SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF MEDICAL ELECTRONICS

QUESTION BANK

IV SEMESTER – MDE

MD3461 HUMAN ANATOMY AND PHYSIOLOGY

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Subject: MD3461 HUMAN ANATOMY AND PHYSIOLOGY
Semester/ Year: IV/ II

UNIT I – INTRODUCTION				
Level of Organization – Metabolism and Homeostasis – Plan of Body – Body Parts and Areas, Planes and Sections. Elements in the Human Body – Inorganic Compounds and Organic Compounds.				
Q.No	**Questions**	**COs**	**BT level**	**Competence**
1.	Name the levels of organization in the human body in ascending order.	CO1	BTL 1	Remembering
2.	Define metabolism.	CO1	BTL 1	Remembering
3.	What is meant by the anatomical position?	CO1	BTL 1	Remembering
4.	List the main body cavities.	CO1	BTL 1	Remembering
5.	Which organ system is primarily responsible for maintaining homeostasis?	CO1	BTL 1	Remembering
6.	Identify one trace element found in the human body.	CO1	BTL 1	Remembering
7.	Which organic compound is the primary source of energy for the body?	CO1	BTL 1	Remembering
8.	What are the four major types of organic compounds in the human body?	CO1	BTL 1	Remembering
9.	List the four most abundant elements in the human body.	CO1	BTL 1	Remembering
10.	Give an example of a homeostatic process in the human body.	CO1	BTL 1	Remembering
11.	Name the primary inorganic compound that serves as a solvent in the human body.	CO1	BTL 1	Remembering
12.	How do tissues differ in structure and function from organs?	CO1	BTL 1	Remembering
13.	Why is it important to understand the levels of organization in biology?	CO1	BTL 2	Understanding
14.	Distinguish between anabolic and catabolic processes with examples.	CO1	BTL 2	Understanding
15.	How does negative feedback play a role in maintaining homeostasis?	CO1	BTL 2	Understanding
16.	Outline the role of electrolytes in maintaining nerve function.	CO1	BTL 2	Understanding
17.	Differentiate between the sagittal and transverse planes with examples.	CO1	BTL 2	Understanding
18.	Mention the role of calcium in muscle contraction and bone strength.	CO1	BTL 2	Understanding
19.	How does a coronal plane divide the body, and why is it useful in imaging?	CO1	BTL 2	Understanding
20.	What is the difference between hemostasis and haemostasis?	CO1	BTL 2	Understanding
21.	Point out the significance of the pelvic region in relation to reproductive and excretory organs.	CO1	BTL 2	Understanding
22.	State the role of lipids in maintaining cell membrane structure.	CO1	BTL 2	Understanding
23.	Mention the importance of calcium for both bones and muscles.	CO1	BTL 2	Understanding
24.	Why is it essential to use the anatomical position when describing body parts?	CO1	BTL 2	Understanding

PART B					
1.	Analyze how the function of each level of organization (cell, tissue, organ, organ system) is interdependent in maintaining the overall functioning of the human body.	**(16)**	CO1	BTL 4	Analyzing
2.	Compare and contrast the structure and function of different types of tissues and explain how they contribute to the function of organs.	**(16)**	CO1	BTL 4	Analyzing
3.	Apply the concept of the levels of organization to describe how a muscle contraction occurs, starting from the molecular level to the organ system level.	**(16)**	CO1	BTL 3	Applying
4.	Illustrate the role of enzymes in speeding up chemical reactions and how this impacts the body's functions.	**(16)**	CO1	BTL 3	Applying
5.	Describe how metabolic disorders like diabetes affect homeostasis and the impact they have on the body's internal balance.	**(16)**	CO1	BTL 4	Analyzing
6.	Compare the structures and functions of the major body cavities (cranial, thoracic, abdominal, pelvic) and analyze how they protect vital organs.	**(16)**	CO1	BTL 4	Analyzing
7.	Summarize the significance of body regions in terms of clinical diagnosis, particularly in identifying symptoms of diseases localized to specific areas.	**(16)**	CO1	BTL 4	Analyzing
8.	Explain the body's response to injury in terms of the levels of organization, from cells to organ systems.	**(16)**	CO1	BTL 3	Applying
9.	Describe the advantages and limitations of using different anatomical sections (e.g., transverse vs. sagittal) in understanding the internal structure of organs.	**(16)**	CO1	BTL 4	Applying
10.	If a person's organ system fails, how would it impact the lower levels of organization, such as tissues and cells? Provide an example.	**(16)**	CO1	BTL 3	Applying
11.	Analyze the differences between sagittal, coronal, and transverse planes and explain how each plane is used in medical imaging to view different aspects of the body.	**(16)**	CO1	BTL 4	Analyzing
12.	Examine how the structures of proteins, lipids, and carbohydrates are connected to their specific functions in the body.	**(16)**	CO1	BTL 3	Analyzing
13.	Evaluate the importance of enzymes in metabolic reactions and explain how factors such as temperature or pH can influence enzyme activity.	**(16)**	CO1	BTL 4	Analyzing
14.	Interpret the role of water in maintaining homeostasis and how its properties make it essential for bodily functions like temperature regulation and nutrient transport.	**(16)**	CO1	BTL 3	Applying
15.	Compare the functions of major elements (carbon, hydrogen, oxygen, nitrogen) and Describe their interdependence in forming the building blocks of life.	**(16)**	CO1	BTL 4	Analyzing
16.	How would you explain the importance of lipids in energy storage and membrane structure when advising a person on a balanced diet?	**(16)**	CO1	BTL 3	Applying
17.	Assess how the structures of proteins, lipids, and carbohydrates are connected to their specific functions in the body.	**(16)**	CO1	BTL 3	Applying

UNIT II – CELL AND TISSUE STRUCTURE, SENSE ORGANS					
Structure of Cell –Structure and functions of sub organelles – Cell Membrane –Transport of across Cell Membrane - Action Potential – Cell to Cell Signaling– Cell Division. Types of Specialized tissues – Functions. Sense Organs: Eye, Ear					
PART – A					
Q.No	**Questions**		**COs**	**BT level**	**Competence**
1.	What is the fundamental unit of life in all living organisms? Name the main parts of a eukaryotic cell.		CO2	BTL 1	Remembering
2.	List the two main types of cells in living organisms.		CO2	BTL 1	Remembering
3.	Which organelle is responsible for energy production in the cell?		CO2	BTL 1	Remembering
4.	Point out the primary function of the nucleus in a cell.		CO2	BTL 1	Remembering
5.	State the process by which molecules move from an area of high concentration to low concentration across the membrane.		CO2	BTL 1	Remembering
6.	Identify the role of sodium ions in the generation of an action potential.		CO2	BTL 1	Remembering
7.	During which phase does a cell prepare for division by replicating its DNA?		CO2	BTL 1	Remembering
8.	What type of tissue is responsible for contracting and producing movement?		CO2	BTL 1	Remembering
9.	Name the four main types of tissues in the human body.		CO2	BTL 1	Remembering
10.	Outline the function of the cochlea in the ear. Which part of the ear is responsible for detecting sound vibrations?		CO2	BTL 1	Remembering
11.	State the function of the lens in the eye, Which part of the eye detects light and sends signals to the brain?		CO2	BTL 1	Remembering
12.	Enumerate the role of the nucleus in controlling cellular activities.		CO2	BTL 1	Understanding
13.	How do prokaryotic cells differ from eukaryotic cells in structure?		CO2	BTL 2	Understanding
14.	Mention the importance of the lipid bilayer in the structure of the cell membrane.		CO2	BTL 2	Understanding
15.	Infer the role of second messengers in cell-to-cell signaling.		CO2	BTL 2	Understanding
16.	What are the key differences between mitosis and meiosis in terms of their purpose and outcomes?		CO2	BTL 2	Understanding
17.	Narrate the significance of the G1 phase in the cell cycle.		CO2	BTL 2	Understanding
18.	Tabulate the difference between autocrine and paracrine signaling in cell communication.		CO2	BTL 2	Understanding
19.	Outline the role of G-protein coupled receptors (GPCRs) in cell signaling.		CO2	BTL 2	Understanding
20.	What is the role of G-protein coupled receptors (GPCRs) in cell signaling?		CO2	BTL 2	Understanding
21.	Differentiate mitosis from meiosis.		CO2	BTL 2	Understanding
22.	Summarize the role of the spindle fibers in cell division.		CO2	BTL 2	Understanding
23.	How does the retina's structure enable it to convert light into electrical signals for vision?		CO2	BTL 2	Understanding
24.	Enlist the function of the aqueous humor in maintaining the shape of the eye and its role in nutrient supply.		CO2	BTL 2	Understanding
PART B					
1.	Compare the structures of prokaryotic and eukaryotic cells and analyze how these structural differences contribute to their respective functions.	**(16)**	CO2	BTL 4	Analyzing
2.	Examine the consequences of a malfunctioning rough endoplasmic reticulum in a cell that produces large	**(16)**	CO2	BTL 4	Analyzing

	amounts of protein.				
3.	Apply your knowledge of cell structure to explain how a single-celled organism performs functions that are similar to those of multicellular organisms.	**(16)**	CO2	BTL 3	Applying
4.	Explain the role of the nucleus in regulating cellular activities.	**(16)**	CO2	BTL 3	Applying
5.	Describe the effects of different types of transport (e.g., active vs. passive) on a cell's energy usage and overall function.	**(16)**	CO2	BTL 4	Analyzing
6.	Assess how the function of different cell types (e.g., muscle vs. nerve cells) is influenced by their unique structures.	**(16)**	CO2	BTL 4	Analyzing
7.	Contrast the roles of the smooth and rough endoplasmic reticulum in cellular metabolism and analyze how their dysfunction would impact cellular function.	**(16)**	CO2	BTL 4	Analyzing
8.	How does the structure of muscle tissue allow it to contract and facilitate movement? Explain the types of specialized tissues.	**(16)**	CO2	BTL 3	Applying
9.	Analyze how the depolarization and repolarization phases of an action potential contribute to the overall functioning of nerve cells.	**(16)**	CO2	BTL 4	Applying
10.	Apply your knowledge of epithelial tissue to explain how its structure allows for protection and secretion in the body.	**(16)**	CO2	BTL 3	Applying
11.	Analyze the functions of different connective tissue types (e.g., bone, cartilage, blood) and how their structures relate to these functions.	**(16)**	CO2	BTL 4	Analyzing
12.	How would the loss of function in the retina affect the overall process of vision? Explain how farsightedness and nearsightedness occur.	**(16)**	CO2	BTL 3	Analyzing
13.	Describe in detail on the ear's three sections (outer, middle, inner ear) work together to process sound and maintain balance.	**(16)**	CO2	BTL 4	Analyzing
14.	Draw the ear's structure and explain how sound waves are converted into electrical signals for interpretation by the brain.	**(16)**	CO2	BTL 3	Applying
15.	Compare and contrast the effects of direct and indirect cell signaling on cellular responses and analyze their significance in maintaining tissue homeostasis.	**(16)**	CO2	BTL 4	Analyzing
16.	Illustrate the importance of the spindle fibers during cell division. How does mitosis differ from meiosis in terms of the number of resulting cells?	**(16)**	CO2	BTL 3	Applying
17.	Describe the role of connective tissue in supporting body structures.	**(16)**	CO2	BTL 3	Applying

UNIT III – SKELETAL, MUSCULAR AND RESPIRATORY SYSTEMS					
Skeletal System: Types of Bone and function – Physiology of Bone formation – Division of Skeleton – Types of joints and function – Types of cartilage and function. Muscular System: Parts of Muscle – Movements. Respiratory System: Parts of Respiratory Systems – Types of respiration - Mechanisms of Breathing – Regulation of Respiration.					
PART – A					
Q.No	**Questions**		**COs**	**BT level**	**Competence**
1.	What are the different types of bones in the human body?		CO3	BTL 1	Remembering
2.	Mention the process by which bone tissue is formed in the body.		CO3	BTL 1	Remembering
3.	Name the two primary functions of bones in the human body.		CO3	BTL 1	Remembering
4.	List the two main divisions of the human skeleton.		CO3	BTL 1	Remembering
5.	Define synovial joint, and what is its primary function?		CO3	BTL 1	Remembering
6.	Mention the two types of movable joints in the human body.		CO3	BTL 1	Remembering
7.	Infer the three main types of muscle tissue in the human body.		CO3	BTL 1	Remembering
8.	Examine the function of tendons in the muscular system.		CO3	BTL 1	Remembering
9.	Identify the main parts of the human respiratory system.		CO3	BTL 1	Remembering
10.	Differentiate between external respiration and internal respiration.		CO3	BTL 1	Remembering
11.	How does the body detect high levels of carbon dioxide in the blood?		CO3	BTL 1	Remembering
12.	Point out the role of bone marrow in the production of blood cells.		CO3	BTL 1	Remembering
13.	Outline the process of ossification and how it contributes to bone formation.		CO3	BTL 2	Understanding
14.	How do the structure and function of long bones differ from short bones?		CO3	BTL 2	Understanding
15.	Tabulate the difference between axial skeleton from appendicular skeleton in structure and function.		CO3	BTL 2	Understanding
16.	Infer the role of fibrocartilage in providing cushioning to the body.		CO3	BTL 2	Understanding
17.	Examine the importance of the vertebral column in protecting the spinal cord.		CO3	BTL 2	Understanding
18.	Enlist the function of the trachea in the respiratory system.		CO3	BTL 2	Understanding
19.	Compare aerobic and anaerobic respiration in terms of energy production.		CO3	BTL 2	Understanding
20.	Predict the role of medulla oblongata in regulating respiration.		CO3	BTL 2	Understanding
21.	What would happen if the medulla oblongata failed to detect changes in blood pH or CO2 concentration?		CO3	BTL 2	Understanding
22.	How do chemoreceptors detect changes in blood oxygen and carbon dioxide levels to regulate respiration?		CO3	BTL 2	Understanding
23.	Compare the roles of peripheral and central chemoreceptors in regulating the respiratory rate.		CO3	BTL 2	Understanding
24.	Where are chemoreceptors located that play a role in regulating the rate of breathing?		CO3	BTL 2	Understanding
PART B					
1.	Compare the functional differences between compact and spongy bone in terms of structure and their roles in supporting body movement and protecting organs.	**(16)**	CO3	BTL 4	Analyzing
2.	Analyze the process of endochondral ossification and describe the steps involved in the formation of bone from cartilage, particularly in long bones.	**(16)**	CO3	BTL 4	Analyzing

3.	Examine how the structure of different bone types (long, short, flat, and irregular) is linked to their distinct functions in the body.	**(16)**	CO3	BTL 3	Applying
4.	Describe the major bones in the axial skeleton (skull, vertebral column, ribs, and sternum) and their role in protecting vital organs.	**(16)**	CO3	BTL 3	Applying
5.	Explore the structure of skeletal muscle fibers, including the roles of myofibrils, actin, and myosin, and explain how these components work together to enable muscle contraction.	**(16)**	CO3	BTL 4	Analyzing
6.	Compare the role of muscle tone in maintaining posture versus muscle contraction during exercise, and analyze how these functions are regulated by the nervous system	**(16)**	CO3	BTL 4	Analyzing
7.	Assess the differences in the structure and function of skeletal, smooth, and cardiac muscles, focusing on their roles in voluntary and involuntary actions.	**(16)**	CO3	BTL 4	Analyzing
8.	Explain the role of synovial fluid in synovial joints, and elaborate on how it facilitates smooth movement and reduces friction between articulating bones,	**(16)**	CO3	BTL 3	Applying
9.	Investigate the role of the alveoli in gas exchange and how changes in the structure of alveolar walls (such as in emphysema) affect the efficiency of this process.	**(16)**	CO3	BTL 4	Applying
10.	Elucidate on the structural features of hyaline cartilage, elastic cartilage, and fibrocartilage, and describe the specific functions of each type in various parts of the body.	**(16)**	CO3	BTL 3	Applying
11.	Evaluate how changes in the volume of the thoracic cavity during breathing affect lung expansion and how this relates to conditions like pneumothorax.	**(16)**	CO3	BTL 4	Analyzing
12.	Describe the importance of cartilage in joint function, and elaborate on how the lack of cartilage or degeneration can lead to conditions such as osteoarthritis.	**(16)**	CO3	BTL 3	Analyzing
13.	Compare the efficiency of aerobic and anaerobic respiration in human cells and explain how the body adapts to prolonged periods of low oxygen availability.	**(16)**	CO3	BTL 4	Analyzing
14.	Describe the differences between aerobic and anaerobic respiration in terms of energy production, the role of oxygen, and the products formed in each process.	**(16)**	CO3	BTL 3	Applying
15.	Estimate the role of the medulla oblongata and chemoreceptors in adjusting respiration rates in response to changes in blood oxygen and carbon dioxide levels during exercise.	**(16)**	CO3	BTL 4	Analyzing
16.	Elaborate on the structure and function of the upper and lower respiratory tracts, and how they work together to ensure efficient gas exchange in the body.	**(16)**	CO3	BTL 3	Applying
17.	How does the body utilize mechanisms to monitor and regulate blood CO2 levels in order to maintain a consistent breathing rate?	**(16)**	CO3	BTL 3	Applying

UNIT IV – CARDIOVASCULAR AND LYMPHATIC SYSTEMS					
Cardiovascular System: Components of Blood and functions- Blood Groups and importance – Structure of Heart – Conducting System of Heart – Properties of Cardiac Muscle - Cardiac Cycle - Heart Beat – Types of Blood vessel – Regulation of Heart rate and Blood pressure. Lymphatic System: Parts and Functions of Lymphatic systems – Types of Lymphatic organs and vessels.					
PART – A					
Q.No	**Questions**		**COs**	**BT level**	**Competence**
1.	Define cardiovascular system.		CO4	BTL 1	Remembering
2.	List the functions of the cardiovascular system.		CO4	BTL 1	Remembering
3.	Mention the main components of blood. What are the four main blood groups?		CO4	BTL 1	Remembering
4.	Why is it important to match blood types during a transfusion?		CO4	BTL 1	Remembering
5.	Draw the structure of the heart.		CO4	BTL 1	Remembering
6.	Mention the role of the sinoatrial (SA) node in the heart.		CO4	BTL 1	Remembering
7.	How does cardiac muscle differ from skeletal muscle?		CO4	BTL 1	Remembering
8.	Name the two main phases of the cardiac cycle. What happens during diastole in the cardiac cycle?		CO4	BTL 1	Remembering
9.	Enlist the three main types of blood vessels?		CO4	BTL 1	Remembering
10.	Write the main components of the lymphatic system?		CO4	BTL 1	Remembering
11.	Outline the specific functions of the spleen in the body's immune system.		CO4	BTL 1	Remembering
12.	What are the main components of blood, and how does each component contribute to the overall function of the cardiovascular system?		CO4	BTL 1	Remembering
13.	What are the components of the heart's conducting system, and how do they coordinate the heartbeat?		CO4	BTL 2	Understanding
14.	Narrate the unique characteristics of cardiac muscle.		CO4	BTL 2	Understanding
15.	Outline the phases of the cardiac cycle.		CO4	BTL 2	Understanding
16.	Inquire about the different types of blood vessels.		CO4	BTL 2	Understanding
17.	Examine the factors which influence heart rate and blood pressure.		CO4	BTL 2	Understanding
18.	Why is cardiac muscle described as involuntary?		CO4	BTL 2	Understanding
19.	Predict how the atrioventricular (AV) node influences heart rhythm.		CO4	BTL 2	Understanding
20.	Write the significance of gap junctions in cardiac muscle cells.		CO4	BTL 2	Understanding
21.	Why does cardiac muscle have a high number of mitochondria?		CO4	BTL 2	Understanding
22.	How does the rhythmic contraction of cardiac muscle contribute to heart function?		CO4	BTL 2	Understanding
23.	Infer the role of lymphatic system in maintaining fluid balance and immune function in the body.		CO4	BTL 2	Understanding
24.	Categorize the primary organs of the lymphatic system.		CO4	BTL 2	Understanding
PART B					
1.	Evaluate how the ABO and Rh blood group systems contribute to the immune response.	**(16)**	CO4	BTL 4	Analyzing
2.	Compare and contrast the functions of the various types of white blood cells (e.g., neutrophils, lymphocytes, monocytes) and analyze how each type responds to different types of infections or immune challenges.	**(16)**	CO4	BTL 4	Analyzing
3.	Elucidate the components of blood (plasma, red blood cells, white blood cells, and platelets) and describe the specific function of each component in maintaining homeostasis in the body.	**(16)**	CO4	BTL 3	Applying
4.	Describe in detail the role of plasma proteins, such as	**(16)**	CO4	BTL 3	Applying

	albumins and globulins, in regulating blood pressure, clotting, and immune function.				
5.	Provide a detailed explanation about the structure of the heart, focusing on the chambers, valves, and walls,	**(16)**	CO4	BTL 4	Analyzing
6.	Analyze the significance of blood group compatibility in medical procedures like blood transfusion and organ transplantation.	**(16)**	CO4	BTL 4	Analyzing
7.	Elaborate on how the heart's anatomical features enable it to maintain efficient circulation, distinguishing between the roles of the left and right sides of the heart.	**(16)**	CO4	BTL 4	Analyzing
8.	Examine the relationship between the types of blood vessels and their specific functions in the cardiovascular system.	**(16)**	CO4	BTL 3	Applying
9.	Explore on how pressure changes in the heart chambers during the cardiac cycle result in the opening and closing of heart valves, and how this ensures one-way blood flow.	**(16)**	CO4	BTL 4	Applying
10.	Describe how the conducting system of the heart (SA node, AV node, bundle of His, and Purkinje fibers) coordinates the contraction of heart muscles?	**(16)**	CO4	BTL 3	Applying
11.	Analyze the phases of the cardiac cycle (diastole and systole), explaining the sequence of events that occur in each phase and their significance in pumping blood.	**(16)**	CO4	BTL 4	Analyzing
12.	Describe the structural differences between arteries, veins, and capillaries, and how these differences relate to their respective functions in the circulatory system.	**(16)**	CO4	BTL 3	Analyzing
13.	Elaborate on the concept of vascular resistance and how it varies across different types of blood vessels. What factors influence vascular resistance?	**(16)**	CO4	BTL 4	Analyzing
14.	Explain the specific roles of primary lymphatic organs (e.g., bone marrow and thymus) and secondary lymphatic organs (e.g., lymph nodes, spleen) in the immune response.	**(16)**	CO4	BTL 3	Applying
15.	Compare and contrast the ABO and Rh blood group systems, examining their genetic inheritance patterns.	**(16)**	CO4	BTL 4	Analyzing
16.	Examine the role of hormones such as adrenaline and aldosterone in regulating heart rate and blood pressure during stress or physical activity.	**(16)**	CO4	BTL 3	Applying
17.	Describe the structure and function of lymphatic vessels and explain how they contribute to the movement of lymph, including the role of valves in preventing backflow.	**(16)**	CO4	BTL 3	Applying

UNIT V – DIGESTIVE AND URINARY SYSTEMS					
Digestive System: Organs of Digestive system – Digestion and Absorption. Urinary System: Structure of Kidney and Nephron – Mechanisms of Urine formation – Regulation of Blood pressure by Urinary System – Urinary reflex.					
PART – A					
Q.No	**Questions**		**COs**	**BT level**	**Competence**
1.	What are the key organs that make up the digestive system?		CO5	BTL 1	Remembering
2.	Name the enzymes involved in the process of digestion.		CO5	BTL 1	Remembering
3.	Where does most of the nutrient absorption take place in the digestive system?		CO5	BTL 1	Remembering
4.	Write the function of the large intestine in the digestive system.		CO5	BTL 1	Remembering
5.	In which part of the digestive system does chemical digestion primarily take place?		CO5	BTL 1	Remembering
6.	List the main components of saliva, and what is their function in digestion?		CO5	BTL 1	Remembering
7.	Identify the organs involved in the process of absorption in the digestive system.		CO5	BTL 1	Remembering
8.	Differentiate between mechanical and chemical digestion.		CO5	BTL 1	Remembering
9.	Draw the basic structure of kidney.		CO5	BTL 1	Remembering
10.	Mention the main parts of the nephron		CO5	BTL 1	Remembering
11.	What does the term "glomerular filtration" refer to in the process of urine formation?		CO5	BTL 1	Remembering
12.	Infer the primary function of the kidneys in the urinary system.		CO5	BTL 1	Remembering
13.	Enlist the function of the stomach in the digestive system.		CO5	BTL 2	Understanding
14.	Identify the role of enzymes in the breakdown of carbohydrates, proteins, and fats.		CO5	BTL 2	Understanding
15.	Outline the significance of villi and microvilli in nutrient absorption.		CO5	BTL 2	Understanding
16.	Write about the process of reabsorption.		CO5	BTL 2	Understanding
17.	How does the micturition reflex help control the act of urination?		CO5	BTL 2	Understanding
18.	How the bladder stores and eliminates urine during the micturition process?		CO5	BTL 2	Understanding
19.	Narrate the role of the loop of Henle in concentrating urine.		CO5	BTL 2	Understanding
20.	In what way does the nervous system control voluntary urination?		CO5	BTL 2	Understanding
21.	State the role of the collecting duct in the process of urine formation.		CO5	BTL 2	Understanding
22.	Enlist the function of the juxtaglomerular apparatus in regulating blood pressure.		CO5	BTL 2	Understanding
23.	Point out the structural characteristics of the proximal convoluted tubule.		CO5	BTL 2	Understanding
24.	Examine the primary function of the distal convoluted tubule in the nephron.		CO5	BTL 2	Understanding
PART B					
1.	Compare and contrast the roles of enzymes and bile in the digestion of fats, proteins, and carbohydrates.	**(16)**	CO5	BTL 4	Analyzing
2.	Analyze how the nephron's structure and function contribute to the formation of urine and the regulation of bodily fluids.	**(16)**	CO5	BTL 4	Analyzing
3.	Summarize the major organs involved in the digestive system, and explain the specific role each organ plays in digestion and absorption.	**(16)**	CO5	BTL 3	Applying
4.	Outline the digestive process from ingestion to nutrient absorption, highlighting how enzymes and digestive fluids contribute.	**(16)**	CO5	BTL 3	Applying

5.	Assess how disorders in the digestive system (e.g., Crohn's disease) affect nutrient absorption and overall health.	**(16)**	CO5	BTL 4	Analyzing
6.	Examine the role of the liver in digestion, particularly in the production and secretion of bile, and how it aids in fat digestion.	**(16)**	CO5	BTL 4	Analyzing
7.	Evaluate the mechanisms that control the formation of concentrated or dilute urine, focusing on the roles of the loop of Henle and collecting duct.	**(16)**	CO5	BTL 4	Analyzing
8.	Explain the role of digestive enzymes in breaking down carbohydrates, proteins, and fats.	**(16)**	CO5	BTL 3	Applying
9.	Compare the processes of filtration, reabsorption, and secretion in the nephron and Describe how each contributes to maintaining homeostasis.	**(16)**	CO5	BTL 4	Applying
10.	Explore the interaction between enzymes and digestive organs in breaking down macromolecules during digestion.	**(16)**	CO5	BTL 3	Applying
11.	Examine the consequences of impaired kidney function on the regulation of blood pressure and fluid balance.	**(16)**	CO5	BTL 4	Analyzing
12.	Elaborate the process of urine formation, including the stages of filtration, reabsorption, secretion, and excretion in the nephron.	**(16)**	CO5	BTL 3	Analyzing
13.	Analyze the mechanisms through which the kidneys regulate blood pressure, focusing on the role of the renin-angiotensin-aldosterone system (RAAS).	**(16)**	CO5	BTL 4	Analyzing
14.	Investigate how the kidneys adjust blood volume and sodium balance to maintain stable blood pressure levels.	**(16)**	CO5	BTL 3	Applying
15.	Assess how the urinary reflex mechanism works to maintain voluntary control over urination and how it integrates with the nervous system.	**(16)**	CO5	BTL 4	Analyzing
16.	Describe the feedback loop between blood pressure, kidney function, and fluid balance, and explain its importance.	**(16)**	CO5	BTL 3	Applying
17.	Describe the relationship between renal function and blood pressure regulation, and evaluate the impact of conditions like hypertension on kidney health.	**(16)**	CO5	BTL 3	Applying