

1.1 HUMAN ANATOMY AND PHYSIOLOGY (THEORY)

75 Hours ; 3 hours/week

1. Scope of Anatomy & Physiology. Basic Terminologies Used: Directional Terminologies, Plains & Sections and Body Cavities. **1 hour; 2 marks**
2. **Structure of the Cell:** Structure & Function of Plasma Membrane, Cell Cycle and Transport of Substances across Cell Membrane. **1 hour; 2-5 marks**
3. **Tissues:** Definition, Classification of Tissues, Location, Characteristics and Function of Epithelial, Connective, Muscular & Nervous Tissues. Definitions of Malignant & Benign Tumors **2 hours; 5-7 marks**
4. **Osseous System:** Structure & Composition of Bone. Functions of Skeleton. Classification of Joints. Definition of Disorders: Osteoporosis, Arthritis, Rickets & Gout **2 hours; 5-7 marks**
5. **Haemopoietic System :** Composition & Functions of Blood. Haemopoiesis. Blood Grouping. Mechanisms of Blood Clotting. Definitions of Disorders: Anaemias, Polycythaemia, Leukopenia, Leukocytosis, Leukaemia, Thrombocytopenia & Haemophilia. **6 hours; 8-10 marks**
6. **Lymphatic System :** Composition, Formation, Circulation & Functions of Lymph. Structure & Functions of Lymph Node, Spleen and Thymus Gland. Definitions of Disorders: Lymphoedema, Elephantiasis & Splenomegaly. **3 hours; 2-5 marks**
7. **Cardiovascular System:** Anatomy of Heart. Structure of Blood Vessels. Circulation: Pulmonary, Systemic (Coronary & Portal). Conduction System of the Heart, Cardiac Cycle & ECG. Blood Pressure: Mechanism of regulation, Factors determining Blood Pressure. Definitions of Disorders: Congestive Heart Failure, Cardiac Arrhythmias, Angina Pectoris, Myocardial Infarction, Atherosclerosis, Rheumatic Heart Disease, Hypertension & Hypotension. **9 hours: 8-10 marks**
8. **Respiratory System:** Anatomy & Functions of Respiratory Organs. Mechanisms of regulation of Respiration. Transport of Respiratory Gases. Definitions of Lung Volume & Capacities, Hypoxia and Resuscitation. Definitions of Disorders: Asthma, COPD, Tuberculosis & Pneumonia **5 hours: 4-6 marks**
9. **Digestive System :**Anatomy & Functions of Salivary Gland, Stomach, Intestine, Liver, Gall Bladder and Pancreas. Digestion & Absorption. Definitions of Disorders: Peptic Ulcer, Constipation, Diarrhea, Emesis, Liver Cirrhosis, Hepatitis, Anorexia & GERD. **6 hours: 4-6 marks**
10. **Nervous Systems:** Classification of Nervous System. Meninges & Cerebrospinal Fluid. Functional Areas of Brain: Cerebrum, Cerebellum, Pons & Medulla, Thalamus & Hypothalamus and Basal Ganglia. Spinal Cord: Structure & Reflexes. Cranial Nerves & their Functions. Autonomic Nervous System: Anatomy & Functions of Sympathetic and Parasympathetic Nervous System. Somatic Nervous System. Definitions of Disorders:

Epilepsy, Parkinson's Disease, Depression, Insomnia, Anxiety, Schizophrenia, Migraine & Alzheimer's Disease. **12 hours; 8-10 marks**

11. **Urinary System:** Parts of Urinary System: Structure & Functions of Kidney and Structure of Nephron. Mechanism of Urine Formation & Acid-Base Balance. Micturition Reflex & Renal Function Test. Definitions of Disorders: Renal Calculi, Cystitis, Glomerulonephritis Renal Fibrosis & Urinary Incontinence. **5 hours; 5-7 marks**
12. **Endocrine System:** Structure, Secretions & Functions of Hypothalamus & Pituitary Gland, Thyroid & Parathyroid Gland, Adrenal Gland, Pancreatic Islets. Definitions of Disorders: Hypothyroidism, Hyperthyroidism, Cushing's Syndrome, Addison's Disease, Diabetes Mellitus, Pheochromocytoma, Gigantism, Acromegaly, Diabetes insipidus & Dwarfism. **4 marks; 5-7 marks**
13. **Reproductive System:** Structure, Functions & Hormones of Male & Female Reproductive System. Physiology of Menstruation, Spermatogenesis & Oogenesis. Pregnancy & its maintenance and Parturition. Definitions of Disorders: Infertility, Polycystic Ovarian Disease, Erectile Dysfunction & AIDS. **5 marks; 5-7 marks**
14. **Sense Organs:** Structure and Functioning of Eye, Ear, Skin, Taste & Smell. Definitions of Disorders: Glaucoma, Cataract, Conjunctivitis, Psoriasis & Tinnitus. **6 hours; 5-8 marks**
15. **Skeletal Muscles:** Physiology of Muscle Contraction. Neuro-muscular Junction. Properties of Skeletal Muscles. Muscles in Exercise. Definitions of Disorders: Muscular Dystrophy, Myasthenia Gravis. **3 hours; 2-4 marks**

HUMAN ANATOMY AND PHYSIOLOGY (PRACTICALS)

75 Hours ; 3 hours/week

1. Determination of Hemoglobin content of Blood**
2. Determination of R.B.C. count of Blood**
3. Determination of W.B.C. count of Blood**
4. Determination of Differential W.B.C count of Blood**
5. Determination of Blood Groups*
6. Determination of Erythrocyte Sedimentation Rate (ESR)*
7. Recording of Human Body Temperature*
8. Recording of Human Heart Rate & Pulse Rate*
9. Determination of Blood Pressure & To study the effect of Posture & Exercise on Blood Pressure*
10. Determination of Bleeding time & Clotting time*
11. Determination of Vital Capacity*
12. Understanding of ECG: PQRST Waves & its Significance*
13. Study of various Models & Specimens of Vital organs & Systems*
14. Study of Skeleton & Bones*
15. Study of Histology slides of different tissues/organs*
16. Study of different Family Planning Appliances*
17. Understanding of Pregnancy Diagnosis Tests*

Note: ** Denotes major experiments

*** Denotes minor experiments**

SCHEME OF EXAMINATION

1. Identification	-	10 Marks
2. Synopsis	-	10 Marks
3. Major Experiment	-	25 Marks
4. Minor Experiment	-	15 Marks
5. Viva	-	10 Marks
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Total	-	70 Marks
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HUMAN ANATOMY AND PHYSIOLOGY TEXT BOOKS

1. Anne W, Allison G. Ross and Wilson Anatomy and physiology in health and illness. 11th ed. Edinburgh:Churchill Livingstone;2010.
2. Chatterjee CC. Human physiology (Vol. I & II). 11th ed. Calcutta:Medical Allied Agency;1985.
3. Sujit KC. Concise medical physiology. 6th ed. Calcutta:New Central Book Agency; 2008.
4. Thakaore B, Gandhi P, Harit RD. Elements of human anatomy physiology and health education. 4th ed. Ahmedabad:B.S. Shah Publishers;1991.
5. Goyal RK, Patel NM. Practical anatomy physiology and biochemistry. 11th ed. Ahmedabad:B.S. Shah Prakashan;2008.

HUMAN ANATOMY AND PHYSIOLOGY REFERENCE BOOKS

1. Gerard JT, Bryan HD. Principles of anatomy and physiology. 13th ed. New York: John-Wiley & Sons;2012.
2. Douglas EK, Richard LW, Allen CE. Bailey's text book of microscopic anatomy. 18th ed. London:Williams & Wilkins Publishers;1984.
3. Inderbir S. Text book of human histology with colour atlas. 6th ed. New Delhi:Jaypee Brothers Medical Publishers;2011.

LIST OF MINIMUM EQUIPMENT REQUIRED

(For a batch of 20 students)

1. Compound Microscopes with oil immersion lens	20 nos
2. Haemocytometers	20 nos
3. Sahli's Haemometers	20 nos
4. Glass Slides	80 nos
5. Westergren's ESR apparatus	05 nos
6. Clinical Thermometers	05 nos
7. Sphygmomanometers	05 nos
8. Stethoscopes	05 nos
9. Hutchinson's Spirometer	01 no
10. Permanent slides for various tissues & organs	(One pair for each tissue /organ)
11. Specimens for various organs	(One specimen for each organ)
12. Models for various organs & systems	(One model for each organ system)
13. Skeleton & Bones	(One set of skeleton and one spare set of bones)
14. Family planning appliances	(One set)