

**Semester -II**  
**C3: Mammalian Physiology (Theory MBTCR2032T; Practical MBTCR2032P)**

**Theory: CIA: 10 Marks, End-Sem: 50 Marks**

**Practical : 40 Marks**

**Theory**

**Module A: (25 marks)**

**(2 classes per week)**

**UNIT I: Circulation:** Composition of blood, Plasma proteins & their role, blood cells, Haemopoiesis, Mechanism of coagulation of blood, Blood pressure, Lymph.

Mechanism of working of heart: Cardiac output, cardiac cycle, Origin & conduction of heart beat.

**UNIT II: Respiration:** Respiration: Exchange of gases, Transport of O<sub>2</sub> and CO<sub>2</sub>, Oxygen dissociation curve, Chloride shift.

**UNIT III: Nervous coordination:** Mechanism of generation & propagation of nerve impulse, structure of synapse, synaptic conduction, saltatory conduction, Neurotransmitters, The Central, Autonomic and Peripheral Nervous Systems.

**Module B: (25 marks)**

**(2 classes per week)**

**UNIT IV: Digestion:** Phases of nutrition, Mechanism of digestion and absorption of macromolecules (carbohydrates, proteins, lipids). Functional composition of bile, saliva, pancreatic, gastric and intestinal juice.

**UNIT V: Muscle physiology and osmoregulation:** Skeleto-muscular physiology: Structure of cardiac, smooth and skeletal muscle, threshold stimulus, All or None rule, single muscle twitch, isotonic and isometric contraction, basic mechanism of muscle contraction (physical, chemical & electrical events) and joint movements.

Excretion: Modes of excretion, Ultrastructure of nephron, Mechanism of urine formation.

**UNIT VI: Endocrine coordination:** Hormones and receptors, Mechanism of action of hormones (protein and steroid hormones), Endocrine glands: Hypothalamus, pituitary, pineal, thymus, thyroid, parathyroid, adrenal, endocrine pancreas, hypo & hyper-secretions.

**Teachers Involved:** Dr. Aniruddha Banerji (Module A), Dr. Priyanka De (Module B)

**Practical**

1. Determination of blood groups
2. Counting of mammalian RBCs
3. Finding the coagulation time of blood
4. Determination of TLC and DLC
5. Demonstration of action of an enzyme
6. Determination of Haemoglobin
7. Qualitative tests for physiologically important substances.

**Teachers Involved:** Dr. Aniruddha Banerji, Dr. Priyanka De

**Texts & Reading/Reference Lists:**

1. J.E. Hall. Guyton and Hall Textbook of Medical Physiology.
2. B.M. Koeppen, B.A. Stanton. Berne and Levy Physiology.
3. G.J Tortora, S. Grabowski. Principles of Anatomy & Physiology.
4. R.K. Murray, D.K. Granner, V.W. Rodwell. Harper's Illustrated Biochemistry.
5. K. C. Ghose, B. Manna. Practical Zoology.
6. R.J. Amitrano, G.J. Tortora. Anatomy and Physiology: A Lab Manual.