

# Department of Pathology



## Study Guide 4<sup>th</sup> Year MBBS

Sharif Medical & Dental College,  
Lahore



## **PREFACE**

Study guide plays a pivotal role in enhancing students' understanding and grasp of a subject. It acquaints the students about the course outline, teaching modules, and methodology. It also briefs about the assessment and evaluation policies in an academic session. This study guide aims to promote self-regulated learning among students. It gives an overview of course outcomes & learning objectives.

This study guide has been carefully planned to keep in view the mission of UHS, Lahore, and the vision of our institute. It is tailored according to the students' needs. This would hopefully enable our young inquisitive minds to develop a good understanding of this subject and adequately prepare for the examination.

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SMDC, Lahore

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## **Vision & Mission of UHS**

Qualitative and Quantitative Revolution in Medical Education and Research through Evolution and thereby improve Health Care delivery to Populace.

UHS shall be innovative global center of excellence in learning and research, supporting a community of scholars and professionals committed to serving society, promoting the development of students to reach their true potential in becoming competent, ethical, caring, and inquiring health professionals for the benefit of the country and the wider world.

## **Mission of SMDC**

Sharif Medical & Dental College is dedicated to best serve the nation through preservation and dissemination of advanced knowledge and educating the students by latest trends in learning and research reaching levels pars excellence.

The Institution is committed to provide standardized quality medical education to its students by inculcating professional knowledge, skills and responsibilities in them with the aim of:

- Preparing them as modern physicians having initiative to act as future leaders in their respective fields and becoming lifelong learners.
- Encouraging the spirit of critical thinking through research and publication.
- Building up an understanding of the ethical values compatible with our religion, culture and social norms.
- Developing a sense of being responsible citizens of the society possessing professional competence and instilling in them the values of hard work and dedication thus preparing them to be accountable to the stakeholders and the state.

The Institution is devoted to keep abreast its faculty with the latest trends in Medical Education encompassing teaching/learning methodologies, assessment tools, research opportunities and professionalism to facilitate their professional development, competencies and commitment towards continues learning.

Our patient-centered mission is achieved by outstanding medical care & services in professional practice with due emphasis and focus on our local health needs.

Our mission further elaborate upon establishing academic and research facilities in areas of local demand under global gold standards and leading advancement in research, education & patient care.

## **Vision of SMDC**

To be recognized for the provision of a safe and functional environment conducive to collaborative teaching & learning, comfortable working atmosphere, and conducting world class research through professionalism and excellence.



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## **TEACHING AND LEARNING STRATEGIES**

### **a) Modes of Information Transfer**

PMC has allocated 250 hours of teaching in the subject of Special Pathology for the 4<sup>th</sup> Year MBBS course. Following teaching modules have been planned to impart core knowledge of Special Pathology so that student can grasp the subject fully and is adequately prepared for university examinations.

#### **Large Group Interactive Session (LGIS)**

A total of 140-150 LGIS are planned for the entire year. The session will be conducted by the Professor, associate professors, and assistant professors. The session will be interactive and students should actively participate in them. At the start of each session, the learning outcome will be displayed.

#### **Practical Classes, Demonstration & Individual Performance**

One practical class has been planned per week. The class will be divided into 03 batches to conduct the practicals effectively and one batch will be entertained once a week for these sessions. Practical will be conducted by demonstrators under the active supervision of senior faculty members. Students are required to enter their work in their practical notebooks and get them checked by the instructors regularly. It will comprise of practical on microscopic & gross appearance of the various organs & tissues. Practical for Haematology and Chemical laboratory tests will also be conducted.

#### **Small-Group Discussion (SGD) & Case-based learning**

The class will be divided into 03 batches. The batch will be further divided into smaller groups for effective learning. Topics for the SGD will be notified at the start of the month. Case-based learning and small group discussion will be conducted throughout the academic year. Clinical problems will be notified at least one week before the session. A senior demonstrator will be interactively facilitating the session and students are required to generate the discussion amongst themselves & the facilitator in line with the learning objectives of the topic.

#### **Students' presentation**

Presentations by the students will be scheduled after the completion of the course. Topics will be allocated to students and each presentation will be of 10-15 minutes duration with a Question & Answer session after it. This will help to increase student's engagement in their learning.

#### **Skill Demonstration**

For appropriate Skill demonstration, the class is divided into 5-6 batches and hands on practical skill demonstration is conducted on specimen and samples with the use of appropriate equipment. Fine Needle aspiration cytology and handling of specimen send to laboratory for histopathology is demonstrated with the use of adequate tools and specimen in Skills Laboratory. Once demonstrated, the students are asked to perform the skill

### **b) Venue for Learning Outcomes**

- Lecture Halls
- Practical Laboratory
- Tutorial rooms
- Skill Laboratory
- Libraries including audio visual
- Online classes- Zoom/Google class room



## LIST OF LECTURES

### 4th Year MBBS

#### CARDIOVASCULAR SYSTEM

##### **Blood Vessel**

| <b>Sr. No.</b> | <b>Topic</b>          | <b>Doctor Name</b> |
|----------------|-----------------------|--------------------|
| 1              | Hypertension          | Dr. Rafiq Ahmad    |
| 2              | Atherosclerosis       | Dr. Rafiq Ahmad    |
| 3              | Aneurysm & dissection | Dr. Rafiq Ahmad    |
| 4              | Vasculitis            | Dr. Rafiq Ahmad    |
| 5              | Vascular tumors       | Dr. Rafiq Ahmad    |
| 6              | Vein and lymphatics   | Dr. Rafiq Ahmad    |

##### **Heart**

| <b>Sr. No.</b> | <b>Topic</b>                   | <b>Doctor Name</b> |
|----------------|--------------------------------|--------------------|
| 1              | Valvular heart disease         | Dr. Rafiq Ahmad    |
| 2              | Cardiomyopathies & Myocarditis | Dr. Rafiq Ahmad    |
| 3              | Ischemic heart disease         | Dr. Rafiq Ahmad    |
| 4              | Congenital heart disease       | Dr. Rafiq Ahmad    |
| 5              | Tumors of heart                | Dr. Rafiq Ahmad    |
| 6              | Pericardium - Pericarditis     | Dr. Rafiq Ahmad    |

#### RESPIRATORY SYSTEM

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | ARDS, Atelectasis, COVID   | Dr. Madiha Ehsan   |
| 2              | Restrictive lung disease and Pneumoconiosis                              | Dr. Madiha Ehsan   |
| 3              | Tuberculosis, Pathogenesis, Morphology and Clinical                      | Dr. Madiha Ehsan   |
| 4              | Obstructive lung disease (Asthma, Emphysema, Bronchiectasis, Bronchitis) | Dr. Madiha Ehsan   |
| 5              | Other granulomatous disease (Sarcoidosis), Hypersensitivity pneumonitis  | Dr. Madiha Ehsan   |
| 6              | Lung cancer (Classification, Morphology and Genes)                       | Dr. Madiha Ehsan   |
| 7              | Pneumonia (Classification, Morphology, stages and types)                 | Dr. Madiha Ehsan   |
| 8              | Pleura – Mesothelioma, Pleural effusion                                  | Dr. Madiha Ehsan   |

#### SKIN

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Basic terminologies, dermatitis                                    | Dr. Usman Nasir    |
| 2              | Premalignant conditions of skin cancers and basal cell carcinoma   | Dr. Usman Nasir    |
| 3              | Squamous cell carcinoma (Risk factors pathogenesis and morphology) | Dr. Usman Nasir    |
| 4              | Melanoma (types pathogenesis, morphology and genetics)             | Dr. Usman Nasir    |



## **ORAL CAVITY**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Leukoplakia and oral infections                             | Dr. Madiha Ehsan   |
| 2              | Squamous cell carcinoma                                     | Dr. Madiha Ehsan   |
| 3              | Salivary glands (Sialadenitis, Benign and Malignant tumors) | Dr. Madiha Ehsan   |

## **GASTROINTESTINAL TRACT (GIT)**

### **Esophagus**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Esophagitis, Baretts esophagus & dysplasia evaluation | Dr. Madiha Ehsan   |

### **Stomach**

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Gastritis (Acute & chronic, pathogenesis, H. pylori)                 | Dr. Madiha Ehsan   |
| 2              | Peptic ulcer disease (Pathogenesis complications)                    | Dr. Madiha Ehsan   |
| 3              | Gastric carcinoma (types, risk factors, morphology and pathogenesis) | Dr. Madiha Ehsan   |
| 4              | Gastrointestinal stromal tumors                                      | Dr. Madiha Ehsan   |
| 5              | Carcinoid, MALT lymphoma   | Dr. Madiha Ehsan   |

### **Intestine**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Intestinal obstruction and Ischemic bowel diseases                        | Dr. Madiha Ehsan   |
| 2              | Malabsorption, celiac disease (Pathogenesis, genetics complications)      | Dr. Madiha Ehsan   |
| 3              | Enterocolitis (Viral, bacterial, fungal)                                  | Dr. Madiha Ehsan   |
| 4              | Inflammatory bowel disease (differentiation, morphology and pathogenesis) | Dr. Madiha Ehsan   |
| 5              | Adenoma and polyps  | Dr. Madiha Ehsan   |
| 6              | Hereditary syndromes and cancer   | Dr. Madiha Ehsan   |
| 7              | Adenocarcinoma (Genetics, Carcinogenesis and morphology)                  | Dr. Madiha Ehsan   |
| 8              | Appendix (inflammation, tumors and carcinoids)                            | Dr. Madiha Ehsan   |

## **HEPATOBIILIARY SYSTEM**

### **Liver**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Jaundice and bilirubin pathophysiology and LFT                            | Dr. Rafiq Ahmad    |
| 2              | Hepatitis types   | Dr. Rafiq Ahmad    |
| 3              | Hepatitis (A, B, C, D and E - Pathogenesis, morphology and serology)      | Dr. Rafiq Ahmad    |
| 4              | Liver abscess   | Dr. Rafiq Ahmad    |
| 5              | Alcoholic liver disease   | Dr. Rafiq Ahmad    |
| 6              | Non alcoholic fatty liver disease   | Dr. Rafiq Ahmad    |
| 7              | Metabolic disease   | Dr. Rafiq Ahmad    |
| 8              | Hemochromatosis, Wilson's disease, $\alpha$ -1 antitrypsin disease        | Dr. Rafiq Ahmad    |
| 9              | Liver cancer (Precursor lesions, Benign tumors, Hepatocellular carcinoma) | Dr. Rafiq Ahmad    |



### **Gall Bladder**

| <b>Sr. No.</b> | <b>Topic</b>                    | <b>Doctor Name</b> |
|----------------|---------------------------------|--------------------|
| 1              | Stones, Inflammation and cancer | Dr. Rafiq Ahmad    |

### **Pancreas**

| <b>Sr. No.</b> | <b>Topic</b>                                  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Acute and chronic pancreatitis (Pathogenesis) | Dr. Rafiq Ahmad    |
| 2              | Pancreatic carcinoma                          | Dr. Rafiq Ahmad    |

### **DISEASES OF BREAST**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Benign fibrocystic disease  | Dr. Madiha Ehsan   |
| 2              | Nipple discharge and adenoma  | Dr. Madiha Ehsan   |
| 3              | Fibroadenoma, Phyllodes tumors  | Dr. Madiha Ehsan   |
| 4              | Breast cancer (classification, molecular genetics and morphology)     | Dr. Madiha Ehsan   |
| 5              | Breast cancer (Prognostic factors, immunohistological classification) | Dr. Madiha Ehsan   |

### **FEMALE GENITAL TRACT**

| <b>Sr. No.</b> | <b>Topic</b>  | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Cervix (Cervical intraepithelial neoplasia and carcinoma)         | Dr. Madiha Ehsan   |
| 2              | Endometrium (endometritis, endometriosis)                         | Dr. Madiha Ehsan   |
| 3              | Dysfunctional uterine bleeding                                    | Dr. Madiha Ehsan   |
| 4              | Endometrial hyperplasia (types and morphology)                    | Dr. Madiha Ehsan   |
| 5              | Endometrial carcinoma (types and morphology)                      | Dr. Madiha Ehsan   |
| 6              | Endometrial stromal tumors and smooth muscle tumors               | Dr. Madiha Ehsan   |
| 7              | Ovary epithelial tumors   | Dr. Madiha Ehsan   |
| 8              | Ovary stromal and germ cell tumors                                | Dr. Madiha Ehsan   |
| 9              | Placenta (molar pregnancy, gestational and trophoblastic disease) | Dr. Madiha Ehsan   |
| 10             | Fallopian tubes (Ectopic pregnancy)                               | Dr. Madiha Ehsan   |

### **MALE GENITAL TRACT**

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Testis cryptorchidism, granulomatous inflammation                              | Dr. Usman Nasir    |
| 2              | Testicular tumors (Seminoma, germ cell tumor, stromal tumors)                  | Dr. Usman Nasir    |
| 4              | Prostatic carcinoma ( morphology, Gleason scoring, immunohistochemical stains) | Dr. Usman Nasir    |
| 5              | Prostatitis  | Dr. Usman Nasir    |
| 6              | Benign Prostatic hyperplasia   | Dr. Usman Nasir    |





## **URINARY SYSTEM**

### **Renal**

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Renal function tests   | Dr. Madiha Ehsan   |
| 2              | Glomerulonephritis (types, pathogenesis, clinical presentation and morphology) | Dr. Madiha Ehsan   |
| 3              | Pediatric Wilm's tumor   | Dr. Madiha Ehsan   |
| 4              | Renal cell carcinoma   | Dr. Madiha Ehsan   |
| 5              | Renal cyst   | Dr. Madiha Ehsan   |

### **Urinary Bladder**

| <b>Sr. No.</b> | <b>Topic</b>                            | <b>Doctor Name</b> |
|----------------|---|--------------------|
| 1              | Cystitis (types)                        | Dr. Madiha Ehsan   |
| 2              | Tumor, urothelial carcinoma             | Dr. Madiha Ehsan   |
| 3              | Acute tubular necrosis – urine cytology | Dr. Madiha Ehsan   |

## **HEMATOPOIETIC & LYMPHOID SYSTEM**

| <b>Sr. No.</b> | <b>Topic</b>                                     | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Haematopoiesis                                   | Dr. Maria Aslam    |
| 2              | Anemia (Classification, types, peripheral smear) | Dr. Maria Aslam    |
| 3              | Hemolytic Anemia                                 | Dr. Maria Aslam    |
| 4              | Thalassemia                                      | Dr. Maria Aslam    |
| 5              | Polycythemia                                     | Dr. Maria Aslam    |
| 6              | Haemophilia                                      | Dr. Maria Aslam    |
| 7              | Leukocytosis and leukopenia complications        | Dr. Maria Aslam    |
| 8              | AML  | Dr. Maria Aslam    |
| 9              | ALL  | Dr. Maria Aslam    |
| 10             | CML  | Dr. Maria Aslam    |
| 11             | CLL  | Dr. Maria Aslam    |
| 12             | Multiple myeloma                                 | Dr. Maria Aslam    |
| 13             | DIC  | Dr. Maria Aslam    |
| 14             | TTP  | Dr. Maria Aslam    |
| 15             | Blood grouping and blood transfusion             | Dr. Maria Aslam    |
| 16             | Lymphoma (Classification) Non Hodgkin lymphoma   | Dr. Maria Aslam    |
| 17             | Hodgkin lymphoma                                 | Dr. Maria Aslam    |

## **ENDOCRINOLOGY**

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Pituitary (Hypo and Hyper pituitarism)   | Dr. Rafiq Ahmad    |
| 2              | Pituitary tumors   | Dr. Rafiq Ahmad    |
| 3              | Hyperthyroidism – Goiter   | Dr. Rafiq Ahmad    |
| 4              | Hypothyroidism   | Dr. Rafiq Ahmad    |
| 5              | Autoimmune thyroiditis   | Dr. Rafiq Ahmad    |
| 6              | Thyroid adenoma  | Dr. Rafiq Ahmad    |
| 7              | Thyroid carcinoma – Papillary carcinoma, medullary carcinoma, follicular carcinoma | Dr. Madiha Ehsan   |
| 8              | Hyper and Hypo parathyroidism  | Dr. Rafiq Ahmad    |
| 9              | Diabetes mellitus (Types, pathogenesis, complications and morphology)              | Dr. Rafiq Ahmad    |



|    |   |                 |
|----|---|-----------------|
| 10 | Adrenal gland – tumors, Cushing’s syndrome, Addison’s disease | Dr. Rafiq Ahmad |
|----|---|-----------------|

### **CENTRAL NERVOUS SYSTEM**

| <b>Sr. No.</b> | <b>Topic</b>                     | <b>Doctor Name</b> |
|----------------|----------------------------------|--------------------|
| 1              | Hydrocephalus, edema, hematoma   | Dr. Madiha Ehsan   |
| 2              | Meningitis (types, CSF findings) | Dr. Madiha Ehsan   |
| 3              | Glial tumors                     | Dr. Madiha Ehsan   |
| 4              | Non Glial tumors                 | Dr. Madiha Ehsan   |

### **MUSCULOSKELETAL SYSTEM & BONES AND JOINTS**

| <b>Sr. No.</b> | <b>Topic</b>   | <b>Doctor Name</b> |
|----------------|--|--------------------|
| 1              | Osteogenesis imperfecta, Achondroplasia                          | Dr. Usman Nasir    |
| 2              | Osteoporosis (Risk factors, Pathogenesis)                        | Dr. Usman Nasir    |
| 3              | Osteomyelitis (types and stages)                                 | Dr. Usman Nasir    |
| 4              | Pagets disease and Vit D deficiency and Rickets                  | Dr. Usman Nasir    |
| 5              | Bone tumors (osteosarcoma- genetics, types, morphology)          | Dr. Usman Nasir    |
| 6              | Bone tumors (Giant cell tumors, Ewing’s sarcoma, chondrosarcoma) | Dr. Usman Nasir    |
| 7              | Osteoarthritis and Rheumatoid arthritis                          | Dr. Usman Nasir    |
| 8              | Musculodystrophy myopathy  | Dr. Usman Nasir    |



**LIST OF PRACTICALS & TUTORIALS (SGDs)**  
**4<sup>th</sup> Year MBBS**

**Blood Vessels**

| Sr. No. | Topic                   | Name              |
|---------|-------------------------|-------------------|
|         | <b>Practicals</b>       |                   |
| 1       | Vascular tumors         | Dr. Sameen Hassan |
| 2       | Atherosclerosis         | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b> |                   |
| 3       | Vasculitis              | Dr. Remisha Zahid |
| 4       | Vascular tumors         | Dr. Remisha Zahid |
| 5       | Atherosclerosis         | Dr. Remisha Zahid |

**Cardio-Vascular System**

| Sr. No. | Topic                        | Name              |
|---------|------------------------------|-------------------|
|         | <b>Practicals</b>            |                   |
| 1       | Pneumonia                    | Dr. Sameen Hassan |
| 2       | COPD                         | Dr. Sameen Hassan |
| 3       | Lung cancer                  | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b>      |                   |
| 4       | Pulmonary function test      | Dr. Remisha Zahid |
| 5       | Restrictive lung diseases    | Dr. Remisha Zahid |
| 6       | COPD                         | Dr. Remisha Zahid |
| 7       | Acute lung injury            | Dr. Remisha Zahid |
| 8       | Pneumoconiosis – lung cancer | Dr. Remisha Zahid |

**Skin**

| Sr. No. | Topic                   | Name              |
|---------|-------------------------|-------------------|
|         | <b>Practicals</b>       |                   |
| 1       | Skin tumors             | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b> |                   |
| 2       | Skin tumors             | Dr. Remisha Zahid |

**Gastrointestinal Tract**

| Sr. No. | Topic                        | Name              |
|---------|------------------------------|-------------------|
|         | <b>Practicals</b>            |                   |
| 1       | Gastritis                    | Dr. Sameen Hassan |
| 2       | H. Pylori                    | Dr. Sameen Hassan |
| 3       | Barett's esophagus           | Dr. Sameen Hassan |
| 4       | Gastric carcinoma            | Dr. Sameen Hassan |
| 5       | GIST                         | Dr. Sameen Hassan |
| 6       | Colonic carcinoma and polyps | Dr. Sameen Hassan |
| 7       | Liver cirrhosis              | Dr. Sameen Hassan |
| 8       | HCC                          | Dr. Sameen Hassan |
| 9       | Gall bladder                 | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b>      |                   |
| 10      | Gastritis and peptic ulcer   | Dr. Remisha Zahid |



|    |  |                   |
|----|--|-------------------|
| 11 | Esophagus                              | Dr. Remisha Zahid |
| 12 | Gastric carcinoma                      | Dr. Remisha Zahid |
| 13 | GIST                                   | Dr. Remisha Zahid |
| 14 | Maltoma                                | Dr. Remisha Zahid |
| 15 | Colonic carcinoma and polyps           | Dr. Remisha Zahid |
| 16 | Ulcerative colitis and Crohn's disease | Dr. Remisha Zahid |
| 17 | LFTs                                   | Dr. Remisha Zahid |
| 18 | Non neoplastic liver disorders         | Dr. Remisha Zahid |
| 19 | HCC and Ademona                        | Dr. Remisha Zahid |
| 20 | Gall bladder and pancreas              | Dr. Remisha Zahid |

### Diseases of Breast

| Sr. No. | Topic                    | Name              |
|---------|--------------------------|-------------------|
|         | <b>Practicals</b>        |                   |
| 1       | Fibroadenoma             | Dr. Sameen Hassan |
| 2       | Breast cancer            | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b>  |                   |
| 3       | Fibroadenoma             | Dr. Remisha Zahid |
| 4       | Breast cancer            | Dr. Remisha Zahid |
| 5       | Ductal carcinoma in situ | Dr. Remisha Zahid |

### Female Genital Tract

| Sr. No. | Topic                   | Name              |
|---------|-------------------------|-------------------|
|         | <b>Practicals</b>       |                   |
| 1       | Cervical cancer         | Dr. Sameen Hassan |
| 2       | Leiomyoma               | Dr. Sameen Hassan |
| 3       | Endometrial hyperplasia | Dr. Sameen Hassan |
| 4       | Ovary tumors            | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b> |                   |
| 5       | Cervical cancer         | Dr. Remisha Zahid |
| 6       | Leiomyoma               | Dr. Remisha Zahid |
| 7       | Endometrial hyperplasia | Dr. Remisha Zahid |
| 8       | Ovary tumors            | Dr. Remisha Zahid |

### Male Genital Tract

| Sr. No. | Topic   | Name              |
|---------|---|-------------------|
|         | <b>Practicals</b>                               |                   |
| 1       | Testicular tumor                                | Dr. Sameen Hassan |
| 2       | Benign prostatic hyperplasia and adenocarcinoma | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b>                         |                   |
| 3       | Testicular tumor                                | Dr. Remisha Zahid |
| 4       | Benign prostatic hyperplasia and adenocarcinoma | Dr. Remisha Zahid |

### Hematopoietic & Lymphoid System

| Sr. No. | Topic             | Name              |
|---------|-------------------|-------------------|
|         | <b>Practicals</b> |                   |
| 1       | Anemias           | Dr. Sameen Hassan |



|   |                         |                   |
|---|-------------------------|-------------------|
| 2 | Leukemias               | Dr. Sameen Hassan |
| 3 | Lymphomas               |                   |
|   | <b>Tutorials (SGDs)</b> |                   |
| 4 | Anemias                 | Dr. Usman Nasir   |
| 5 | Leukemias               | Dr. Usman Nasir   |
| 6 | Lymphomas               | Dr. Usman Nasir   |

### Urinary System

| Sr. No. | Topic  | Name              |
|---------|--|-------------------|
|         | <b>Practicals</b>                                    |                   |
| 1       | Pyelonephritis                                       | Dr. Sameen Hassan |
| 2       | Kidney stones  | Dr. Sameen Hassan |
| 3       | Renal cell carcinoma and transitional cell carcinoma |                   |
|         | <b>Tutorials (SGDs)</b>                              |                   |
| 4       | RFTs   | Dr. Remisha Zahid |
| 5       | Glomerulonephritis                                   | Dr. Remisha Zahid |
| 6       | Renal cell carcinoma and transitional cell carcinoma | Dr. Remisha Zahid |

### Musculoskeletal System and Bones & Joints

| Sr. No. | Topic                                      | Name              |
|---------|--|-------------------|
|         | <b>Practicals</b>                          |                   |
| 1       | Osteomyelitis                              | Dr. Sameen Hassan |
| 2       | Osteosarcoma                               | Dr. Sameen Hassan |
| 3       | Soft tissue tumors                         |                   |
|         | <b>Tutorials (SGDs)</b>                    |                   |
| 4       | Bone developmental and metabolic disorders | Dr. Remisha Zahid |
| 5       | Bone tumors and Soft tissue tumors         | Dr. Remisha Zahid |
| 6       | Liposarcoma, Rhabdomyosarcoma              | Dr. Remisha Zahid |

### Endocrinology

| Sr. No. | Topic                         | Name              |
|---------|-------------------------------|-------------------|
|         | <b>Practicals</b>             |                   |
| 1       | Multinodular Goiter           | Dr. Sameen Hassan |
| 2       | Thyroid Adenoma               | Dr. Sameen Hassan |
|         | Thyroid carcinoma             |                   |
|         | <b>Tutorials (SGDs)</b>       |                   |
| 3       | Thyroid function tests        | Dr. Remisha Zahid |
| 4       | Pituitary gland and tumors    | Dr. Remisha Zahid |
| 5       | Liposarcoma, Rhabdomyosarcoma | Dr. Remisha Zahid |
| 6       | Thyroid tumors                |                   |

### Central Nervous System

| Sr. No. | Topic                   | Name              |
|---------|-------------------------|-------------------|
|         | <b>Practicals</b>       |                   |
| 1       | CNS tumors              | Dr. Sameen Hassan |
|         | <b>Tutorials (SGDs)</b> |                   |
| 2       | CSF evaluation          | Dr. Remisha Zahid |
| 3       | CNS tumors              | Dr. Remisha Zahid |



## LEARNING OBJECTIVES

### **BLOOD VESSELS AND HEART**

1. Describe atherosclerosis with respect to the following factors:
  - Etiology and pathogenesis
  - Early lesion
  - Late and complicated lesion
  - Vessels effected
  - Complications
2. Differentiate between atherosclerosis, Monkeberg's medial calcify sclerosis and arteriolosclerosis.
3. Classify hypertension and list the causes of secondary hypertension.
4. Describe the vascular changes in hypertension.
5. Discuss the common pathogenic mechanisms of vasculitis.
6. Classify aneurysm according to etiology.
7. Describe atherosclerotic aneurysm with respect to:
  - Pathogenesis
  - Type of vessel involved
  - Morphological and clinical features
8. Describe varicose veins with respect to:
  - Common sites
  - Predisposing factors
  - Clinical features
9. List the benign and malignant tumors of blood vessels.
10. Describe the pathogenesis of ischemic heart disease.
11. Describe myocardial infarction with respect to the following:
  - Sequence of changes in myocardial infarction (MI)
  - Pattern of elevation of biochemical markers used in the evaluation of MI
  - Complications of MI
12. List the causes of sudden cardiac death.
13. Describe cor pulmonale and list the predisposing disorders.
14. Describe rheumatic fever with respect to etiology, pathogenesis, morphological and clinical features, and its sequelae.
15. List the causes of myocarditis and describe its morphological and clinical features.
16. Describe the three major clinico-pathological groups of cardiomyopathy (dilated, hypertrophic and restrictive).
17. List the causes of pericarditis and describe its clinical and morphological features.
18. List the primary and secondary cardiac tumours.
19. Describe the main features of Fallot's tetralogy and coarctation of aorta.
20. Describe valvular heart disease with respect to following:
  - Rheumatic heart disease
  - Infective endocarditis
  - Mitral valve prolapse
  - Complications of artificial valve
21. Identify the lesions of atherosclerosis, MI and myxoma on gross and microscopic examination.



22. Enlist and interpret the biochemical, serological and molecular tests in diagnosis of heart and vascular disease.

## HAEMATOPOIETIC AND LYMPHOID SYSTEM

1. Outline the stages in the formation of red blood cells (RBCs), white blood cells (WBCs), platelets and correlate haematopoiesis with various haematopoietic growth factors.
2. List the normal values of red cell count, haemoglobin level, packed cell volume, MCH, MCV, MCHC, WBC count and platelet count.
3. Classify anaemia on the basis of morphology and underline pathogenesis of RBC production.
4. Enlist causes of hypochromic microcytic anaemia.
5. Describe the causes, clinical features, blood picture and diagnosis of iron deficiency anaemia.
6. Differentiate between the causes of based on risk factors and laboratory diagnosis with special emphasis on Vitamin B<sub>12</sub> and folate deficiency.
7. List the conditions which predispose to folate deficiency.
8. Describe vitamin B<sub>12</sub> deficiency with respect to cause, blood picture and clinical features.
9. Define anemia of chronic disease and explain its pathophysiology.
10. Differentiate between anemia of chronic disease and nutritional deficiency anemia.
11. Classify hemolytic anemias and describe their cardinal features and laboratory diagnosis.
12. Describe the pathophysiology, clinical features and lab diagnosis of hereditary spherocytosis.
13. Discuss the Pakistani perspective of beta thalassemia major with emphasis on incidence, common mutations, associated psychosocial problems and prevention.
14. Discuss the pathogenesis of thalassemia.
15. Classify thalassemia on the basis of clinical and genetic features.
16. Differentiate between the blood picture and clinical feature of Beta- thalassemia minor and major.
17. Discuss the mechanism of hemolytic anemia due to glucose-6-phosphate dehydrogenase deficiency.
18. Classify immune hemolytic anemia.
19. Differentiate between warm and cold antibodies in immune hemolytic anemia.
20. Discuss the inheritance, clinical features, lab diagnosis of von Willebran's disease and Hemophilia A and B.
21. Describe aplastic anemia with respect to the etiology, pathogenesis, clinical features and laboratory diagnosis.
22. Describe polycythemia with respect to etiology, pathogenesis, clinical significance and laboratory diagnosis.
23. Describe the mechanisms which can cause neutropenia/ agranulocytosis.
24. Differentiate between the benign and malignant causes of leukocytosis.
25. Describe the epidemiological, morphological and clinical features of infectious mononucleosis.
26. Differentiate between acute and chronic non-specific lymphadenitis.
27. Describe the different classifications (REAL and working formulations) of non-Hodgkin's lymphoma.



28. Describe Hodgkin's disease with respect to classification, etiology, pathogenesis and clinical stages.
29. Classify leukemias.
30. Discuss the etiology, clinical features, laboratory diagnosis and prognostic factors of acute lymphoblastic and acute myeloblastic leukemias.
31. Describe the pathophysiology of chronic myeloid and chronic lymphocytic leukemias.
32. Describe multiple myeloma with respect to etiology, pathogenesis, morphology, clinical features and lab diagnosis.
33. Describe disseminated intravascular coagulation with respect to, etiology, pathogenesis, clinical features and laboratory diagnosis.
34. List the causes of thrombocytosis and thrombocytopenia.
35. Describe the pathogenesis of idiopathic & thrombotic thrombocytopenic purpura.
36. Indicate the value of following tests in the assessment of bleeding disorders:
  - Bleeding time
  - Clotting time
  - Platelets count
  - Platelet function test
  - Activated partial thromboplastin time
  - Prothrombin time
  - Mixing test studies
  - ABO and Rhesus blood groups
37. Describe ABO and Rhesus blood groups and outline the way in which a sample of blood is typed.
38. Explain the inheritance of ABO and Rhesus blood groups.
39. List the common indications of blood products (red cells, platelets and plasma) transfusion.
40. List the hazards of blood transfusion and discuss their prevention.
41. Identify the following on microscopic examination:
  - Anemia (iron deficiency, megaloblastic, aplastic), thalassemia.
  - Acute Lymphocytic Leukemia.
  - Acute Myeloid Leukemia.
  - Chronic leukemia (CLL, CML), bone marrow needle.
  - Hodgkin lymphoma.
42. Identification and use of ESR stand, micropipettes and haematology analysers.

## **RESPIRATORY SYSTEM**

1. List micro-organisms causing upper respiratory tract infection.
2. Describe the etiology and clinical features of rhinitis and nasal polyps.
3. List and differentiate between malignant and benign tumours of nasopharynx and larynx.
4. Discuss and differentiate between pleural effusion, haemothorax, hydrothorax, pleuritis, pneumothorax and chylothorax.
5. Discuss and differentiate between acute pharyngitis, acute bacterial epiglottitis and acute laryngitis.
6. Classify atelectasis on the basis of underlying mechanisms.
7. Describe the etiology, pathogenesis, morphology and clinical features of asthma.
8. Discuss the disorders associated with airflow obstruction disease.





9. Differentiate between restrictive and obstructive lung disease on the basis of clinical features and pulmonary function tests.
10. Describe various types of emphysema, its pathogenesis, morphology and clinical features.
11. Describe pathogenesis and clinical features of chronic bronchitis.
12. Describe the predisposing factors, pathogenesis, morphology and clinical features of bronchiectasis.
13. Describe the pathogenesis, morphology and clinical features of adult respiratory distress syndrome.
14. Describe the pathogenesis, morphology and clinical features of sarcoidosis and hypersensitivity pneumonitis.
15. Describe different categories of pulmonary eosinophilia.
16. Describe the pathogenesis, morphology and clinical features of idiopathic pulmonary fibrosis.
17. Describe clinical features of Goodpasture's syndrome based on the pathology.
18. List the pathogenesis, morphology and clinical features of thromboemboli.
19. Describe the morphology & clinical features of pulmonary infarction.
20. List the causes of pulmonary hypertension and vascular sclerosis.
21. Describe the etiology, pathogenesis, morphology and clinical features of acute bacterial pneumonias.
22. List the micro-organisms causing atypical pneumonias.
23. Discuss the etiology, pathogenesis and clinical features of tuberculosis of the lung.
24. List the fungal infections of lung.
25. Describe classification, etiology, pathogenesis and clinical features of bronchogenic carcinoma.
26. Describe etiology & pathogenesis of mesothelioma.
27. Describe pneumoconiosis with respect to etiology, pathogenesis and clinical features.
28. List the common diseases caused by air pollutants and asbestos and describe asbestos related diseases.
29. Identify on gross and microscopic examination the following disease conditions:
  - Pneumonia
  - TB lung
  - Emphysema
  - Asthma
  - Carcinoma lung

## **THE ORAL CAVITY AND GASTROINTESTINALTRACT**

1. Define the term leukoplakia.
2. List the possible predisposing factors of leukoplakia (pipe smoking, ill-fitting denture, alcohol abuse, irritant foods).
3. Discuss the risk factors, clinical and morphological features of oral cancer.
4. Differentiate between the benign and malignant tumours of salivary glands.
5. Describe the clinical and morphological features of pleomorphic adenoma.
6. Differentiate between oesophagitis, Barrett's oesophagus and carcinoma of the oesophagus.
7. List the predisposing factors for gastritis and describe the pathogenesis and clinical features of acute gastritis.



8. Describe the pathogenesis, morphological and clinical features of chronic gastritis and peptic ulcer.
9. Describe gastric carcinoma with respect to risk factors, pathogenesis, clinical and morphological features and prognosis; and differentiate it from gastric lymphoma and gastrointestinal stromal tumor (GIST).
10. Describe the clinical and morphological features of Hirschsprung's disease.
11. Describe the pathogenesis, morphological and clinical features of celiac sprue and tropical sprue.
12. Describe the predisposing conditions, clinical and morphological features of ischemic bowel disease.
13. Differentiate between Crohn's disease and Ulcerative Colitis.
14. List the major causes of intestinal obstruction.
15. Describe the clinico-pathological features of amoebiasis, tuberculosis and typhoid
16. List the non-neoplastic polyps of intestine.
17. Classify adenomas on the basis of epithelial architecture and describe the clinical and morphological features of adenomas.
18. Discuss the pathogenesis of colorectal carcinoma.
19. Describe carcinoid tumor with respect to the peak incidence, most prevalent sites in the gut and morphological features.
20. Describe the clinical features of carcinoid syndrome.
21. Describe the morphological features of Ulcerative Colitis, rectal polyp, carcinoma colon, Crohn's disease, TB intestine and typhoid.
22. Describe the etiology, pathogenesis, morphological and clinical features of acute appendicitis.
23. List the tumors of appendix.
24. Identify acute appendicitis, chronic cholecystitis and TB intestine on microscopic and gross examination.

## **LIVER AND BILIARYTRACT**

1. Describe the pathway of bilirubin metabolism and its elimination from the body.
2. Describe the types of jaundice with respect to the causes, clinical features and laboratory diagnosis.
3. Differentiate between intrahepatic and extrahepatic biliary obstruction.
4. List the causes, clinical features and important complications of hepatic failure, hepatic encephalopathy and hepato-renal syndrome.
5. List the common causes of viral hepatitis, cryptogenic, alcohol, biliary disease, genetic hemochromatosis, Wilson's disease and alpha-1anti-trypsin deficiency.
6. Discuss the causes, pathogenesis and complication of cirrhosis.
7. Differentiate among viral hepatitis A, B, C, D and E with respect to route of transmission, incubation period, clinical features and potential outcome of acute infection.
8. Define carrier state and differentiate between acute and chronic hepatitis.
9. List the common causes of liver abscess and differentiate between them (amebic, echinococcal, bacterial, fungal) on the basis of clinical and morphological features, and laboratory diagnosis.
10. List the drugs and toxins which cause hepatic injury along-with their specific effects.
11. Discuss the pathogenesis of alcohol liver disease.



12. Differentiate between the morphological and clinical features of alcoholic hepatitis and cirrhosis.
13. List the causes of secondary hemochromatosis and describe its pathogenesis, morphological and clinical features.
14. Discuss the clinico-morphological features of Wilson's disease.
15. Describe the clinico-morphological features of alpha-1 anti-trypsin deficiency.
16. List the causes of neonatal hepatitis.
17. Differentiate between primary and secondary biliary cirrhosis.
18. Discuss the epidemiology, pathogenesis, morphological and clinical features of hepatocellular carcinoma.
19. Describe the pathogenesis and risk factors of cholelithiasis.
20. Describe the morphological and clinical features of acute and chronic cholecystitis.
21. Describe clinical and morphological features of gall bladder cancer.
22. Describe acute pancreatitis with respect to etiology, pathogenesis, clinical and morphological features.
23. Differentiate between acute and chronic pancreatitis on the basis of their clinical and morphological features.
24. Describe the clinical and morphological features of carcinoma of pancreas.
25. Identify on microscopic and gross examination: cirrhosis and carcinoma of liver.
26. Give interpretation of biochemical tests in differentiation of jaundice and interpretation of serological tests in viral hepatitis and acute pancreatitis.

## **URINARY SYSTEM**

1. Define the terms: azotemia, uremia, acute renal failure, chronic renal failure
2. Discuss the types, pathogenesis, clinical features and complications of polycystic kidney disease.
3. Differentiate between the different types of glomerulonephritides based on their pathogenesis, etiology, morphology, clinical features and complications (membranous, minimal change, membranoproliferative and acute post-streptococcal glomerulonephritis).
4. Differentiate between nephritic and nephrotic syndromes.
5. Discuss the etiology, clinical course, pathogenesis and complications of acute pyelonephritis and differentiate it from chronic pyelonephritis.
6. Discuss pathogenesis, morphology, clinical features and complications of chronic pyelonephritis.
7. Define acute tubular necrosis, its pathogenesis and clinical course.
8. Differentiate between benign and malignant nephrosclerosis (on the basis of clinical data).
9. Differentiate between the different types of renal stones based on their pathogenesis, clinical features and lab diagnosis.
10. Define hydronephrosis, its causes, clinical features and complications.
11. Discuss the epidemiology, morphology and clinical features (paraneoplastic syndrome) of renal cell carcinoma.
12. Describe the clinical features, morphology and prognosis of Wilm's tumour.
13. Describe the etiology, morphology and clinical features of cystitis.
14. Describe the clinical features, etiology and morphology of transitional cell carcinoma of the urinary bladder.



15. Identify chronic pyelonephritis, renal cell carcinoma, transitional cell carcinoma of urinary bladder, renal stones; Wilm's tumour, cystic kidney on microscopic and gross examination.
16. Give interpretation of renal function tests.

## **MALE GENITAL SYSTEM**

1. Discuss the following congenital conditions:
  - Hypospadias
  - Undescended testis
1. Describe the etiology, route of infection, pathogenesis and methods of diagnosis of gonococcal and non-gonococcal urethritis.
2. Discuss the etiology, pathogenesis and natural history of prostatitis, prostatic hyperplasia and prostatic carcinoma.
3. Discuss the causes, pathogenesis and clinical features of scrotal swelling due to:
  - Testicular adnexae
  - Varicocele
  - Hydrocele
  - Spermatocele
  - Inflammation of testis
  - Tumor of testis and epididymis
4. Discuss the causes, pathogenesis and relevant investigations of male infertility.
5. Classify the tumours of the male genital tract including prostate and testis.
6. Identification on microscopic and gross examination of:
  - BPH
  - Carcinoma Prostate
  - Testicular Tumors.

## **FEMALE GENITAL SYSTEM**

1. List the causes, routes of infection and methods of diagnosis of sexually transmitted diseases.
2. List the causative micro-organism, route of infection, pathogenesis and methods of diagnosis of the following:
  - Gonorrhoea
  - Syphilis
  - Genital herpes
  - Genital warts
  - Trichomoniasis
3. Classify the neoplasms of cervix with special reference to cervical intraepithelial neoplasia.
4. Describe the causes, pathogenesis and clinical features of dysfunctional uterine bleeding with special reference to endometrial hyperplasia, endometrial polyp and carcinoma.
5. Describe the clinical features and pathogenesis of adenomyosis and endometriosis.
6. Classify tumours of the uterus on the basis of endometrium, endometrial stroma and myometrium.
7. Classify tumours of the ovary. Histiogenesis of epithelial, germ cell and sex cord stromal tumors.



8. Describe the etiology, clinical features and pathogenesis of ectopic pregnancy and toxemia of pregnancy.
9. Classify gestational trophoblastic tumours with special reference to their clinical features.
10. Describe vulvar and vaginal squamous intraepithelial lesions.
11. Identification on microscopic and gross examination of:
  - Cystadenoma ovary
  - Teratoma of ovary
  - Ovarian tumors
  - Endometriosis
  - Endometrial hyperplasia
  - Endometrial carcinoma
  - Leiomyoma
  - Leiomyosarcoma
  - Cervical carcinoma
  - Cervical intraepithelial neoplasia

## **BREAST**

1. List the causes of lump in the breast and differentiate the following on the basis of etiology, pathogenesis, morphology, clinical features and natural history:
  - Inflammation (Mastitis)
  - Fibrocystic disease of the breast
  - Benign tumours (fibroadenoma and phyllode's tumour)
  - Carcinomas of the breast (Ductal and Lobular)
2. Describe epidemiology, etiology and pathogenesis of the following:
  - In-situ (ductal and lobular)
  - Invasive carcinomas of the breast
3. Describe prognostic and predicative markers of breast carcinoma.
4. List the causes of nipple discharge with special reference to intraductal papilloma.
5. Describe gynaecomastia and list its causes.
6. Identify fibroadenoma of breast, carcinoma breast and fibrocystic disease on microscopic and gross examination.

## **MUSCULOSKELETAL SYSTEM**

1. Describe the pathogenesis and clinical features of achondroplasia and osteogenesis imperfecta.
2. List the causes of osteoporosis and describe its pathogenesis, morphological and clinical features.
3. Describe osteomyelitis with respect to:
  - Common causative micro-organisms
  - Common routes of spread
  - Complications
4. List the common sites involved in tuberculous osteomyelitis.
5. Differentiate between acute and chronic osteomyelitis.
6. Describe the pathogenesis, morphological and clinical features of paget's disease.



7. List the benign and malignant bone forming tumours (osteoid osteoma, osteoblastoma, and osteosarcoma).
8. List the common sites of osteogenic sarcoma.
9. Describe the morphological and clinical features of osteogenic sarcoma.
10. List the most frequent sites of giant cell tumours of the bone.
11. Describe the clinical and morphological features of giant cell tumours of bone.
12. Differentiate between the peak incidence, common sites of origin, morphological and clinical features of:
  - Osteosarcoma
  - Osteoclastoma
  - Ewing's sarcoma
13. List the benign and malignant cartilaginous tumours and describe chondrosarcoma with respect to peak incidence, common sites of origin and morphological and clinical features.
14. Describe the pathogenesis, morphological and clinical features of osteoarthritis.
15. Describe rheumatoid arthritis with respect to pathogenesis, morphological and clinical features.
16. Classify gout and describe its pathogenesis, morphological and clinical features.
17. Describe the pathogenesis, morphological and clinical features of:
  - Duchenne's muscular dystrophy
  - Myotonic dystrophy
18. List congenital (central core disease, nemaline myopathy and centronuclear myopathy) and inflammatory myopathies (dermatomyositis, polymyositis and inclusion body myositis).
19. Describe the clino-pathological features of myasthenia gravis.
20. Differentiate between lipoma and liposarcoma.
21. Describe rhabdomyosarcoma with respect to:
  - Peak incidence
  - Histological variants (embryonal, alveolar, sarcoma botryoides, pleomorphic)
  - Frequent sites
22. Identification of giant cell tumour, osteosarcoma on microscopic and gross examination.

## ENDOCRINE SYSTEM

1. List the causes of hyperpituitarism.
2. Describe the morphology and clinical features of pituitary adenomas.
3. Describe the clinical features of acromegaly and gigantism.
4. List the causes of hypopituitarism and describe the etiology, pathogenesis and clinical features of Sheehan's syndrome and dwarfism.
5. Describe the factors, clinical features and pathogenesis and laboratory findings in:
  - Inappropriate secretion of anti-diuretic hormone (ADH)
  - Diabetes insipidus
  - Syndrome of inappropriate ADH secretion
6. List the causes of adrenal cortical hyperfunction.
7. Describe the etiology, pathogenesis clinical features and laboratory diagnosis of:
  - Primary hyperaldosteronism (con's syndrome)
  - Hypercortisolism
  - Adrenogenital syndrome



8. List the causes of adrenal insufficiency and describe the etiology, pathogenesis, and clinical features of Addison's disease.
9. List the tumours of adrenal medulla and cortex and describe the clinical features and diagnosis of pheochromocytoma.
10. Interpret and list pituitary and adrenal function test.
11. List the etiology and clinical features of hyperthyroidism.
12. List the etiology and clinical features of hypothyroidism.
13. Differentiate between cretinism and myxoedema.
14. Describe the types, pathogenesis, morphology and clinical features of thyroid with special reference to auto-immune thyroiditis (Hashimoto's thyroiditis and Grave's disease).
15. Define goiter, list its types and describe the etiology, pathogenesis and clinical features of diffuse and multinodular goiter.
16. List the causes of solitary thyroid nodule and discuss its diagnostic approach.
17. Classify the etiology, pathogenesis, morphology and clinical features:
  - Follicular adenoma
  - Papillary carcinoma
  - Follicular carcinoma
  - Medullary carcinoma
  - Anaplastic carcinoma.
18. List the types of MEN syndromes.
19. Discuss the investigation/lab tests for diagnosis of thyroid dysfunction.
20. Identify the following on microscopic and gross examination:
  - Goitre
  - Papillary carcinoma of thyroid
  - Follicular adenoma thyroid
21. Differentiate between primary, secondary, tertiary and pseudo hyper-parathyroidism on the basis of causes, pathophysiology, diagnosis and clinical features.
22. List the etiological factors and clinical features of hypoparathyroidism.
23. Discuss calcium homeostasis and causes of hyper and hypocalcemia.
24. Classify Diabetes Mellitus and differentiate between Type 1 and 2 on the basis of pathogenesis, morphology, clinical features, laboratory diagnosis and complications.
25. List pancreatic endocrine neoplasms.
26. Give lab diagnosis of diabetes mellitus and diabetic ketoacidosis.

## SKIN

1. Define the following macroscopic and microscopic terms:
  - Macule
  - Papule
  - Nodule
  - Plaque
  - Vesicle
  - Bulla
  - Blister
  - Pustule
  - Scale
  - Lichenification
  - Excoriation





- Hyperkeratosis
  - Parakeratosis
  - Acanthosis
  - Dyskeratosis
  - Acantholysis
  - Papillomatosis
  - Lentiginous spongiosis
2. Describe the morphological and clinical features of urticaria.
  3. Classify eczematous dermatitis.
  4. Describe the etiology, morphological features and pathogenesis of the following contact dermatitis:
    - Atopic dermatitis
    - Drug related eczematous dermatitis photo eczematous eruptions
    - Primary irritant dermatitis
  5. Describe the morphological and clinical features of acute eczematous dermatitis.
  6. List the conditions which are associated with erythema multiforme and describe its clinical features.
  7. Describe the pathogenesis, morphological and clinical features of psoriasis.
  8. Differentiate between the variants of pemphigus with respect to frequent site of involvement and clinical features and discuss its pathogenesis.
  9. Describe the clinical and morphological features of bullous pemphigoid.
  10. List the types of warts and their most frequent locations.
  11. List the pre-malignant epithelial lesions.
  12. List the predisposing factors for squamous cell carcinoma of skin.
  13. Differentiate squamous cell carcinoma from basal cell carcinoma on the basis of morphology and clinical features.
  14. List the types of nevi (congenital nevus, blue nevus, Spitz's nevus, halo nevus, dysplastic nevus) along with their clinical significance.
  15. Describe the clinical and morphological features of dysplastic nevi.
  16. Describe malignant melanoma with respect to frequent site of origin, clinical and morphological features.
  17. Identify squamous cell carcinoma, basal cell carcinoma and squamous papilloma on microscopic and gross examination.

## **CENTRAL NERVOUS SYSTEM**

1. Describe clinico-pathological features of hydrocephalus.
2. Describe the categories of cerebral edema (vasogenic and cytotoxic).
3. List the types of herniation of brain along with clinical significance.
4. Describe the clinical and morphological features of intra-cranial haemorrhage.
5. Differentiate between acute purulent meningitis and acute lymphocytic meningitis.
6. List the aetiologic agents of chronic meningitis (mycobacterium tuberculosis, cryptococcus neoformans, treponema pallidum) and describe its clinical and morphological features.
7. List the route of infecting agents causing brain abscesses and describe the clinical and morphological features (tuberculosis meningitis).
8. List the causative organisms of viral encephalitis (herpes simplex virus, cytomegalovirus, HIV, JC virus, arbovirus).
9. Describe clinico-pathological features of Guillain Barre syndrome.





10. List the infectious agents associated with polyneuropathies (leprosy, diphtheria, Varicella-zoster virus).
11. List the organic and inorganic compounds which can produce toxic neuropathy (organophosphorous esters, vincristine, acrylamide, hexame, ethanol, arsenic and lead).
12. List the important types of intracranial tumours (astrocytoma, oligodendroglioma, ependymoma, medulloblastoma and meningioma) along with clinical significance of glial tumours.
13. List the frequent metastatic tumours to the brain (carcinoma of the lung, breast, malignant melanoma, leukemia and lymphoma).
14. List common primary peripheral nerve sheath neoplasms along with their clinical significance.
15. Identify astrocytoma and meningioma on gross and microscopic examination.

## **CHEMICAL PATHOLOGY**

1. Develop the concept of chemical pathology, reference/ranges conventional and SI units.
2. List biochemical markers of ischemic heart disease.
3. Name the renal function tests with interpretation.
4. Describe causes of proteinuria and its laboratory diagnosis.
5. Interpret the analytical results for diagnosis of diabetes mellitus.
6. List liver function tests and their interpretation.
7. Give laboratory diagnosis of hyperlipidemia and its clinical interpretation.
8. Describe the role of enzymes in diagnosis of pancreatitis.
9. List laboratory investigations of endocrine disorders.
10. Interpret thyroid function tests.
11. Give interpretation of adrenal function test.
12. Correlate the role of hormone estimation in diagnosis of infertility.
13. Describe role of hormone estimation in diagnosis of hyper and hypopituitarism.



## **ASSESSMENT PLAN**

### **Formative Assessment:**

It will be carried out throughout the academic year to provide timely feedback to the students and help them to identify learning gaps. It includes surprise quizzes, tests during SGDs and LGIS. They may be graded so that students can judge themselves in comparison with their peers.

### **Summative Assessment (Continuous Internal Assessment )**



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## **PRESCRIBED BOOKS & REFERENCES**

### **RECOMMENDED READING**

1. Kumar, Cortan, Robbins. Pathological Basis of Disease. 9<sup>th</sup> Ed. W.B. Saunders.
2. Ackerman's Surgical Pathology.
3. AH Nagi. Clinical Pathology Interpretations.
4. John D Bancroft. Theory and Practice Of Histological Techniques.
5. Monica Cheesburgh. District Laboratory Practice in Tropical Countries. 2<sup>nd</sup> Ed. Part I & II.
6. Online Journals and Reading Materials through HEC Digital Library Facility.

### **REFERENCE BOOKS**

1. James CE Underwood, Simon S Cross. General and Systematic Pathology: with STUDENT CONSULT Access. 5<sup>th</sup> Ed.
2. JB Walter, MS Israel. General Pathology. 7<sup>th</sup> Ed.
3. David Lowe. General Pathology: Vivas- Questions You Will be Asked.
4. Nicholas P. Money. Microbiology: A Very Short Introduction (Very Short Introductions)
5. Monica Cheesbrough. Medical Laboratory Manual for Tropical Countries: v.2: Microbiology.