HUMAN ANATOMY AND PHYSIOLOGY – THEORY

Course Code: ER20-14T

75 Hours (3 Hours/week)

Scope

This course is designed to impart basic knowledge on the structure and functions of the human body. It helps in understanding both homeostasis mechanisms and homeostatic imbalances of various systems of the human body.

Course Objectives

This course will discuss the following:

1. Structure and functions of the various organ systems and organs of the human body
2. Homeostatic mechanisms and their imbalances in the human body
3. Various vital physiological parameters of the human body and their significances Course

Outcomes

Upon successful completion of this course, the students will be able to

1. Describe the various organ systems of the human body
2. Discuss the anatomical features of the important human organs and tissues
3. Explain the homeostatic mechanisms regulating the normal physiology in the human system
4. Discuss the significance of various vital physiological parameters of the human body

Course Outcomes

Upon successful completion of this course, the students will be able to

1. Perform the haematological tests in human subjects and interpret the results

2. Record, monitor and document the vital physiological parameters of human subjects and interpret the results

3. Describe the anatomical features of the important human tissues under the microscopical conditions

4. Discuss the significance of various anatomical and physiological characteristics of the human body

Practicals

1. Study of compound microscope
2. General techniques for the collection of blood
3. Microscopic examination of Epithelial tissue, Cardiac muscle, Smooth muscle, Skeletal muscle, Connective tissue, and Nervous tissue of ready / pre-prepared slides.
4. Study of Human Skeleton-Axial skeleton and appendicular skeleton
5. Determination of a. Blood group b. ESR c. Haemoglobin content of blood d. Bleeding time and Clotting time
6. Determination of WBC count of blood
7. Determination of RBC count of blood
8. Determination of Differential count of blood
9. Recording of Blood Pressure in various postures, different arms, before and after exertion and interpreting the results
10. Recording of Body temperature (using mercury, digital and IR thermometers at various locations), Pulse rate/ Heart rate (at various locations in the body, before and after exertion), Respiratory Rate
11. Recording Pulse Oxygen (before and after exertion)
12. Recording force of air expelled using Peak Flow Meter
13. Measurement of height, weight, and BMI

14. Study of various systems and organs with the help of chart, models, and specimens

a) Cardiovascular system
b) Respiratory system
c) Digestive system
d) Urinary system
e) Endocrine system
f) Reproductive system
g) Nervous system
h) Eye
i) Ear
j) Skin

TOPIC WISE MARKS AND QUESTION WEIGHTAGE

TOPIC NO	NAME OF HE TOPIC	NO OF HOURS 75	HOURS BASED MARKS DISTRIBUTION	WEIGHTAGE OF MARKS ROUDED OFF	NO OF 1 MARK QUESTIONS	NO OF 3 MARK QUESTIONS	NO OF 5 MARK QUESTIONS
1.	Scope of Anatomy and Physiology Definition of various terminologies	2	2.34	2	2	-	-
2.	Structure of Cell: Components and its functions	2	2.34	2	2	-	-
3.	**Tissues of the human body:** Epithelial, Connective, Muscular and Nervous tissues – their sub-types and characteristics	4	4.69	5	2	1	-
4.	**Osseous system:** structure and functions of bones of axial and appendicular skeleton Classification, types and movements of joints, disorders of joints	6	7.03	7-1=6	1	-	1

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5.	**Haemopoietic system** ● Composition and functions of blood ● Process of Hemopoiesis ● Characteristics and functions of RBCs, WBCs, and platelets ● Mechanism of Blood Clotting ● Importance of Blood groups	8	9.38	9	1	1	1
6.	**Lymphatic system** ● Lymph and lymphatic system, composition, function and its formation ● Structure and functions of spleen and lymph node.	3	3.51	4	1	1	-
7.	**Cardiovascular system** ● Anatomy and Physiology of heart ● Blood vessels and circulation (Pulmonary, coronary and systemic circulation) ● Cardiac cycle and Heart sounds, Basics of ECG ● Blood pressure and its regulation	8	9.38	9	1	1	1
8.	Respiratory system ● Anatomy of respiratory organs and their functions. ● Regulation, and Mechanism of respiration. ● Respiratory volumes and capacities – definitions	4	4.69	5	2	1	-

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9.	**Digestive system** ● Anatomy and Physiology of the GIT ● Anatomy and functions of accessory glands ● Physiology of digestion and absorption	8	9.38	9	1	1	1
10.	**Skeletal muscles** ● Histology ● Physiology of muscle contraction ● Disorder of skeletal muscles	2	2.34	2	2	-	-
11.	**Nervous system** ● Classification of nervous system ● Anatomy and physiology of cerebrum, cerebellum, mid brain ● Function of hypothalamus, medulla oblongata and basal ganglia ● Spinal cord-structure and reflexes ● Names and functions of cranial nerves. ● Anatomy and physiology of sympathetic and parasympathetic nervous system (ANS)	8	9.38	9	1	1	1
12.	**Sense organs - Anatomy and physiology of** ● Eye ● Ear ● Skin ● Tongue ● Nose	6	7.03	7+1=8	-	1	1

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13.	**Urinary system** ● Anatomy and physiology of urinary system ● Physiology of urine formation ● Renin - angiotensin system ● Clearance tests and micturition	4	4.69	5	2	1	-
14.	**Endocrine system (Hormones and their functions)** ● Pituitary gland ● Adrenal gland ● Thyroid and parathyroid gland ● Pancreas and gonads	6	7.03	7+1=8	-	1	1
15.	**Reproductive system** ● Anatomy of male and female reproductive system ● Physiology of menstruation ● Spermatogenesis and Oogenesis ● Pregnancy and parturition	4	4.69	5	2	1	-