Course	**Discipline Specific Core**
Semester	II
Paper Number	**MBTCR2032T & MBTCR2032P**
Paper Title	**MAMMALIAN PHYSIOLOGY**
No. of Credits	6
Theory/Composite	Composite
No. of periods assigned	4 Theory + 3 Practical
Course description/objective	The course aims to 1. impart a comprehensive overview of the principles and basic concepts of mammalian physiology, especially human physiology. 2. provide an advanced understanding of skeleton-muscle physiologyand digestive system functioning. 3. give an overview of renal physiology and electrolyte homeostasisand endocrine function. 4. provide a comprehensive idea about circulatory and respiratory biology and functioning of the heart. 5. provide a comprehensive idea about nervous coordination, nerve impulses and the central and peripheral nervous systems. 6. familiarize students with laboratory techniques and equipment usedin the acquisition of physiological data.
Syllabus	**Theory** **Module A: (25 marks)** **Module A: (25 marks)** **UNIT I: Circulation:** Composition of blood, Plasma proteins & their role, blood cells, Haemopoisis, 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_2 and CO_2, 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. **No. of Classes:** 2 Classes per week **Module B: (25 marks)** **UNIT IV: Digestion:** Phases of nutrition, Mechanism of digestion and absorption of macromolecules (carbohydrates, proteins, lipids). Functional composition of bile, saliva, pancreatic, gastric andintestinal 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. **No. of Classes: 2 Classes per week**

	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.**
Readings	**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.**
Evaluation	**Theory: Continuous Internal Assessment: 10 marks End-Semester Theory Examination: 50 marks** **Practical: Continuous Internal Assessment: 32 marks End-Semester Examination: 8 marks**
Paper Structure for End Sem Theory	**Module A (25 marks)** **Compulsory objective questions: 1x 5 = 5 marks** **Any two from three subjective questions with subparts: 10 x 2 = 20 marks** **(No sub-part will be less than 1 mark or more than 5 marks) Module B (25 marks)** **Compulsory objective questions- 10 marks** **Subjective three questions, 5 marks each, i.e. 5 x 3= 15 marks**