GENERAL PATHOLOGY

Cell Injury & Adaptation

- Define necrosis. Types of necrosis with examples. Morphology of coagulative necrosis.
- Apoptosis vs necrosis – differences and mechanism of apoptosis.
- Fatty change in liver – causes and morphology.
- Dystrophic vs metastatic calcification with examples.
- Reversible vs irreversible cell injury.
- Mitochondrial pathway of apoptosis.
- Phagocytosis.
- Mechanism of cell injury.
- Cell injury and its types.
- Pyroptosis.
- Metaplasia vs dysplasia.
- Councilman bodies.
- Psammoma bodies.

Inflammation & Healing

- Define inflammation. Vascular events and cellular events of acute inflammation.
- Chemical mediators of acute inflammation with examples.
- Granuloma – definition, types, causes, and morphology of tubercle.
- Factors affecting wound healing.
- Healing by primary vs secondary intention.
- Free radical injury.
- Angiogenesis.
- Discuss chemokines with special emphasis on their role in inflammation.
- Cytokines.
- Pathogenesis of tuberculosis.
- Types of collagen.
- Endothelium in health and disease.

Hemodynamic Disorders

- Define thrombosis and discuss the primary events predisposing to thrombosis with reference to hypercoagulable states and its complications.
- Endothelial properties responsible for maintenance of normal hemostasis.
- Virchow's triad.
- Pathogenesis of septic shock.
- Pulmonary embolism.
- Oedema – pathogenesis, morphology, and types.
- Pathogenesis of thrombus formation.

- Pathology of multiple organ failure syndrome.
- Pathology of systemic inflammatory response syndrome.
- Embolism – types and effects of pulmonary embolism.
- Shock – types and stages of shock.
- Infarction – types and morphology.

Neoplasia*

- Role of nutrition in cancer.
- Discuss the molecular basis of carcinogenesis.
- Discuss the important chemical carcinogens and the mechanism of chemical carcinogenesis.
- Viral carcinogenesis.
- Tumour suppressor genes.
- Discuss the mechanism of metastasis and outline the role of extracellular matrix in tumor progression.
- Warburg effect.
- Tumour markers.
- Angiogenesis.
- Mention the various paraneoplastic syndromes.
- Tumour metastasis – routes, factors, and examples.
- Differentiate benign from malignant tumours with 10 points. Morphology of carcinoma.
- Oncogenes vs tumour suppressor genes. Role of p53 and Rb gene.
- Classification of tumours.

Immunity & Hypersensitivity*

- Type I hypersensitivity – pathogenesis and examples.
- Systemic Lupus Erythematosus (SLE) – pathogenesis, laboratory diagnosis, and LE cell phenomenon.
- Transplant rejection – types.
- Amyloidosis – pathogenesis and classification.
- Type IV hypersensitivity with examples.
- HIV & AIDS – pathogenesis.
- Type II hypersensitivity reaction.
- Type III hypersensitivity reaction.

Infections

- Tuberculosis - pathogenesis, morphology of tubercle, complications of primary TB.
- Malaria.

Genetic, Nutritional, Environmental

- Down syndrome – karyotype and clinical features.
- Vitamin A deficiency and Vitamin D deficiency.

- Cytogenetics.
- Klinefelter syndrome.
- Turner syndrome.

HEMATOLOGY*

- Iron deficiency anemia – etiology, peripheral smear findings, and laboratory diagnosis.
- Megaloblastic anemia – causes, peripheral smear findings, laboratory diagnosis, and differences from iron deficiency anemia.
- Thalassemia – classification, pathogenesis, peripheral smear findings, and laboratory diagnosis.
- Sickle cell anemia – pathogenesis, peripheral smear findings, and sickling test.
- Aplastic anemia – causes and laboratory diagnosis.
- Hereditary spherocytosis.
- Hemolytic anemias – classification and laboratory diagnosis.
- Polycythemia – types and causes.
- Leukocytosis vs leukemoid reaction.
- Classification of leukemias. Peripheral smear and bone marrow findings of CML vs CLL.
- Chronic Myeloid Leukemia (CML).
- Chronic Lymphocytic Leukemia (CLL).
- Acute Myeloid Leukemia (AML).
- Acute Lymphoblastic Leukemia (ALL).
- AML vs ALL – differences and peripheral smear findings.
- Hodgkin lymphoma – morphology, Reed–Sternberg cell, and subtypes.
- Multiple myeloma – CRAB features and laboratory diagnosis.
- Hemophilia – pathogenesis, laboratory diagnosis, and complications.
- Immune Thrombocytopenic Purpura (ITP) – pathogenesis, peripheral smear findings, and laboratory diagnosis.
- PT vs aPTT.
- ABO blood grouping.
- Transfusion reactions – types and prevention.
- Hemolytic Disease of the Newborn (HDN).
- Blood components and indications.
- Bombay blood group.
- Types of blood groups.
- Non-Hodgkin lymphoma.
- Burkitt lymphoma.

Cardiovascular System

- Rheumatic heart disease.

- Myocardial infarction.
- Atherosclerosis.
- Infective endocarditis.
- Vasculitis.
- Aschoff bodies.

Respiratory System

- Lobar pneumonia vs bronchopneumonia – differences and morphology.
- Pulmonary tuberculosis – primary vs secondary tuberculosis.
- Lung tumours.
- Chronic Obstructive Pulmonary Disease (COPD) – types and morphology of each.
- Pneumoconiosis.
- Bronchial asthma.
- Bronchiectasis.
- Emphysema.
- Ghon focus.
- Ghon complex.

Gastrointestinal Tract

- Crohn's disease.
- Ulcerative colitis.
- Ulcerative colitis vs Crohn's disease – differences.
- Carcinoma stomach.
- Carcinoma colon.
- Barrett's esophagus.
- Intestinal tuberculosis.

Liver and Gallbladder*

- Cirrhosis of liver – definition, types, pathogenesis of alcoholic cirrhosis, and complications.
- Viral hepatitis – morphology and sequelae.
- Gallstones – types, composition, and complications.
- Hepatocellular carcinoma – etiology, morphology, and spread.
- Fatty liver.
- Non-Alcoholic Fatty Liver Disease (NAFLD).
- Liver function tests.

Kidney and Urinary Tract

- Nephrotic syndrome.
- Glomerulonephritis.
- Chronic pyelonephritis – etiology, morphology, and complications.
- Wilms tumor.
- Nephritic syndrome.
- Nephrotic vs nephritic syndrome.

Male Genital System

- Benign Prostatic Hyperplasia (BPH).
- Carcinoma prostate.
- Seminoma of testis.
- Tumors of testes.

Female Genital System and Breast

- Carcinoma cervix.
- Fibroadenoma.
- Carcinoma breast.
- Phyllodes tumor.
- Adenomyosis.
- Endometriosis.
- Endometrial carcinoma.
- Endometrial hyperplasia.
- Ductal Carcinoma In Situ (DCIS).
- Lobular Carcinoma In Situ (LCIS).

Endocrine System

- Graves disease.
- Papillary carcinoma thyroid.
- Diabetes mellitus Type 1 vs Type 2.
- Pheochromocytoma.
- Hashimoto thyroiditis.
- Tumors of thyroid.
- Medullary thyroid carcinoma.
- Multiple Endocrine Neoplasia (MEN) syndrome.
- Paraganglioma.
- Cushing syndrome.
- Adrenal insufficiency – types, pathogenesis, and morphology.

- Addison disease.
- Hyperparathyroidism.

Bone, Soft Tissue, Skin, CNS

- Osteosarcoma.
- Malignant melanoma – clinical features and spread.
- Tuberculous meningitis – CSF findings.
- Glioblastoma multiforme.
- Tumors of bone – classification.
- Ewing sarcoma.
- Giant cell tumor of bone.
- Paget disease of bone.
- Squamous Cell Carcinoma (SCC).
- Basal Cell Carcinoma (BCC).