Subject Code : RACSY90A

BASIC BIOLOGICAL SCIENCE – I

Objective : To Provide basic knowledge about the human body, its functions and its physiological activities.

Unit – I

Anatomy: Structures constituting human body; Main sub-divisions of human body, Some commonly used descriptive terms in Anatomy.

Muscles: Types, structure, functions and its distribution in various parts of the body (Head , neck, thorax, abdomen, lower and upper extremity)

Bones & Joints : Types, structure, functions & its distribution in various parts of the body (Head, neck, thorax and abdomen, lower & upper extremity)

Surface making of some structure and clinical correlations of upper, limb lower limb, thorax, abdomen, Head & neck.

Unit – II

Physiology: Blood: Functions and composition of blood cells – Red blood cells, white blood cells, platelets, Haemoglobin, clotting of blood. Thrombosis, Immunity – Natural and acquired, Immune response - Primary, secondary response, Antigen – Antibody Reaction, Blood Group and transfusion of blood, ABO system, Rh factor.

Circulation: Structure and function of Heart; Types of blood vessels and blood flow, Heart Beat, Blood pressure – measuring B.P. systolic and diastolic pressure. Circulation of blood through artery, veins and capillaries.

Respiration: Breathing and respiration, respiratory organs, gaseous exchange and transport, factor influencing breathing rate, control of breathing – nervous and chemical control.

Excretion : Structure of kidney, mechanism of urine formation, Glomerular filtration urine formation, tubular function, composition of urine; principle of dialysis and haemodialysis, skin – its structure of function.

Digestion: Digestion in mouth, Digestion in stomach, enzymes – functions of enzymes in digestions. Digestion and absorption. Nervous system – Introduction to nervous system, Neuron, Nerve fiber function and properties, central nervous system Autonomic nervous system. Spinal cord cranial nerves, Receptors and sensations.

Unit – III

Bio Chemistry : Structure and properties of Molecules. Electronic configuration of an atom, association of atoms into molecules; physical properties of molecules.

Protein Metabolism with brief description of immunoglobulins and their diagnostic significance in modern medicine. Amino acid, metabolism – mechanism; biosynthesis and detection of basic errors in laboratory.

Fat metabolism with special emphasis on the role of lipids in heart diseases – diagnostic methodologies. Carbohydrate metabolism in brief – explaining the mechanisms of glycogens, Neoglucogenesis and glycogenolysis with special reference to diabetes mellitus and its laboratory investigations.

Importance enzymes and co-enzymes – their supportive role in brief - their diagnostic values in health and disease. Vitamins and Hormones – source, utilization, excretion, diseases associated with their abnormal levels in the human body – diagnostic methods.

Blood chemistry; brief description of various blood forming elements; their normal and abnormal levels – Laboratory investigations. Some recent Laboratory techniques - chromatography; calorimetry and spectrophotometry; Electrophoresis; Immuno Electrophoresis; Radiation techniques; Radio immunoassay:

Unit – IV - MICROBIOLOGY

Microbiology: General Introduction. Brief Historical Reviews; value of knowledge of Microbiology. Micro – organism: Classification, General Characteristics – Size, Structure methods and rate of reproduction, nutrition and respiration, factors influencing growth, pathogenic and non – pathogenic organisms; common diseases caused by different types of organisms – Bacteria, Virus, Moulds and protozoa. Microbiology of food borne diseases; food poisoning principles and food preservation.

Unit – V

Parasitology: Introduction to parasitology. Introduction to protozoan parasites. Common prevailing parasites - identifications and treatment of – Amoebiasis. Nematodes – identification and treatment of : Helminthiasis, Filariasis, Hookworms, Ascariasis and trichuriasis, Trichomoniasis, Enterobius Vermicularis & Dracunculiasis.