

SEMESTER –III

Core Course: Zoology: DSC-03
BZO-C 301: PHYSIOLOGY AND BIOCHEMISTRY
(Credits: Theory-4, Practicals-4)
THEORY

Lectures: 60

M.M.: 70

UNIT-I

Nerve and muscle: Structure of a neuron, Resting membrane potential, Graded potential, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres, Ultrastructure of skeletal muscle, Molecular and chemical basis of muscle contraction. (12 Lectures)

UNIT-II

Digestion: Digestion in different segments of the alimentary canal; Absorption of carbohydrates, proteins, lipids: **Respiration:** Pulmonary ventilation, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood. (12 Lectures)

UNIT-III

Excretion: Structure of nephron, mechanism of Urine formation; **Cardiovascular system** Blood: Composition, Hemostasis, Heart structure, Origin and conduction of the cardiac impulse, cardiac cycle. (12 Lectures)

UNIT-IV

Reproduction and Endocrine Glands: Physiology of male reproduction: hormonal control of spermatogenesis; Physiology of female reproduction: hormonal control of menstrual cycle; Structure and function of pituitary, thyroid, parathyroid, pancreas and adrenal. (12 Lectures)

UNIT-V

Carbohydrate Metabolism: Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism, Review of electron transport chain: **Lipid Metabolism:** Biosynthesis and β oxidation of palmitic acid: **Protein metabolism:** Transamination, Deamination and Urea Cycle: **Enzymes:** Introduction, Mechanism of action, Kinetics, Inhibition and Regulation. (12 Lectures)

Note: The question paper shall consist of two sections (A & B). Section A shall contain ten short answer type questions of six marks each and student has to attempt any five questions in about 150 words each. Section B shall consist eight long answer type questions of ten marks each and student shall be required to attempt any four questions in detail. Questions shall be uniformly distributed from the entire syllabus. The previous year paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

SUGGESTED READINGS: PHYSIOLOGY

1. Tortora, G.J.& Derrickson, B.H. (2009). Principles of Anatomy and Physiology, 12th edn., John Wiley & Sons, Inc.
2. Widmaier, E.P., Raff, H. & Strang, K.T. (2008) Vander's Human Physiology, 11th edn., McGraw Hill
3. Guyton, A.C. & Hall, J.E. (2011) Textbook of Medical Physiology, 12th edn., Harcourt Asia Pvt. Ltd/ W.B. Saunders Company

SUGGESTED READINGS: BIOCHEMISTRY

1. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). Biochemistry. VI Edition. W.H Freeman and Co.
2. Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009) . Principles of Biochemistry. IV Edition. W.H Freeman and Co.
3. Murray, R. K., Granner, D. K., Mayes, P. A. and Rodwell, V. W. (2009). Harper's Illustrated Biochemistry. XXVIII Edition. Lange Medical Books/Mc GrawHill.