

DISCIPLINE SPECIFIC CORE COURSE
BZO:C301 ANIMAL PHYSIOLOGY AND BIOCHEMISTRY
(Credits: Theory-4, Practicals-2)

SEMESTER –III

LECTURES: 60

Unit 1

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

Unit 2

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

Unit 3

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

Unit 4

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

Unit 5

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

SUGGESTED READINGS: PHYSIOLOGY

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

SUGGESTED READINGS: BIOCHEMISTRY

- Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). Biochemistry. VI Edition. W.H Freeman and Co.
 - Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009). Principles of Biochemistry. IV Edition. W.H Freeman and Co.
 - Murray, R. K., Granner, D. K., Mayes, P. A. and Rodwell, V. W. (2009). Harper's Illustrated Biochemistry. XXVIII Edition. Lange Medical Books/Mc Graw Hill.
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SKILL ENHANCEMENT COURSE
BZO: S302 MEDICAL DIAGNOSTIC TECHNOLOGY
(Credits: Theory-4, Practical -2)

SEMESTER –III

LECTURES: 60

Unit 1: Medical Diagnostics and its importance: Introduction, History of medical diagnostics, Medical ethics, Ancient Indian diagnostic techniques, Comparison between modern and ancient diagnostic methods

Unit 2: Medical Diagnostics of body fluids

Blood composition, Blood bank, Transfusion of blood, RBC, WBC and platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V), Analysis of urine, sputum, faeces and semen (sperm count)

Unit 3: Medical Diagnostics of Non-infectious Diseases

Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Diagnosis and detection of types of tumors, strokes and mental ill health

Unit 4: Diagnostics Microbiology

Methods to diagnose and isolate infectious agents of diseases like Tuberculosis, Rabies, Measles, Hepatitis, AIDS and COVID.

Unit 5: Diagnostic Medical Imaging

Principle of Medical imaging techniques like X-Ray of Bone fracture, PET, MRI and CT Scan

LAB COURSE- BZO: 351

A. PHYSIOLOGY

1. Preparation of hemin and hemochromogen crystals
2. Examination of permanent histological sections of mammalian pituitary, thyroid, parathyroid, pancreas, adrenal,
3. Examination of permanent slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage

B. BIOCHEMISTRY

1. Identification of unknown carbohydrates in given solutions (Starch, Sucrose, Lactose, Galactose, Glucose, Fructose)
 2. Colour reactions to identify functional group in the given solution of proteins
 3. Study of activity of salivary amylase under optimum conditions
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