Pathology

Marks distribution of Assessment of Pathology:

Total marks – 300

- Written=100 (MCQ (SBA+MTF) 20+ (SAQ+SEQ) 70 + Formative Assessment Marks- 10)
- Structured Oral Examination= 100
- Practical and OSPE =100

Learning Objectives and Course Contents in Pathology Term I A- General Pathology, Hematolymphoid System (Term-1A)

Contents
Introduction to pathology: **Core:** • Introduction to different branches of pathology • Definition of etiology, morphology and pathogenesis
Cell injury: **Core:** • Cause of cell injury • Reversible and irreversible injury: mechanism • Mechanism of hypoxic injury • Name of free radical , target of free radical and scavenging system (name of the anti-oxidant), definition of reperfusion injury • Definition of necrosis and apoptosis, types of necrosis and morphologic feature with examples **Additional:** • Mechanism of free radical injury and reperfusion injury, apoptosis • Consequences of mitochondrial dysfunction and loss of calcium homeostasis
Pigments and calcification Core: • Pathological calcification- dystrophic and metastatic: definitions with examples. • Different intracellular pigmentation particularly their name **Additional:** Mechanism of calcification
Acute Inflammation **Core:** • Causes and cardinal signs or features of acute inflammation; • Vascular and cellular events Chemical mediators and their function • Morphological patterns of acute inflammation • Outcome of acute inflammation • Local and systemic effect of acute inflammation **Additional:** • Recruitment of leukocytes • Role of complement, coagulation and kinin system • Mechanism of neutrophil recruitment • Recognition of microbes and dead tissue • Defects in leukocyte function • How the chemical mediator works

Chronic inflammation:

Core:

- Cause
- Difference with acute inflammation
- Role of macrophage
- Examples of granulomatous lesion
- Type of granuloma
- Mechanism of granuloma

Additional- Giant cells

Repair and healing:

Core:

- Definition of healing, repair and regeneration
- Steps of cutaneous wound healing,
- Factors influencing wound healing
- Complications of wound healing,
- Fracture healing
- Nerve regeneration

Additional:

- Stem cell
- Growth cycle
- Extracellular matrix

Edema and electrolyte disorder

Core:

- Pathophysiology of oedema
- Mechanism of oedema in cirrhosis, renal disease and heart failure
- Examination of body fluids such as pleural effusion, ascitic fluid
- Electrolyte disorder: causes of metabolic acidosis, metabolic alkalosis, respiratory acidosis & respiratory alkalosis

Hyperemia, congestion and hemorrhage and Shock

Core:

- Definition of hyperemia, congestion and hemorrhage
- Cause of passive Congestion in lung and liver
- Shock: type, pathogenesis of septic shock, stages

Additional:

- Morphology of passive congestion in lung and liver
- Mechanism of compensation in shock

Thrombosis and embolism:

Core:

- Mechanism of thrombosis
- fate of thrombus,
- Clinical consequence of venous thrombosis, arterial and cardiac thrombosis
- DIC

Embolism and infarction

Core:

- Definition of embolism
- Pulmonary embolism: source and consequence
- Systemic thromboembolism: source and consequence

- Air embolism, fat embolism, amniotic fluid embolism: source and consequence
- Infarct: definition, types, factors influencing the formation of infarct

Growth disturbance and adaptive change

Core:

- Adaptive change
- Definitions and examples of atrophy, metaplasia, hypertrophy, hyperplasia

Additional:

Mechanism of the adaptive changes

Neoplasia

Core:

- Definition and characteristics of neoplasia
- Nomenclature
- Features of benign and malignant tumor
- Spread of tumor
- Genetic predisposition of cancer
- Example of proto-oncogene, cancer suppressor gene
- Precancerous conditions

Additional:

- Molecular basis of cancer
- Multiple steps of carcinogenesis,

Carcinogenesis

Core:

- Chemical carcinogen: classification
- Tumor: initiation and promotion
- Microbiologlogical carcinogen: name and the cancer associated with them
- Name of the radiant energy and the cancer associated with them

Additional:

Mechanism of the carcinogenesis of the viruses and radiant energy particularly of HPV and EBV and H pylori

Tumor immunity and clinical aspects of neoplasia and laboratory diagnosis of tumor

Core:

- Tumor antigen
- Antitumor mechanism
- Immune surveillance
- Cancer cachexia
- Paraneoplastic syndrome
- Grading and staging of tumor: basis and their use
- Laboratory diagnosis: role of FNAC, cytological examination, pap smear, frozen section and immunohistochemistry

Additional:

- Mechanism of immune surveillance
- Paraneoplastic syndrome
- Molecular diagnosis of cancer

Genetics

Core:

- Basic definitions, mutation, type,
- Classification of genetic disease,

• Mendelian disorder: characteristics and examples, • features of down syndrome, turner syndrome and Klinefelter syndrome and hermaphrodite • Name of the tools for diagnosis of genetic disease karyotype, FISH, PCR. **Additional:** • Biochemical and molecular basis of single gene disorder, lysosomal storage disease • Single gene disorder non-classical inheritance • Indications of prenatal diagnosis
Immunopathology **Core:** • Name of immune deficiency diseases • Autoimmune diseases: name of the organ specific auto immune diseases and the basic pathogenesis (name of the antibody) • Name of the diagnostic tools
Infectious Disease **Core:** • Lesions produced by tuberculosis, leprosy and syphilis • Name of the diagnostic tools
Nutritional disorders **Core:** • Bone changes in deficiency states • Features of vitamin A, Vit B12 and folic acid deficiency **Additional:** • Iron metabolism • Vitamin A and D metabolism • Vitamin B12 and folic acid deficiency mechanism
Environmental diseases and hazards **Core:** • Diseases associated with smoking, arsenics, radiation hazard

Term-1B - General Pathology, Hematolymphoid System (Term-1B)

3. Lymphoreticular **Core:** • Causes of lymphadenopathy, Outline of classification of NHL • Hodgkin and non-Hodgkin lymphomas: Classification, morphology **Additional:** • Immune diagnosis of Hodgkin lymphoma • Burkitt lymphoma: morphology • Follicular lymphoma: morphology • Causes of splenomegaly
4. Hematopathology **Core:** • Hematopoiesis, different stages of RBC and WBC • Causes of Leukocytosis, leucopenia, eosinophilia, monocities and thrombocytopenia • Anemia: morphological and etiological classification • Lab. diagnosis of nutritional anemia, iron deficiency anemia, megaloblastic anemia, pernicious anemia • Hemolytic anemia: classification

- Thalassemia and sickle cell anemia: lab diagnosis
- Aplastic anemia: etiology and lab diagnosis
- PNH, AIHA, Coombs test
- Classification of bleeding disorder
- ITP: causes and lab diagnosis
- Hemophilia: causes and lab. investigation
- Leukemia: classification and lab diagnosis
- CGL
- Multiple myeloma: lab. Diagnosis

Additional:

- Constituents of blood and bone marrow Polycythemia Blood Group and blood transfusion

Core:

- Blood transfusion: grouping and cross matching, transfusion reaction, blood transmissible disease, Rh incompatibility, Blood transfusion products

Term-2A - Systemic Pathology (Term-2A)

1. Blood vessels

Core:

- Name of different vasculitis, and vascular tumor,

Core:

- Define arteriosclerosis and atherosclerosis, aneurysm and dissection,
- Risk factors of atherosclerosis, site of involvement and complications
- Lipid profile

Additional: Pathogenesis of atherosclerosis

2. Heart

Must know

- Ischemic heart disease and myocardial infarction : pathogenesis, morphological features and biochemical indicators, complications
- Rheumatic fever: pathogenesis, morphology and complications
- Infective endocarditis: pathogenesis, morphology and complications
- Causes of myocarditis, pericarditis

Additional:

Names of congenital heart disease.

5. Respiratory System

Core:

- Cause of Pulmonary oedema
- Define: ARDS, obstructive pulmonary disease and pneumoconiosis
- Morphology of obstructive airway disease
- Pathogenesis and morphology of Pneumonia
- Lung abscess: pathogenesis and morphology
- Pulmonary tuberculosis: pathogenesis, morphology, fate
- Cause of pleural effusion
- Classification of lung tumor

Additional:

- Congenital anomalies

- Pathogenesis of obstructive airway disease, name of the granulomatous lesion of lung
- Defense mechanism of lung
- Definition of restrictive disease
- Morphology and clinical effect of lung tumor

6. GIT

Core:

- Leukoplakia, , name of the carcinoma of oral cavity
- Salivary gland tumor, morphology of pleomorphic adenoma
- Oesophagus:causes of oesophagitis, Barretts oesophagus
- Congenital anomalies of GIT – morphology of Hirschprung disease and hypertrophic pyloric stenosis
- PU: pathogenesis, morphology, complications
- Inflammatory bowel syndrome, difference between crohns and ulcerative colitis
- Tumors of stomach
- Gastric cancer: morphology and etiopathogenesis
- Acute appendicitis Morphology
- Ca colon: morphology and etiopathogenesis
- Name of the different polyp of GIT

Additional:

- Pathogenesis of IBD
- Diverticulosis
- Infarction
- Necrotizing enterocolitis
- Ulcerative lesion of GIT

7. Hepato biliary system

Core:

- Liver function tests & their interpretation
- Jaundice: types, differences
- Hepatitis: cause, morphology
- Cirrhosis: etiology, pathogenesis, morphology and complication
- Portal hypertension and hepatic failure: feature
- Liver abscess: morphological features
- Tumor of liver: types
- Cholecystitis and cholelithiasis: etiology, pathogenesis,

Additional:

- Neonatal jaundice
- Diseases of exocrine pancreas
- Hepatic Cysts

Term-2B - Systemic Pathology (Term-2B)

8. Renal system

Core:

- Classification of renal disease and their clinical manifestation
- Renal function test including examination of urine
- Immune basis of glomerulonephritis
- Classification of glomerulonephritis
- Acute post streptococcal glomerulonephritis: etiopathogenesis, morphology, complications
- Nephrotic syndrome: definition, causes
- Pyelonephritis: etiopathogenesis, morphology and complications
- Renal tumor: different types
- Renal cell carcinoma
- Urinary bladder tumor: different types

Additional:

- Congenital disease of kidney
- Polycystic kidney disease
- Urolithiasis: Types
- Morphology of renal cell carcinoma
- Morphology of different types of cystitis

9. Male genital system

Core:

- Prostate: causes of prostatitis
- A etiopathogenesis and morphology of nodular hyperplasia
- Role of PSA in prostatic carcinoma
- Testis
- Undescended testis: importance
- Inflammatory diseases of testis
- Testicular tumor: classification and clinical outcome
- Morphology of seminoma, yolk sac tumor and embryonal carcinoma
- Tumor markers for testicular tumors
- Semen analysis

10. Female genital system

Core:

- Causes of cervicitis, salpingitis
- Risk factors of cervical cancer
- Role of human papilloma virus –screening for cervical cancer
- Different histological types of cervical cancer
- Endometriosis: possible mechanism, sites and effect of endometriosis
- Common tumor of the corpus of uterus: morphology of leiomyoma,
- Endometrial hyperplasia: different types, their morphology and importance
- Classification of ovarian tumor and role of tumor marker
- Morphology of teratoma, dysgerminoma, choriocarcinoma and the different surface epithelial tumor, Kroonenberg tumor
- Hydatidiform mole and choriocarcinoma predisposing factors, morphology and diagnosis
- Pregnancy test

11. Breast

Core:

• Name of the different inflammatory diseases of breast, cause of lump of breast • Fibrocystic disease: different types and their importance • Classification of breast tumor • Breast carcinoma: risk factors and the prognostic factors • Screening of breast carcinoma
12. Endocrine system—thyroid and endocrine pancreas diabetes mellitus **Core:** • Causes of goiter, name of the different auto immune disease of thyroid • Thyroiditis: types and morphology • Different types of thyroid tumor, their morphology and prognosis • Diabetes mellitus: different types, pathogenesis, and complications • Estimation of blood sugar • Glucose tolerance test and its interpretation **Additional:** Mechanism of ketoacidosis
13. Skin **Core:** • Terms used in dermatology • Cause of bullous lesions • Name of premalignant and malignant lesions of skin • Basal cell carcinoma, malignant melanoma and squamous cell carcinoma: morphology
14. CNS **Core:** • Indications of Examination of CSF and the findings in different types of meningitis • Name of the CNS tumor **Additional:** • Changes in cerebral infarction
15. Bone, soft tissue, eye and ENT **Core:** • Soft tissue tumor: names • Bone tumor: names and their histogenesis • Osteomyelitis: a etiopathogenesis, morphology • Name of the tumors of eye and nasal cavity **Additional:** • Morphology of retinoblastoma, giant cell tumor of bone, Ewings sarcoma, **Lecture on specimen and morphology based on different systems.**