

1ST YEAR

SEMESTER-I

HP-101C

Paper- 1 (Theory)

Total Mark = 100 (IA = 40 + ESE = 60) Credit = 04

Unit-I: History of Physiology & Medicine and Contribution of Indian scientists in the field of Physiology and allied health sciences

1. A history of Physiology and Medicine.
2. Contribution of India in ancient time - Charaka; Sushruta; Patanjali;
3. Landmark physiological experiments and discoveries.
4. Contribution of modern Indian scientists in physiology - U.N. Brahmachari, S.C. Mahalanobis, J.B.S. Haldane, A.S Paintal.

Unit-II: Structural and functional basis of Human Body-I

1. Cell theory, structure of eucaryotic cell, different human tissue types.
2. Structure and function of: Biomembrane- structure, composition and function, Use of Intracellular Vesicles to Replenish Cellular Membranes, Cell junction, transport through membrane,
3. Structure and function of Endoplasmic reticulum, Golgi body, Mitochondria,
4. Structure and function of Nucleus, Ribosomes, Cell inclusions.

Unit-III: Structural and functional basis of Human Body-II

1. Structure and function of Lysosomes, Peroxisomes,
2. Structure and function of Cytoskeletal system, Locomotion of Cells - ameboid locomotion and ciliary movement- cells in the body showing these movements
3. Functional Systems of the cell, endocytosis-phagocytosis and pinocytosis, mechanism, Digestion of Pinocytotic and Phagocytic Foreign Substances Inside the Cell,
4. Regression of Tissues and Autolysis of Cells,

Unit-IV: Structural and functional basis of Human Body-III

1. Structural and functional basis of different human body organ and organ systems,
2. Musculoskeletal system,
3. Homeostasis and its control systems,
4. Anthropometric landmarks.

Paper- 2A (Theory)

Total Mark = 50 (IA = 20 + ESE = 30) Credit = 02

HP-102C

Unit-I: Biophysics and Physicochemical Principles

1. Diffusion, osmosis, surface tension & viscosity-definition and physiological applications.
2. Properties of water, pH and Buffer-definition, example of buffers, buffering properties of

- amino acids, zwitterion, pKa value, weak chemical bonds, biological significance
3. Henderson-Hasselbalch equation, mathematical problems on Ph and buffer.
4. Gibbs-Donnan membrane equilibrium its biological application and relation with osmotic pressure and pH.
5. Colloids-Classification, properties optical and electrical, Physiological importance of Colloids.

Unit-II: Chemistry of Biomolecules

1. Carbohydrates-Definition and, Classification, Monosaccharides-classification, structure, stereoisomerism, optical isomerism, optical activity, epimerism.
2. Cyclic structure-pyranose and furanose forms, anomerism, mutarotation and its mechanism, Polysaccharides-Starch, glycogen, cellulose, chitin, dextrin- structural comparison.
3. Lipids - Definition and Classification. Fatty acids-Classification, and structure. Phospholipids and glycolipids-classification and physiological significance. Mono and poly unsaturated fatty acids and their physiological significance.
4. Sterols-Chemical nature, structure, classification and physiological importance.
5. Amino acids-Classifications. Peptide and Protein: Primary, secondary (alpha helix, beta-sheet and globular structure), tertiary, quaternary structure of proteins.
6. Protein purification and separation methods.

Paper-2B (Practical)

HP-102C

Total Mark = 50 (IA = 20 + ESE = 30) Credit = 02

Sl. No.	Practical	Marks
1.		
2.		
3		
4.		
5.	Laboratory Note book	
6.	<i>Viva voce</i>	
TOTAL		40

CONTENTS:

1. Study of Models/Charts of different body organ systems & organs –Anatomical position, Structure & Functions.
2. Study of Body Anthropometry-Stature, weight, sitting height, shoulder height(standing), Elbow height (standing), Hip height (standing), hand length, shoulder elbow length, leg length, shoulder breadth (biacromial), Arm reach from wall (Arm span) Knee to Knee Breadth, Elbow to elbow breadth, Head circumference, Shoulder circumference, Chest circumference, waist circumference, hip circumference. Calculation of BMI, BSA, WHR, Head and Chest circumference ratio.

3. Qualitative identification of physiologically important substances –HCL, Lactic acid, Uric acid, Albumin, Peptone, Starch, Dextrin, Glucose, Fructose, Lactose, Maltose, Sucrose, Bile salt, Acetone, Glycerol, urea.
4. **Laboratory Records:** Student must get the laboratory note books duly signed by the respective teacher during practical classes.
5. **Viva voce:** Questions based on theory and practical syllabus of 1st semester.