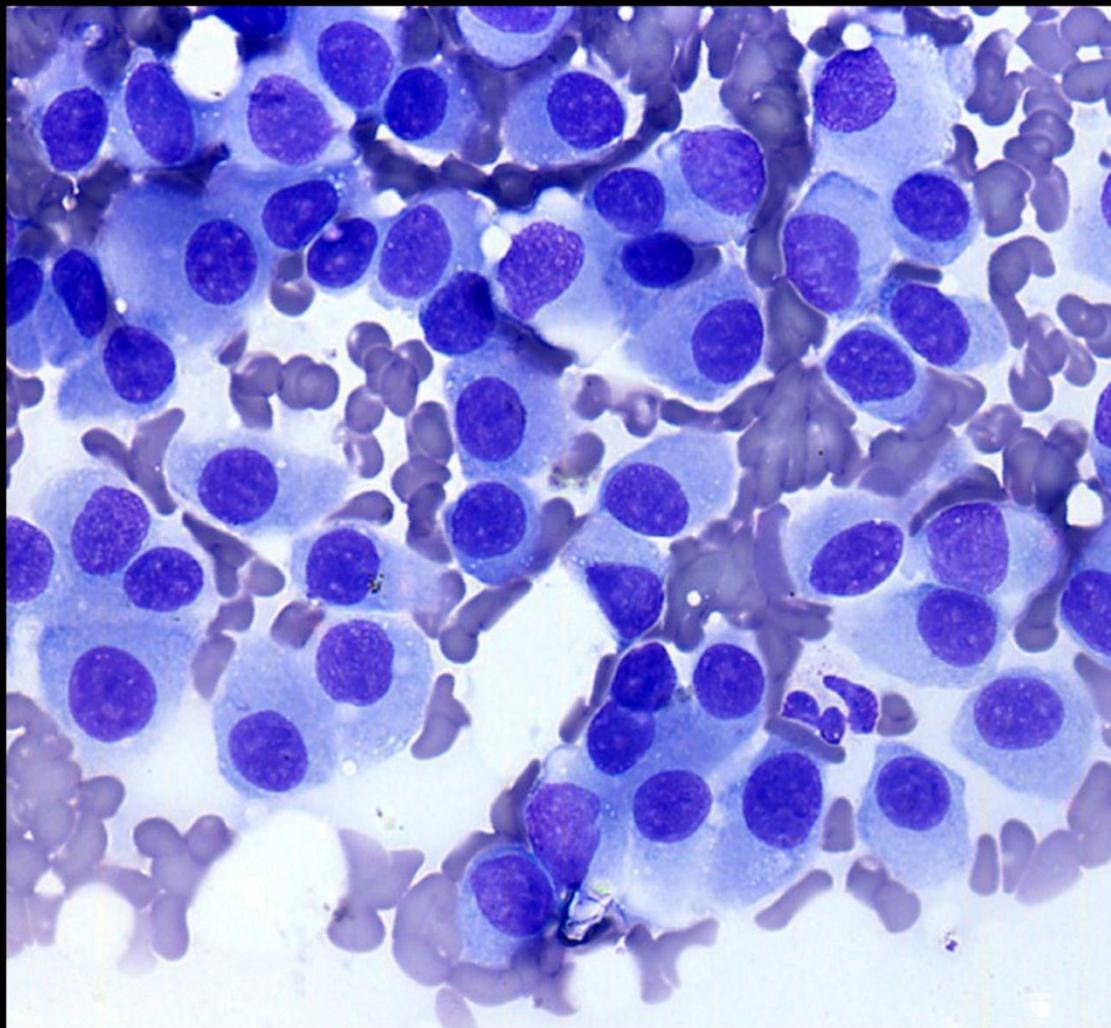


# **Pathology Study Guide**

## **(4th year) M.B.B.S**



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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 principle 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**

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

## **TIME LINE for SYLABUS COMPLETION**

# **GANTT CHART of 4<sup>th</sup> YEAR**

### Key:

## **Winter Vacations**



## **SP= Special Pathology**

## Sports Week



## **Summer Vacations**



Eid Ul Adha



## Sendup Exam



## TIME TABLE

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

**Table of learning outcomes and teaching strategies in Special Pathology**

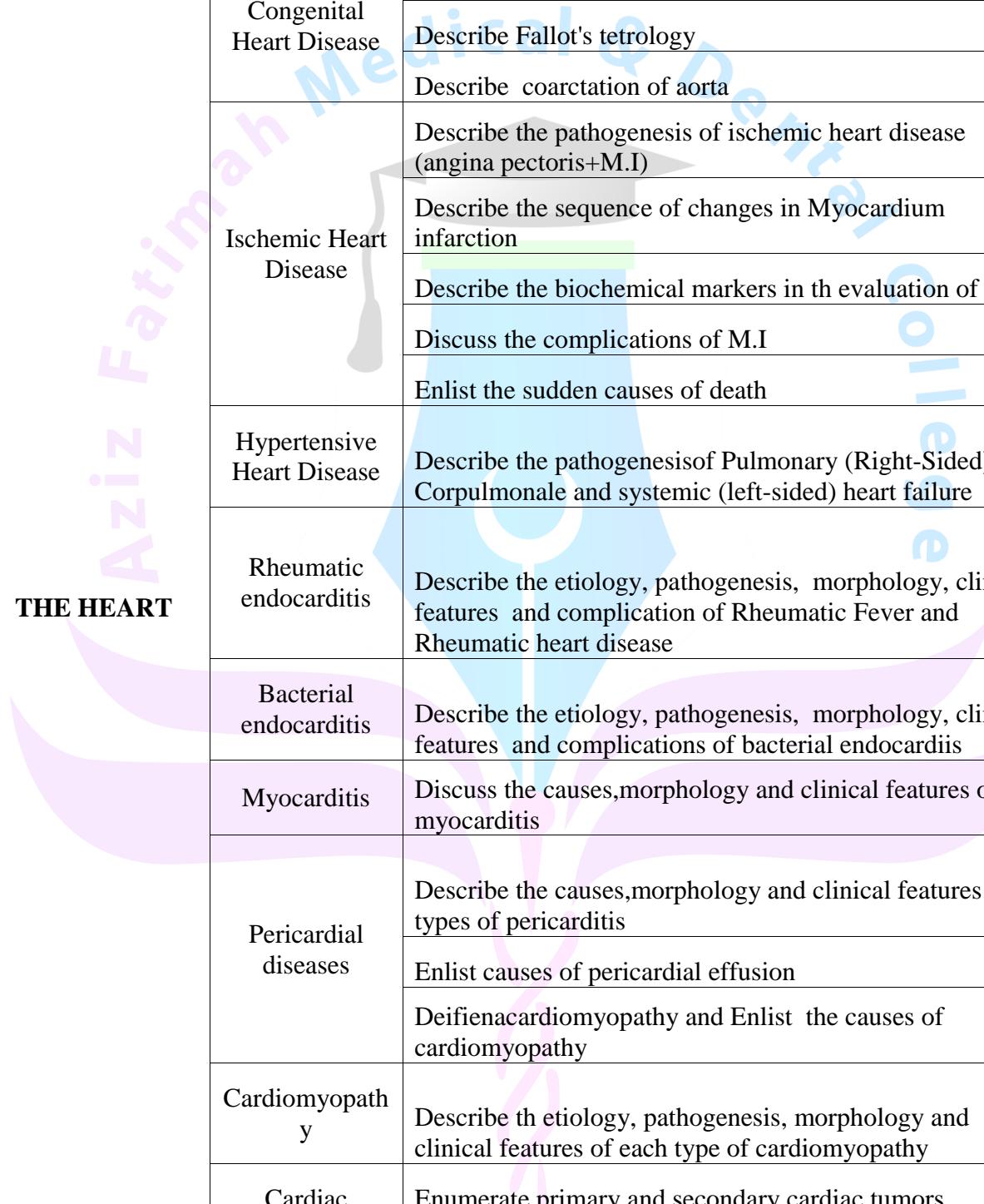
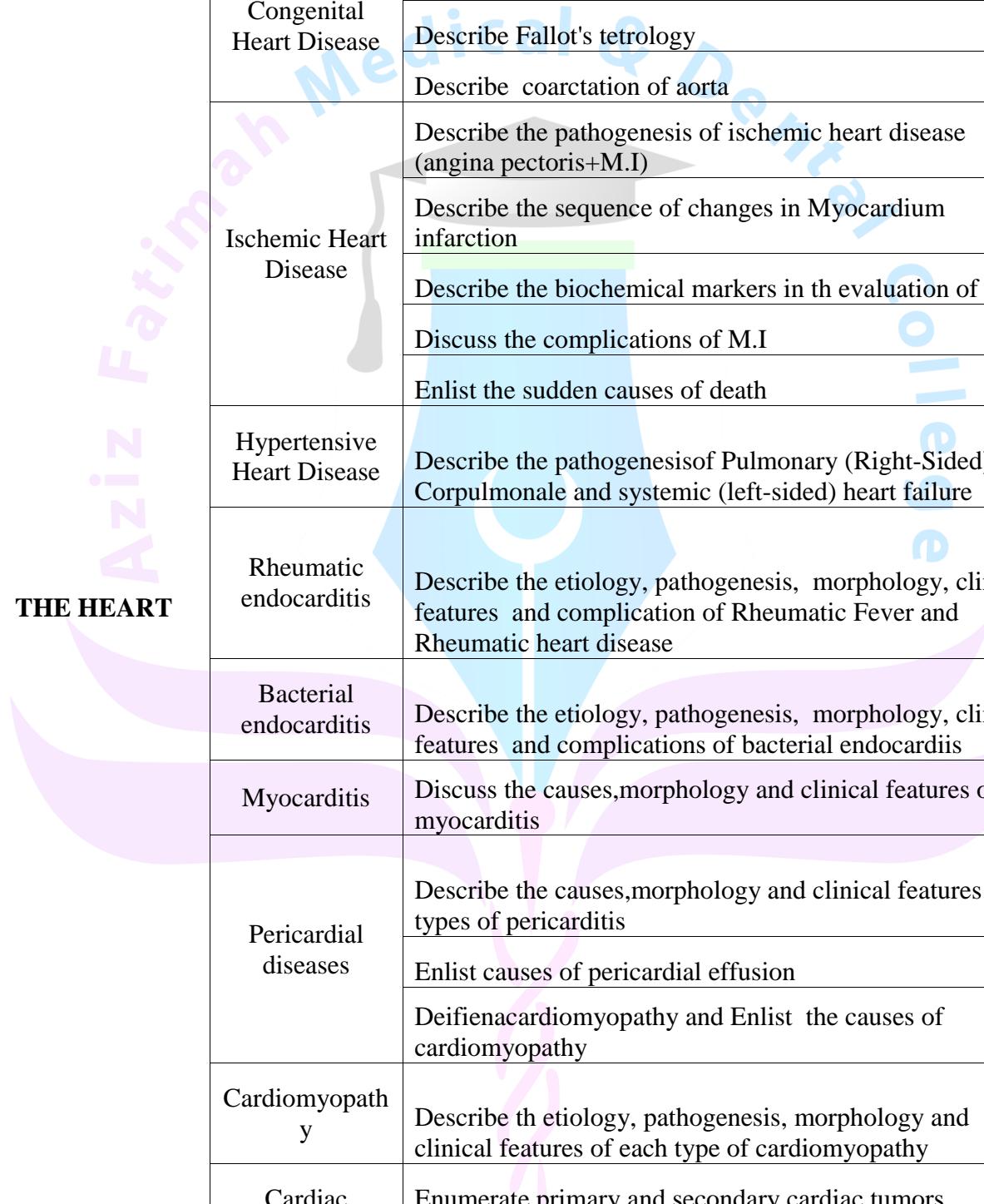
TOPIC	SUBTOPIC	LEARNING OBJECTIVES
<b>THE GASTROINTESTINAL TRACT</b>		
1. ESOPHAGUS	Congenital anomalies	Recall and define Atresia, Fistulae, and Duplications
		Recall and define Diaphragmatic Hernia, Omphalocele, and Gastroschisis, Meckel Diverticulum, Pyloric Stenosis
		Describe the pathogenesis and morphology of Hirschsprung's disease
	Esophageal obstruction and inflammation	Describe the pathogenesis and morphology of Achalasia
		Describe the pathogenesis and morphology of different types of Esophagitis
	Esophageal Hemorrhage	Enlist the causes esophageal varices
2. STOMACH	Barrett Esophagus	Describe the pathogenesis, morphology and consequences of Barret esophagus
	Esophageal Tumors	Describe the etiology, pathogenesis and morphology of Adenocarcinoma & Squamous Cell Carcinoma
	Gastropathy and Acute Gastritis	Enlist the causes of acute gastritis
		Discuss the pathogenesis of acute gastritis with its morphological features
	Chronic Gastritis	Discuss the pathogenesis and morphological features of Helicobacter pylori Gastritis
		Discuss the pathogenesis and morphological features Autoimmune Gastritis
		Compare and contrast H.pylori and autoimmune gastritis
		Describe the pathogenesis, morphology and complications of Peptic Ulcer Disease
		Define other different types of chronic gastritis and stress induced gastritis
		Discuss the Dysplastic changes in gastric epithelium

	Hypertrophic Gastropathies	<p>Enlist the gastropathies, with description on causes and morphological features of Ménétrier Disease</p>
		<p>Compare and contrast different hypertrophic gastropathies along with Zollinger-Ellison Syndrome</p>
	Gastric Polyps and Tumors	<p>Describe the etiology, sites, pathogenesis, morphology and consequences of following polyps and tumors</p>
		<ol style="list-style-type: none"> <li>1. Inflammatory and Hyperplastic Polyps</li> <li>2. Fundic Gland Polyps</li> <li>3. Gastric Adenoma</li> <li>4. Gastric Adenocarcinoma</li> <li>5. Lymphoma</li> <li>6. Carcinoid Tumor</li> <li>7. Gastrointestinal Stromal Tumor</li> </ol>
3. SMALL INTESTINE AND COLON	Intestinal Obstruction	<p>Recall the anatomical locations, definitions and types of :</p>
		Hernias
		Adhesions
		Volvulus
		Intussusception
	Ischemic Bowel Disease	<p>Describe the etiology, pathogenesis, morphology and clinical features of Ischemic bowel disease</p>
		<p>Discuss the etiology, pathogenesis, morphology, complications and clinical features of following;</p>
	Malabsorption and Diarrhea	Cystic Fibrosis
		Celiac Disease
		Environmental Enteropathy
		Autoimmune Enteropathy
		Lactase (Disaccharidase) Deficiency and Abetalipoproteinemia

	A brief overview of the gastrointestinal microorganisms (etiological agent, pathogenesis, morphology, clinic features)
Infectious Enterocolitis	<p>Cholera</p> <p>Campylobacter Enterocolitis</p> <p>Shigellosis</p> <p>Salmonella</p> <p>Typhoid Fever</p> <p>Escherichia coli ,Pseudomembranous Colitis</p> <p>Whipple Disease</p> <p>Viral Gastroenteritis</p> <p>Parasitic Enterocolitis</p>
Irritable Bowel Syndrome	Discuss briefly the etiology ,pathogenesis,morphology and clinical features
Inflammatory Bowel Disease	<p>Discuss in detail the etiology ,pathogenesis,morphology, complications and clinical features of Crohn Disease</p> <p>Discuss in detail the etiology ,pathogenesis,morphology, complications and clinical features of Ulcerative Colitis</p> <p>Compare and contrast the features of Crohn's disease and Ulcerative colitis</p> <p>Discuss the significance of Colitis-Associated Neoplasia</p> <p>Compare Microscopic, Diverticulitis and indeterminate Colitis</p>
Graft-Versus-Host Disease	Define and describe the morphological changes in GVHD
Polyps and tumors	<p>Describe the etiology, pathogenesis, morphology and clinical features of;</p> <ol style="list-style-type: none"> <li>1. Hyperplastic Polyps</li> <li>2. Inflammatory Polyps</li> <li>3. Hamartomatous Polyps</li> <li>4. Juvenile Polyps</li> <li>5. Peutz-Jeghers Syndrome</li> </ol>

<b>BLOOD VESSELS</b>		6. Neoplastic Polyps
		7. Adenomatous Polyposis
		8. Hereditary Non-Polyposis Colorectal cancer
		9. Adenocarcinoma
	Tumors of the Anal Canal	Recall of features of squamous cell carcinoma
	Hemorrhoids	Recall the anatomical features of hemorrhoids with brief morphological features
	Appendix	Describe the etiology, pathogenesis, morphology, complications and clinical features of Acute Appendicitis
		Enumerate the Tumors of the Appendix
	4. Peritoneum	Peritoneal cavity
		Enlist the Inflammatory and infectious Diseases of peritoneum
		Discuss the Sclerosing Retroperitonitis
	Introduction	Recall the structure and function of blood vessels
	Hypertensive Vascular Disease	Describe the pathogenesis of hypertension along with vascular pathology
		Classify hypertension and enlist the causes of secondary hypertension
	Arteriosclerosis	Define arteriosclerosis
	Atherosclerosis	Define atherosclerosis, Enlist it's Risk factors
		Discuss the etiology and pathogenesis along with complications and morphology
	Aneurysms and dissection	Classify and describe various types of aneurysms, types of vessels involved,
		Discuss the etiology and pathogenesis along with complications of aneurysms
		Define aortic dissection, describe it 's pathogenesis and morphology
	Vasculitis	Classify vasculitis and describe the underlying pathogenesis and morphology
	Varicose veins	Enlist common sites, risk factors and discuss clinical features
	Vascular	Classify vascular tumors (benign and malignant)

## THE HEART

	tumors	Decsibe the Pathogenesis and morphology of Kaposi sarcoma
	Congenital Heart Disease	Enist congenital heart defects Describe Fallot's tetrology Describe coarctation of aorta
	Ischemic Heart Disease	Describe the pathogenesis of ischemic heart disease (angina pectoris+M.I)
		Describe the sequence of changes in Myocardium infarction
		Describe the biochemical markers in th evaluation of M.I
		Discuss the complications of M.I
		Enlist the sudden causes of death
	Hypertensive Heart Disease	Describe the pathogenesisisof Pulmonary (Right-Sided) Corpulmonale and systemic (left-sided) heart failure
	Rheumatic endocarditis	Describe the etiology, pathogenesis, morphology, clinical features and complication of Rheumatic Fever and Rheumatic heart disease
	Bacterial endocarditis	Describe the etiology, pathogenesis, morphology, clinical features and complications of bacterial endocardiis
	Myocarditis	Discuss the causes,morphology and clinical features of myocarditis
	Pericardial diseases	Describe the causes,morphology and clinical features of all types of pericarditis Enlist causes of pericardial effusion Deifienacardiomiyopathy and Enlist the causes of cardiomyopathy
	Cardiomyopath y	Describe th etiology, pathogenesis, morphology and clinical features of each type of cardiomyopathy
	Cardiac neoplasms	Enumerate primary and secondary cardiac tumors Describe the morphology of cardiac myxoma

## THE LUNG

	Upper respiratory tract infections	Enlist the microorganisms causing upper RTI's
	Lower respiratory tract infections	<p>Classify pneumonia, describe acute bacterial pneumonias with morphological changes in the lung</p> <p>Enlist atypical pneumonias,</p> <p>Discuss lung infections by Fungi (candidiasis, pneumocystis carinii)</p>
		<p>Enlist causes of aspiration pneumonia, morphology of lung abscess alongwith its complications</p> <p>Discuss etiology, pathogenesis and clinical features of tuberculosis of the lung</p> <p>Discuss etiology, pathogenesis and clinical features of pneumoconiosis</p>
	Tumors of nasopharynx and larynx	<p>Enumerate the benign and malignant tumors</p> <p>Describe the nasophryngeal carcinoma (etiology, morphology, clinical features)</p>
	Atelactasis	Classify atelactasis and enlist it causes
	Pulmonary Edema	Discuss Hemodynamic Pulmonary Edema & Edema Caused by Microvascular (Alveolar) injury
	Lung injury	<p>Enlist causes of Acute Lung Injury and Acute respiratory distress syndrome</p> <p>Describe the pathogenesis of Acute respiratory distress syndrome</p>
	Obstructive Lung Diseases	<p>Describe the etiology, pathogenesis, morphology and clinical features of following obstructive lung diseases</p> <p>1. Asthma, f2. Various types of emphysema f 3. Chronic bronchitis. f 4. Bronchiectasis.</p> <p><b>f</b></p>
	Restrictive lung diseases	Describe the etiology, pathogenesis, morphology and clinical features of following restrictive lung diseases

		<p>1. Idiopathic pulmonary fibrosis 2. Nonspecific interstitial pneumonia 3. Cryptogenic organizing pneumonia 4. Pneumoconiosis</p>
	Granulomatous Diseases	discuss the Pathogenesis and morphology of Sarcoidosis and hypersensitivity pneumonitis
	Diseases of Vascular Origin	<p>Discuss the pathogenesis and morphology of Pulmonary Embolism and Infarction</p> <p>Describe Pulmonary Hypertension</p> <p>Describe Goodpasture Syndrome</p> <p>Discuss Polyangiitis With Granulomatosis</p>
	Tumors of lung	<p>Describe the Bronchogenic carcinoma and mesothelioma on the basis of the following</p> <p>1. Classification f 2. Etiology f3. Pathogenesis 4. f Clinical features</p>
DISEASES OF WBC'S,LYMPH NODES,SPLEEN	Development and maintenance of hematopoietic tissue	<p>Recall from physiology the developmental stages of WBC'S</p> <p>Memorize the reference ranges for different WBC'S</p>
	Disorders of white cells	<p>Discuss the etiology, pathogenesis and morphology of Leukopenia</p> <p>Discuss the etiology, pathogenesis and morphology of Neutropenia</p> <p>Discuss the etiology, pathogenesis and morphology of Agranulocytosis</p> <p>Introduction to reactive proliferation of white cells</p> <p>Discuss the etiology, pathogenesis and morphology of leukocytosis</p> <p>Discuss the etiology, pathogenesis and morphology of lymphadenitis</p> <p>Discuss the etiology, pathogenesis and morphology of acute nonspecific lymphadenitis</p>

	Discuss the etiology, pathogenesis and morphology of chronic nonspecific lymphadenitis
	Define the term hemophagocytic lymphohistiocytosis
	Discuss the etiological and pathogenetic factors in white cell neoplasia
Neoplastic proliferation of WBC'S	Definitions and classification of lymphoid neoplasms
	Discuss the etiology, pathogenesis and morphology of precursor B and T-cell neoplasm
	Discuss the etiology, pathogenesis and morphology of precursor B and T-cell neoplasm
	Discuss the etiology, pathogenesis and morphology of T-cell and natural killer cell neoplasms
	Discuss the etiology, pathogenesis and morphology of Hodgkin Lymphoma
	Introduce the term Myeloid neoplasm
	Discuss the etiology, pathogenesis and morphology of AML
	Discuss the etiology, pathogenesis and morphology of Myelodysplastic syndromes
	Discuss the etiology, pathogenesis and morphology of Myeloproliferative disorders
	Discuss the etiology, pathogenesis and morphology of Langerhans cell histiocytosis
Spleen	Explain the causes of spleenomegaly
	Discuss the etiology, pathogenesis and morphology of acute splenitis
	Discuss the etiology, pathogenesis and morphology of splenic infarcts and congestive splenomegaly

		Discuss the neoplasms,congenital anomalies and rupture of spleen
	Thymus	Define the developmental disorders of thymus Distinguish between thymic hyperplasia and thymomas morphologically and clinically
RED BLOOD CELL AND HEMOPHILIA	Anemias	Discuss the Classification of ANEMIAS Explain the reference ranges for RBCS
	Blood loss anemias	Discuss in detail the etiology,pathogenesis,morphology and clinical features of acute blood loss anemias Discuss in detail the etiology,pathogenesis,morphology and clinical features of chronic blood loss anemias
	Hemolytic Anemias	Discuss in detail the etiology,pathogenesis,morphology and clinical features of hereditary spherocytosis Discuss in detail the etiology,pathogenesis,morphology and clinical features of G6PD deficiency
		Discuss in detail the etiology,pathogenesis,morphology and clinical features of Sickle cell disease
		Discuss in detail the etiology,pathogenesis,morphology and clinical features of Thalassemia Syndromes
		Discuss in detail the etiology,pathogenesis,morphology and clinical features of paroxysmal nocturnal hemoglobinuria
		Discuss in detail the etiology,pathogenesis,morphology and clinical features of Immunohemolytic Anemias
	Anemias of Diminished	Discuss in detail the etiology,pathogenesis,morphology and clinical features of Megaloblastic Anemia
	Erythropoiesis	Discuss in detail the etiology,pathogenesis,morphology and clinical features of Folate deficiency Anemia

BLEEDING DISORDERS	Anemias	Discuss in detail the etiology, pathogenesis, morphology and clinical features of iron deficiency Anemia
		Discuss in detail the etiology, pathogenesis, morphology and clinical features of Anemia of chronic diseases
		Discuss in detail the etiology, pathogenesis, morphology and clinical features of aplastic anemia
		Discuss in detail the etiology, pathogenesis, morphology and clinical features of pure red cell aplasia
	Polycythemia	Discuss in detail the etiology, pathogenesis, morphology and clinical features of polycythemia
	Hemorrhagic Diatheses	Describe the bleeding disorders caused by vessel wall abnormalities
		Discuss etiology, pathogenesis, morphology and clinical features of thrombocytopenia
		Discuss etiology, pathogenesis, morphology and clinical features of Acute immune thrombocytopenic purpura
		Discuss etiology, pathogenesis, morphology and clinical features of Chronic immune thrombocytopenic purpura
		Describe the terms drug induced and HIV associated thrombocytopenia, HUS.
	Defective platelet function	Discuss the effects of defective platelet function
		Describe the hemorrhagic diathesis related to abnormalities in clotting factors
		Discuss the etiology, pathogenesis, morphology and clinical features of Von Willebrand disease
		Discuss the etiology, pathogenesis, morphology and clinical features of Hemophilia A
		Discuss the etiology, pathogenesis, morphology and clinical features of Hemophilia B
		Discuss the etiology, pathogenesis, morphology and clinical features of DIC

	Transfusion Reactions	<p>Discuss the types of transfusion reactions</p> <p>Discuss the etiology, pathogenesis, morphology and clinical features of allergic and hemolytic reactions</p> <p>Discuss the etiology, pathogenesis, morphology and clinical features of transfusion related acute lung injury</p>
THE LOWER URINARY TRACT AND MALE GENITAL SYSTEM	ureters	<p>recall the anatomy of normal lower urinary tract</p> <p>discuss the congenital anomalies of ureters</p> <p>recognize various inflammations of ureters</p> <p>discuss the etiology, pathogenesis and morphology of congenital anomalies of ureters</p> <p>memorize various obstructive lesions and causes of urethral obstructions</p> <p>explain tumor and tumor like lesions of ureters</p>
	urinary bladder	<p>identify congenital anomalies of bladder</p> <p>Identify acute and chronic cystitis</p> <p>distinguish variants of cystitis (interstitial cystitis, Melakoplakia, polypoid cystitis)</p> <p>name various metaplastic lesions of bladder</p> <p>discuss the epidemiology, pathogenesis and morphology of urothelial tumors</p> <p>memorize grading of transitional cell tumors</p> <p>learn pathological staging of bladder carcinoma</p>
	male genital tract	
	penis	enlist congenital anomalies, inflammation and tumors of penis
	testis and epididymis	discuss the etiology, pathogenesis and morphology of cryptorchidism

		enumerate inflammatory diseases (orchitis, granulomatous orchitis, gonorrhea, mumps, tuberculosis, syphilis)
testicular tumors		classify testicular tumors
		discuss the etiology, pathogenesis and morphology of germ cell tumors
		discuss the etiology, pathogenesis and morphology of seminomatous, nonseminomatous tumors
		discuss the etiology, pathogenesis and morphology of teratoma and sexcord-stromal tumors
prostate		recall the anatomy of normal adult prostate
		discuss the etiology, pathogenesis and morphology of various types of prostatitis
		memorize etiology, pathogenesis and morphology of BPH
		introduction to tumors of prostate
		discuss in detail the etiology, pathogenesis and morphology of adenocarcinoma
		explain staging of prostatic adenocarcinoma using the TNM system
THE FEMALE GENITAL TRACT	Lower genital tract	associate the role of PSA LEVELS in adenocarcinoma of prostate
		Recall the anatomy of the structures comprising this system
	VULVA	identify various infections of lower genital tract, discuss the clinical course of PID in detail
		discuss the etiology, pathogenesis and morphology of various types of NONNEOPLASTIC EPITHELIAL DISORDERS
		discuss the etiology, pathogenesis and morphology of various types of NEOPLASTIC EPITHELIAL DISORDERS
	VAGINA	discuss in detail the etiology, pathogenesis and morphology of BARTHOLIN CYST
		Explain various developmental anomalies

	Associate various premalignant and malignant neoplasms of vagina
	illustrate vaginal intraepithelial neoplasia and embryonal rhabdomyosarcoma
CERVIX	Discuss etiology,pathogenesis and morphology of acute cervicitis
	Discuss etiology,pathogenesis and morphology of chronic cervicitis
	Discuss etiology,pathogenesis and morphology of endocervical polyp
	Discuss etiology,pathogenesis and morphology of CIN(squamous intraepithelial lesion)
	Discuss etiology,pathogenesis and morphology of cervical carcinoma
	Explain cervical cancer screening and prevention
	Inquire endometrial histology in normal menstrual cycle
uterus and endometrium	Introduce various functional endometrial disorders
	Explain the etiology,pathogenesis and morphology of DUB
	Discuss various inflammatory disorders of endometrium
	Explain the etiology,pathogenesis and morphology of acute endometritis
	Explain the etiology,pathogenesis and morphology of chronic endometritis
	Explain the term endometriosis and adenomyosis
	Discuss the etiology,pathogenesis and morphology of endometrial polyps
	Discuss the etiology,pathogenesis and morphology of endometrial hyperplasia
	Identify malignant tumors of endometrium
	Describe carcinoma of endometrium also explain characteristics of type I and type II

	Explain the etiology, pathogenesis and morphology of type I and type II
	Briefly discuss the etiology, pathogenesis and morphology of Malignant Mixed Mullerian tumor
	Discuss the etiology, pathogenesis and morphology of tumors of endometrial stroma
	Discuss the etiology, pathogenesis and morphology of tumors of myometrium
Fallopian tubes	<p>Briefly discuss the etiology, pathogenesis and morphology of inflammations, tumor and cysts of fallopian tubes</p>
	Describe nonneoplastic and functional cysts
	Discuss the etiology, pathogenesis and morphology of follicle and luteal cysts
	Discuss the etiology, pathogenesis and morphology of polycystic ovaries and stromal hyperthecosis
Ovaries	Discuss classification of ovarian tumors
	Explain the etiology, pathogenesis and morphology of Epithelial tumors
	Explain the etiology, pathogenesis and morphology of germ cell tumors
	Explain the etiology, pathogenesis and morphology of sex cord stromal tumors
	Briefly discuss the etiology, pathogenesis and morphology of metastatic tumors
Gestational and placental disorders	<p>Discuss the etiology, pathogenesis and morphology of spontaneous abortion and ectopic pregnancy</p>
	Explain disorders of late pregnancy
	Briefly explain twin placentas, abnormalities of placental implantation
	Discuss etiology of placental infections

The Breast	development	Explain the etiology ,pathogenesis and morphology of preeclampsia and eclampsia
		Explain the term GTD
		Discuss the etiology,pathogenesis and morphology of Hydatidiform Mole
		Discuss the etiology,pathogenesis and morphology of complete,partial and invasive mole
		Describe in detail choriocarcinoma discussing the etiology, morphology and pathogenesis
		Briefly discuss placental site trophoblastic tumor
		Briefly explain milk line remnants,accessory axillary breast tissue and congenital nipple inversion
		Introduction of inflammatory disorders of breast
		Discuss the etiology,pathogenesis and morphology of acute mastitis
		Discuss the etiology,pathogenesis and morphology of squamous metaplasia of lactiferous ducts

	Briefly explain the clinical significance of benign epithelial changes
Carcinomas of breast	General discussion on carcinoma of breast
	Brief discussion about incidence and epidemiology
	Discuss in detail the etiology and pathogenesis of familial breast cancer
	Discuss in detail the etiology and pathogenesis of sporadic breast cancer
	Discuss in detail the molecular mechanism of carcinogenesis and tumor progression
	General discussion on types of breast cancer
	Describe the etiology, pathogenesis and morphology of Ductal Carcinoma in situ
	Describe the etiology, pathogenesis and morphology of lobular Carcinoma in situ
	Describe the etiology, pathogenesis and morphology of invasive(infiltrating) Carcinoma
	Discuss in detail the special histologic types of invasive carcinoma
	Brief discussion about incidence of male breast cancer
	Associate various prognostic and predictive factors in cancer development
	Introduce stromal tumors
	Discuss the etiology, pathogenesis and morphology of Fibroadenoma
	Discuss the etiology, pathogenesis and morphology of Phyllodes tumor
	Discuss the etiology, pathogenesis and morphology of lesions of interlobular stroma
	Describe in detail the malignant tumors of interlobular stroma
	Brief introduction to the other malignant tumors of the breast

	General Features of Liver Disease	Describe the mechanisms of injury and repair in liver
Liver Failure		Define acute liver failure and enlist its causes
		Describe the morphological changes of acute liver failure
		Define chronic liver failure and enlist its causes
		Describe the morphological changes of chronic liver failure
		Define acute on chronic liver failure
		Define portal hypertension and enlist its causes
		Describe the mechanism of portal hypertension
Infectious Disorders		Recall and describe the properties of hepatitis A,B,C,D,E along with their prognosis
		Define the Clinicopathologic Syndromes of Viral hepatitis
		Enlist Bacterial, Parasitic, and Helminthic Infections
		Describe liver abscess (causes and morphology)
Autoimmune Hepatitis		Describe the morphology and enlist the antibodies involved
Drug- and Toxin-Induced Liver Injury		Enlist the causes
Alcoholic Liver Disease		Describe the pathogenesis,morphology and prognosis
Metabolic Liver Disease		Describe causes and morphology of Nonalcoholic Fatty Liver Disease
		Describe the pathogenesis, morphology and clinical features of Hemochromatosis
		Describe the pathogenesis, morphology and clinical features of Wilson disease
		Describe the pathogenesis, morphology and clinical features of $\alpha$ 1-Antitrypsin Deficiency
Cholestatic Diseases		recall the Bilirubin and Bile Formation
		Descibe the Pathophysiology of Jaundice
		Enlist the causes and morphology of Cholestasis

		Enlist the causes and morphology of Cholestasis of Sepsis
		Neonatal Cholestasis
Autoimmune Cholangiopathies		Describe the etiology, pathogenesis and morphology of Primary Biliary Cirrhosis (PBC)
		Describe the etiology, pathogenesis and morphology of Primary Sclerosing Cholangitis (PSC)
	Circulatory Disorders	Describe the pathogenesis, causes and morphology of following circulatory disorders;
		Hepatic Vein Thrombosis
		Passive Congestion and Centrilobular Necrosis
Graft-Versus-Host Disease		Describe the causes and morphology of GVHD
		Describe the etiology, morphology and clinical features of following preg.related hepatic dis;
	Hepatic Disease Associated with pregnancy	1. Preeclampsia and Eclampsia
		2. Acute Fatty Liver of Pregnancy
		3. Intrahepatic Cholestasis of Pregnancy
Nodules and Tumors		Decsribe the pathogenesis and morphology of Nodular Hyperplasias
		Decsribe the pathogenesis and morphology Benign Neoplasms Hepatocellular Adenomas
	Malignant Tumors	Describe the etiology, pathogenesis, morphology and prognosis of Hepatocellular Carcinoma
		Describe the etiology, pathogenesis, morphology and prognosis of Hepatoblastoma
		Describe the etiology, pathogenesis, morphology and prognosis of Cholangiocarcinoma (CCA)
<b>GALLBLADDER</b>	Cholelithiasis (Gallstones)	Describe the types, etiology, pathogenesis, morphology and complications of gallstones

<b>PANCREAS</b>	Cholecystitis	Describe the etiology, pathogenesis, morphology and prognosis of ;  Acute cholecystitis and chronic cholecystitis
	Carcinoma	Describe the etiology, pathogenesis, morphology and prognosis og gallbladder carcinoma
	Congenital Anomalies	Define Annular Pancreas.  Define Ectopic Pancreas
	Acute Pancreatitis	Enlist the Etiologic Factors in Acute Pancreatitis  Describe the underling Pathogenesis.  Describe the morphology  Describe the clinical features
	CHRONIC PANCREATITIS	Describe the etiology, pathogenesis,  Describe the morphology and clinical features
	Pancreatic carcinoma	Describe he etiology, pathogenesis, morphology  and clinical features of pancreatic carcinoma
	Basic Structure and function of bone	Recall of the basic histological structure, development of bone
	Developmental Disorders of Bone and and Cartilage	Recall of the following developmental disorders of bone and cartilage  1. Define Defects in Nuclear Proteins and Transcription Factors  2.Define Defects in Hormones and Signal Transduction Proteins  3. Define Defects in Extracellular Structural Proteins
	Acquired Disorders of Bone and Cartilage	Describe the etiology, pathogenesis, morphology, clinical features and complications of Osteopenia and Osteoporosis

		Describe the etiology, pathogenesis, morphology, clinical features and complications of Paget Disease
		Describe the etiology, pathogenesis, morphology, clinical features and complications of Osteomalacia and Rickets
		Describe the etiology, pathogenesis, clinical features of Renal Osteodystrophy
		Define different types of Fractures
		Describe the etiology, pathogenesis, clinical features of Osteonecrosis
		Describe the etiology, pathogenesis, clinical features of Osteomyelitis
Bone Tumors and Tumor-Like Lesions		Describe the etiology, pathogenesis, morphology, clinical features and complications of Bone-Forming Tumors
		Describe the etiology, pathogenesis, morphology, clinical features and complications of Cartilage-Forming Tumors
		Describe the etiology, pathogenesis, morphology, clinical features and complications of Tumors of Unknown Origin
		Describe the etiology, pathogenesis, morphology, clinical features and complications of Lesions Simulating Primary Neoplasms
JOINTS		Describe the etiology, pathogenesis, morphology, clinical features and complications of Osteoarthritis
		Describe the etiology, pathogenesis, morphology, clinical features and complications of Rheumatoid Arthritis
		Describe the etiology, pathogenesis, morphology, clinical features of Juvenile Idiopathic Arthritis

		Describe the etiology, pathogenesis, morphology, clinical features of Seronegative Spondyloarthropathies
		Describe the etiology, pathogenesis, morphology, clinical features of Infectious Arthritis
		Describe the etiology, pathogenesis, morphology, clinical features of Crystal-Induced Arthritis
	Joint Tumor and Tumor-Like Conditions	Describe the etiology, pathogenesis, morphology, clinical features of Ganglion and Synovial Cysts
		Describe the etiology, pathogenesis, morphology, clinical features of Tumors of Adipose Tissue
		Describe the etiology, pathogenesis, morphology, clinical features of Fibrous Tumors
	SOFT TISSUE	Describe the etiology, pathogenesis, morphology, clinical features of Skeletal Muscle Tumors
		Describe the etiology, pathogenesis, morphology, clinical features of Smooth Muscle Tumors
		Describe the etiology, pathogenesis, morphology, clinical features ofTumors of Uncertain Origin (synovial sarcoma)
Central Nervous system	Cellular Pathology of CNS	Describe the Reactions of Neurons, microglia and astrocytes to Injury Recall and define Cerebral Edema, Hydrocephalus, and herniation
	Cerebrovascular Disease (CVD)	Recall hypoxic, ischemic and infarctive changes in brain Describe the etiology, pathogenesis, morphology, clinical features of Hypertensive CVD
		Recall the the etiology, pathogenesis, morphology, clinical features of CNS Infections
	Prion Diseases	Recall and define prion diseases
	Demyelinating Diseases	Classify demyelinating disorders of brain with definitions of basic terminologies in multiple sclerosis
	Neurodegenerative Diseases	Classify Neurodegenerative Diseases

The Endocrine System	Diseases	Describe the etiology, pathogenesis, morphology, clinical features of Alzheimer Disease
		Describe the etiology, pathogenesis, morphology, clinical features of Parkinson Disease (PD)
		Briefly Describe pathogenesis, morphology, clinical features of Huntington Disease
	Tumors	classify CNS tumors
		Describe the etiology, pathogenesis, morphology, clinical features of Gliomas
		Describe the etiology, pathogenesis, morphology, clinical features of Poorly Differentiated Neoplasms
		Describe the etiology, pathogenesis, morphology, clinical features of Meningiomas
		Briefly discuss the normal anatomy of pituitary gland
		Discuss in detail the clinical manifestations of pituitary gland diseases
		Discuss in detail the classification of pituitary adenomas
		Discuss in detail the genetic alterations in pituitary tumors
	Pituitary Gland	Explain the term hyperpituitarism followed by discussion on the following
		Discuss in detail the eiology, pathogenesis and morphology of Lactotroph Adenoma
		Discuss in detail the eiology, pathogenesis and morphology of Somatotroph Adenoma
		Discuss in detail the eiology, pathogenesis and morphology of Corticotroph Adenoma
		Discuss in detail the eiology, pathogenesis and morphology of other anterior pituitary Adenomas
		Describe hypopituitarism, discuss the causes and clinical manifestations in detail
		Give a review of Posterior Pituitary Syndrome
		Describe hypothalamic suprasellar tumors
	Thyroid Gland	Explain the terms hyperthyroidism and hypothyroidism

	Discuss in detail the etiology, morphology and pathogenesis of Cretinism
	Discuss in detail the etiology, morphology and pathogenesis of Myxedema
	Introduce the term Thyroiditis giving examples
	Discuss in detail the etiology, pathogenesis and morphology of Hashimoto Thyroiditis
	Discuss in detail the etiology, pathogenesis and morphology of Subacute Lymphocytic Thyroiditis
	Discuss in detail the etiology, pathogenesis and morphology of Granulomatous Thyroiditis
	Discuss in detail the etiology, pathogenesis and morphology of Graves Disease
	Explain the differences between diffuse and multinodular goiter
	Discuss in detail the etiology, pathogenesis and morphology of Diffuse Nontoxic Goiter
	Discuss in detail the etiology, pathogenesis and morphology of Multinodular Goiter
	Discuss neoplasms of Thyroid(Adenomas and Carcinomas)
	Discuss in detail the etiology, pathogenesis and morphology of Adenomas
	Discuss in detail the etiology, pathogenesis and morphology of Papillary Carcinomas
	Discuss in detail the etiology, pathogenesis and morphology of Follicular Carcinomas
	Discuss in detail the etiology, pathogenesis and morphology of Anaplastic Carcinomas
	Discuss in detail the etiology, pathogenesis and morphology of Medullary Carcinomas
	Discuss various congenital anomalies of thyroid gland
Parathyroid Gland	Explain the term Hyperparathyroidism
	Discuss in detail the etiology, pathogenesis and morphology of Primary Hyperparathyroidism

	Discuss in detail the etiology, pathogenesis and morphology of Secondary Hyperparathyroidism
	Discuss in detail the etiology, pathogenesis and morphology of Hypoparathyroidism
	Discuss in detail the etiology, pathogenesis and morphology of pseudo hypoparathyroidism
The Pancreas	Discuss in detail the etiology of Diabetes Mellitus
	Explain the diagnostic criteria of diabetes and its classification
	Explain the role of insulin in regulation of its signaling pathways
	Discuss in detail the pathogenesis of Type I and Type II Diabetes Mellitus
	Briefly discuss diabetes in pregnancy
	Discuss the most initial presentation or mode of diagnosis for each of the major subtypes
	Discuss in detail the morphology and clinical manifestations of chronic diabetes
Adrenal Glands	Introduction to pancreatic neuroendocrine tumors
	Discuss in detail the etiology, pathogenesis and morphology of Hyperinsulinism(Insulinoma)
	Discuss in detail the etiology, pathogenesis and morphology of Zollinger-Ellison Syndrome
	Recall the anatomy of ADRENAL CORTEX
Adrenal Cortex	Explain Adrenocortical Hyperfunction(Hyperadrenalinism)
	Discuss in detail the etiology, pathogenesis and morphology of Cushing Syndrome
	Discuss in detail the etiology, pathogenesis and morphology of Primary Hyyperaldosteronism
	Discuss in detail the etiology, pathogenesis and morphology of Adrenogenital Syndromes
	Explain in detail the pathogenesis of Adrenocortical Insufficiency

THE SKIN	Endocrine Glands	Discuss in detail the etiology, pathogenesis and morphology of Primary acute adrenocortical insufficiency
		Discuss in detail the etiology, pathogenesis and morphology of Waterhouse-fridrichsen Syndrome
		Discuss in detail the etiology, pathogenesis and morphology of Addison Disease
		Explain in detail the pathogenesis of Secondary Adrenocortical Insufficiency
		Discuss in detail the etiology, pathogenesis and morphology of Adrenocortical Neoplasms
	Adrenal Medulla	Recall the anatomy and physiology of ADRENAL Medulla
	Endocrine Neoplasia	Discuss in detail the etiology, pathogenesis and morphology of Pheochromocytoma
		Discuss in detail the etiology, pathogenesis and morphology of Multiple Endocrine Neoplasia Type 1
	Pineal Gland	Discuss in detail the etiology, pathogenesis and morphology of Multiple Endocrine Neoplasia Type 2
	Disorders of pigmentation	learn the definitions of the terms Freckle,Lentigo,melanocytic nevus,dysplastic nevi
THE SKIN	acute inflammations of skin	Distinguish psoriasis,pemphigus and bullous pemphigoid morphologically
		Discuss morphological and clinical features of Urticaria
		Discuss etiology ,pathogenesis ,morphological and clinical features of eczematous,contact and atopic dermatitis
		Discuss types of warts and their frequent locations
		Discuss in detail types,clinical and morphological features of nevocellular nevi and dysplastic nevi

	chronic inflammations	Identify seborrhic keratoses, acanthosis nigricans, fibroepithelial polyp, epithelial or follicular inclusion cysts
	Benign tumors of skin	Brief introduction of the benign epithelial tumors(just names)
		Describe the predisposing factors, morphology, clinical features and prognosis of squamous cell carcinoma
		Describe the predisposing factors, morphology, clinical features and prognosis of basal cell carcinoma
	malignant tumors of skin	Describe the classification, morphology, clinical features and prognosis of malignant melanoma
<b>Practical Work</b>	Slide examination /Identification	Atherosclerosis
		Hypertensive Vascular disease
		Monckeberg's Arteriosclerosis
		Vasculitis
		Infarction
		Anthracocnosis
		Pneumonia
		Emphysema
		Pulmonary Tuberculosis
		Lung cancer
		Chronic gastritis
		Carcinoma of Stomach
		Adenocarcinoma Colon
		Acute Appendicitis
		Chronic Cholecystitis
		Bliliary Calculi ( Gall Bladder Stone)
		Liver Cirrhosis
		Hepatocellular Carcinoma
		Chronic Pyelonephritis
		Renal Calculi
		Renal Cell Carcinoma( Hypernephroma , Renal Adenocarcinoma)
		Urothelial tumours
		Benign Prostatic hyperplasia
		Carcinoma Prostate
		Seminoma testes

	Cervical Carcinoma
	Endometrial Hyperplasia
	Leiomyoma Hyperplasia
	Teratoma
	Breast Fibroadenoma
	Breast Cancer
	Multinodular Goiter
	Thyroid Follicular Adenoma
	Papillary Carcinoma
	Chronic Osteomyelitis
	Osteoma
	Osteogenic Sarcome
	Giant Cell Tumour ( Osteoclastoma)of bone
	Squamous Cell Carcinoma ( SCC)
	Basal Cell carcinoma ( BCC)
	Malignant Melanoma
	Meningeoma
	Sickle cell anemia
	Iron deficiency anemia
	Megaloblastic anemia
	Aplastic anemia
	AML,
	ALL
	CML
	CLL
	Hodgekin's Lymphoma
	Chemical Pathology

## **ORAL AND PRACTICAL EXAMINATION THIRD PROFESSIONAL**

Oral and practical examination carries 150 marks.

<b>EXAMINATION COMPONENT</b>		<b>MARKS</b>
A	<b>Internal Assessment</b>	15
B	<b>Practical notebook manual (Internal Examiner)</b>	05
C	<b>Structured viva voce</b>  a) External Examiner: 25 Marks b) Internal Examiner: 25 Marks	50
D	<b>OSPE</b> a) Histopathology (10 stations) b) Haematology (5 stations) c) Chemical Pathology (5 stations) Time allowed: 04 minutes at each station	80

**MBBS Third Professional****Special Pathology****Table of Specifications (Theory)**

Sl. No.	Topic/ Chapter	No. of SEQs	No. of MCQs
1	Cardiovascular System	1	5
2	Haemopoietic & Lymphoid System	1	5
3	Respiratory System	1	5
4	Oral Cavity and Gastrointestinal Tract	2	9
5	Hepatobiliary System	1	5
6	Urinary System	1	5
7	Male Genital System	1	5
8	Female Genital System	1	5
9	Diseases of Breast	1	5
10	Endocrinology	1	5
11	Musculo Skeletal System and Bones & Joints	1	5
12	Central Nervous System	1	2
13	Clinical Chemistry	1	3
14	Skin	-	1
<b>Total</b>		<b>14</b>	<b>65</b>

## **RECOMMENDED BOOKS**

1. Pathological Basis of Disease by Kumar, Cotran, Robbins. 7th. Ed.
2. Medical Microbiology and Immunology by Levinson and Jawetz, 9th Ed. Mc Graw-Hill
3. Ackerman's Surgical Pathology
4. Clinical Pathology Interpretations by A.H. Nagi
5. Theory and Practice Of Histological Techniques by John D Bancroft
6. District Laboratory Practice in Tropical Countries by Monica Cheesburgh, 2nd Ed. Part I & II
7. Online Journals and Reading Materials through HEC Digital Library Facility.

