	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Sporotrichosis,chromomycosis	Discuss features,transmission,pathogenesis,diagnosis,prevention
	mycetoma	Discuss features,transmission,pathogenesis,diagnosis,prevention
Systemic mycoses	Introduction	Enlist systemic mycoses
	coccidioides,Histoplasma	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Blastomyces,Paracoccidioides	Discuss features,transmission,pathogenesis,diagnosis,prevention
Opportunistic mycoses	Introduction	Enlist opportunistic mycoses
	Candida,Cryptococcus,Aspergillus,mucor&rhizopus	Discuss features,transmission,pathogenesis,diagnosis,prevention
	Pneumocystis,penicillium marneffei,	Discuss features,transmission,pathogenesis,diagnosis,prevention
	fusarium solani,pseudallescheria boydii	Discuss features,transmission,pathogenesis,diagnosis,prevention
Parasitology		
Intestinal and urogenital parasite	Intestinal parasite	Enlist intestinal parasite
	Entamoeba,Giardia,cryptosporidium	Discuss features,transmission,pathogenesis,diagnosis,prevention

	m	
	Urogenital parasite	Enlist urogenital parasite
	Trichomonas	Discuss features,transmission,pathogenesis,diagnosis,prevention
Blood and tissue parasite	Introduction	enlist blood and tissue parasite
	Plasmodium,toxoplasma	Discuss features,transmission,pathogenesis,diagnosis,prevention
	leishmania	Discuss features,transmission,pathogenesis,diagnosis,prevention
Cestodes	Introduction	Define cestodes
	Taenia,Diphyllobothrium,Echinococcus	Discuss features,transmission,pathogenesis,diagnosis,prevention
trematodes	Introduction	Define trematodes
	Schistosoma,clonorchis,paragonimus	Discuss features,transmission,pathogenesis,diagnosis,prevention
	fasciola,Fasciolopsis,Heterophyses	Discuss features,transmission,pathogenesis,diagnosis,prevention
Nematodes	Introduction	Define nematodes
	enterobius,trichuris,ascaris,ancylostoma&nectar	Discuss features,transmission,pathogenesis,diagnosis,prevention
	strongyloides,trichinella	Discuss features,transmission,pathogenesis,diagnosis,prevention
	wucheria,onchocerca,loa,dracunculus	Discuss features,transmission,pathogenesis,diagnosis,prevention
	toxocara,ancylostoma,angiostrongylus,anisakia	Discuss features,transmission,pathogenesis,diagnosis,prevention
Special bacteriology		
Gram positive cocci	Introduction	Enlist types of gram positive cocci
	Staphylococcus	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	Staphylococcus aureus,epidermidis,saprophyticus	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	Streptococcus	Discuss streptococcus pathogenesis,diseases,laboratory diagnosis and prevention
	Streptococcus	Discuss pathogenesis,diseases,laboratory diagnosis and

	Pneumoniae	prevention
Gram negative cocci	Introduction	Enlist types of gram negative cocci
	Nesseris Meningitidis, N. gonorrhoea	Discuss properties, pathogenesis, transmission, diagnosis, treatment and prevention
Gram positive rods	Introduction	Define gram positive rods
		Classify gram positive rods
	Spore-forming gram positive rods	Discuss types of spore forming gram positive rods
	Bacillus anthracis, cereus	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Clostridium tetani, botulinum, perfringens, difficile	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Non-spore forming gram positive rods	Introduce and classify non-spore forming gram positive rods
	Corynebacterium diphtheriae	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Listeria monocytogenes	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Gardnerella vaginalis	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
Gram negative rods related to enteric tract	Introduction of enterobacteriaceae	Discuss enterobacteriaceae and related organisms
	Pathogen both inside and outside enteric tract	Enlist pathogens both inside and outside enteric tract
	E. coli, Salmonella	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Pathogens within the enteric tract	enlist pathogens within enteric tract
	Shigella, campylobacter, helicobacter	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	vibrio cholerae, parahaemolyticus, vulnificus	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Pathogens	Discuss pathogen outside the enteric tract

	outside the enteric tract	
	Klebsilla-enterobacter-serratia group	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	proteus-providencia-morganella group	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	pseudomonas,bacteroides&prevotella	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Gram negative rods related to respiratory tract	Introduction	Recall and classify gram negative rods related to respiratory tract
	Haemophilus, Bordetella, Legionella, Acinetobacter	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Gram negative rods related to animal source	Introduction	Discuss gram negative rods related to animal source
	Brucella, Francisella, Pasteurella, Bartonella,	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Mycobacterium	Introduction	Discuss types of mycobacterium
	Mycobacterium tuberculosis	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	Atypical mycobacteria, Mycobacterium leprae	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Actinomycetes	Introduction	Define actinomycetes
	Actinomyces israelii, Nocardia Asteroides,	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Mycoplasma	Introduction	Recall Mycoplasma
	Mycoplasma Pneumonia	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Spirochetes	Introduction	Recall spirochetes
	Treponema, Leptospira	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
	Borrelia burgdorferi, recurrentis, hermsii, miyamotoi	Discuss transmission,pathogenesis,diseases,laboratory diagnosis and prevention
Chlamydiae	Introduction	Recall chlamydiae

	Chlamydia trachomatis, pneumoniae, psittaci	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
Rickettsiae	Introduction	Recall rickettsiae
	Rickettsia rickettsii, prowazekii	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
	Coxiella burnetii, Anaplasma phagocytophilum	Discuss transmission, pathogenesis, diseases, laboratory diagnosis and prevention
Practical Work	Microscope	Demonstrate the working of microscope
	Sterilization and Disinfection	Enlist the steps in sterilization and disinfection
		Identify equipments used in sterilization and disinfection
	Culture Media	Identify various culture media used in Pathology
		Enlist uses of various culture media used in Pathology
		Demonstrate the making of various culture media in pathology
		Perform Coagulase/Catalase/Oxidase test
	Laboratory test	Perform Gram staining
		Perform Zn staining
		Perform test for motility of bacteria/Inoculation
		Verbally discuss Citrate test
		Verbally discuss Indole test
		Verbally discuss Urease test
		Verbally discuss VP test
		hypertrophy/Hyperplasia
		Fatty change
		Pigmentation
	Calcification + Thrombosis	
	Congestion+ Infarction	
	Acute inflammation	
	Chronic inflammation	
	Chronic granulomatous inflammation	
	Necrosis	
	Stool examination	
	Urine examination	
	Lipoma	
	Leiomyoma	
	Hemangioma	
	Benign tumours	
	Malignant tumours	
	Squamous cell carcinoma	
	basal cell carcinoma	

ORAL AND PRACTICAL EXAMINATION SECOND PROFESSIONAL

Oral and practical examination carries 150 marks.

EXAMINATION COMPONENT		MARKS
A	Internal Assessment	15
B	Practical notebook manual (Internal Examiner)	05
C	Structured viva voce a) External Examiner: 25 Marks b) Internal Examiner: 25 Marks	50
D	Observed Practical Microbiology	16
E	OSPE a) 16 stations b) 04minute each station	64

MBBS SECOND PROFESSIONAL EXAMINATION

GENERAL PATHOLOGY AND MICROBIOLOGY

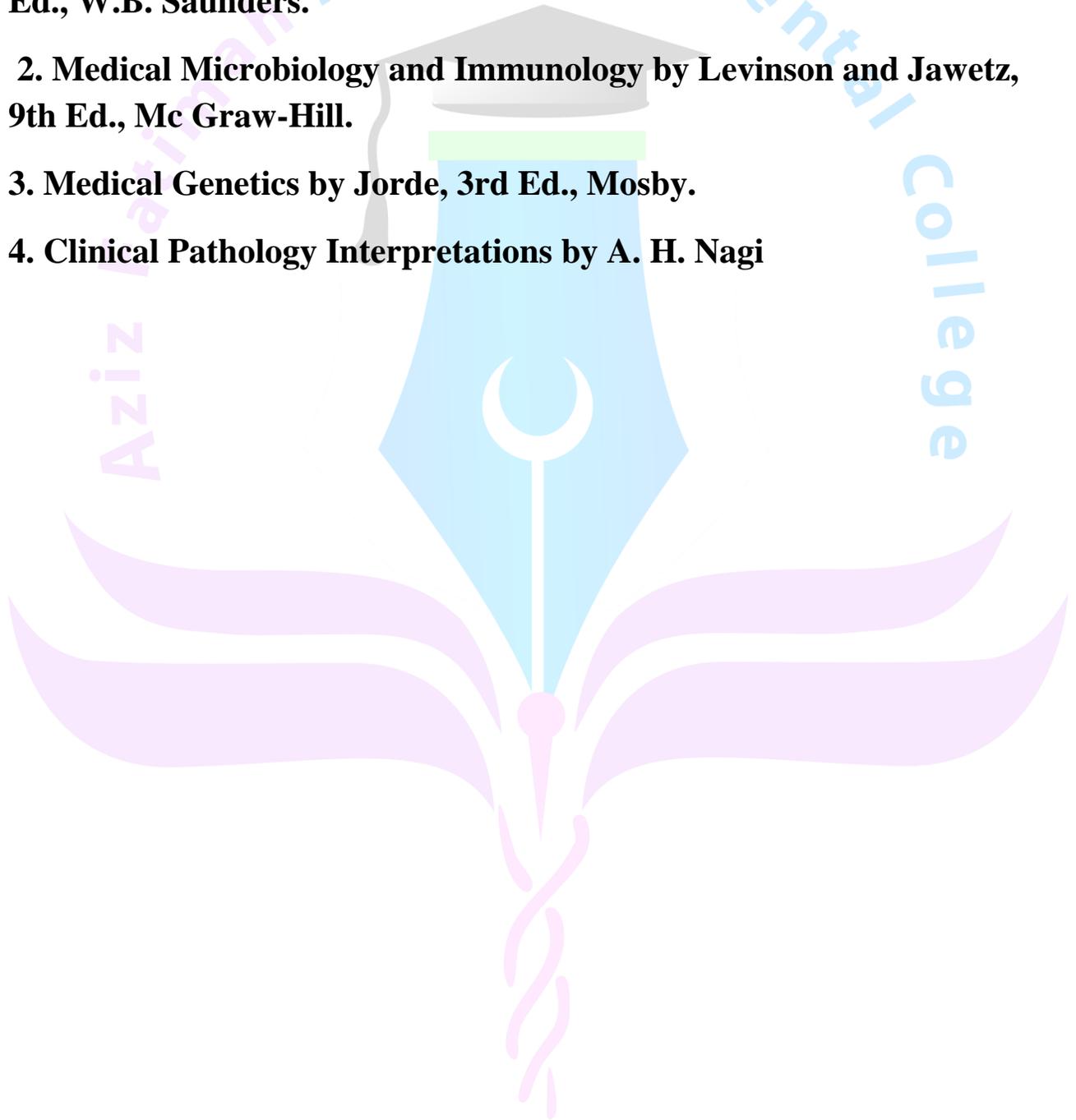
Table of Specifications

(SEQs)

Sr. No.	Topic Specification	SEQ's
1.	Acute and Chronic Inflammation	01
2.	Cellular Adaptations, Cellular Injury and Cell Death	01
3.	Inflammation and Repair	01
4.	Disorders Of Circulation	01
5.	Genetic Disorders	01
6.	Neoplasia	01
7.	Immunology	01
8.	Bacteriology	03
9.	Bacteriology (Mycobacteria)	01
10.	Parasitology	01
11.	Mycology	01
12.	Virology	01
	Total	14

RECOMMENDED BOOKS

- 1. Pathological Basis of Disease by Kumar, Cortan and Robbins, 7th Ed., W.B. Saunders.**
- 2. Medical Microbiology and Immunology by Levinson and Jawetz, 9th Ed., Mc Graw-Hill.**
- 3. Medical Genetics by Jorde, 3rd Ed., Mosby.**
- 4. Clinical Pathology Interpretations by A. H. Nagi**



Azizah Atimah Medical & Dental Colleges



Thank You