

2.3 PATHOPHYSIOLOGY (THEORY)

75 hours ; 3 hours/week

1. a) Definition of pathology, health and disease. Terminologies used in pathology. b) Basic principles of cell injury and adaptation: Causes, pathogenesis and morphology of cell injury, Cellular adaptation's-physiologic and pathologic adaptations, Cellular ageing and death, Antioxidant enzymes-superoxide dismutase, catalase and glutathione peroxidase.

6 hours; 10-12 marks

2. **Inflammation:**a) Definition, causes, signs ,types of inflammation and chemical-mediators. b) Pathogenesis of acute inflammation (vascular events, Cellular events, transdate, exudate, edema, phagocytosis). c) Pathogenesis of chronic-inflammation and difference between acute and chronic inflammation. d) Tissue renewal and repair: regeneration healing and fibrosis. e) Wound healing: process of wound healing, types of cells, factors influencing healing of wounds.

12 hours; 10-12 marks

3. **Diseases of Immunity:** Components of the immune system: Cells involved in immune response- T and B cells, Macrophages, Dendritic cells and Natural killer cells. MHC proteins or transplantation antigens. Immune Tolerance.

A) Hypersensitivity: Hypersensitivity type I, II, III, IV. Biological significance of hypersensitivity. Allergy due to food, chemicals and drugs. **B) Auto-immunity:** Mechanism of Autoimmunity. Classification of autoimmune diseases in man. Transplantation rejection (types and mechanisms). **C) Acquired Immune Deficiency Syndrome (AIDS) D) Amyloidosis.**

12 hours; 10-12 marks

4. **Cancer:** General aspects of neoplasia, Definition, terminology, Differences between benign and malignant tumors. Etiology and pathogenesis of cancer. General biology and classification of malignant tumors. Invasions and metastasis of cancer.

10 hours; 6-10 marks

5. **Shock:** Types, mechanism, stages and Management

2 hours; 2-5 marks

6. **Biological effects of radiation:** Introduction on radiation, strength of radiation, mechanism of action of ionizing and non-ionizing radiations and their toxic effects.

1 hour; 2-4 marks

7. **Environment and Nutritional diseases:**Obesity, Malnutrition, Pathogenesis of deficiency diseases with special reference to vitamins and minerals, Air pollution and smoking — SO₂, NO and CO.

4 hours; 2-4 marks

8. **Pathophysiology (etiology, pathogenesis, signs and symptoms) of common diseases/disorders:** Peptic ulcer and inflammatory bowel disease, Gastritis, Hypertension, Angina, Myocardial Infarction, Congestive cardiac failure, Atherosclerosis, Stroke (Ischemic and Hemorrhage), Diabetes Mellitus, Hypo and hyperthyroidism, Cirrhosis and Alcoholic liver diseases, Asthma and chronic obstructive airway diseases, Parkinsonism, Schizophrenia, Depression and Mania, Alzheimer's disease, Acute and chronic renal failure.

16 hours; 16-18 marks

9. **Pathophysiology (causative organisms, mode of transmission, pathogenesis, signs and symptoms) of infectious diseases:** Hepatitis - infective hepatitis, Sexually transmitted

diseases (Syphilis, Gonorrhoea), Pneumonia, Typhoid, Urinary tract infections, Tuberculosis, Leprosy, Malaria, Dysentery (Bacterial and amoebic), Dengue and Chikungunya.

13 hours; 6-8 marks

10. Genetics and chromosomal disorders: Mendelian disorders, Cytogenic disorders (Karyotypic abnormalities) **3 hours; 6-8 marks**

PATHOPHYSIOLOGY TEXT BOOKS

1. Kumar V., Abbas A.K. and Aster J., Robbins Basic Pathology, 9th Edition, Elsevier, 2012.
2. Mohan H., Textbook of Pathology, 6th Edition, Jaypee Brothers, Medical Publishers, 2010.

PATHOPHYSIOLOGY REFERENCE BOOKS

1. Kumar V., Abbas A.K., Fausto N. and Aster J., Robbins and Cotran Pathologic Basis of Disease, 8th Edition, Saunders, 2009.
2. Mitchell R., Kumar V., Fausto N., Abbas A.K. and Aster J., Pocket comparisons to Robbins Pathologic Basis of Disease, 8th Edition, Saunders, 2011.
3. Kumar, Cotran, Robbins. Robbins's Basic pathology. 7th edition. Elsevier.