

# Anatomy and Physiology

## Important Questions

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### D.Pharma 1<sup>st</sup> year

#### Syllabus & Questions

##### Chapter-1

Scope of Anatomy and Physiology Definition of various terminologies

##### Short Question

- Discuss the scope of Anatomy and physiology.
- Define histology.
- What is the difference between anatomy and physiology?
- What are the two main scientific fields that study the human body?
- Define "cell" as the basic unit of structure and function in living things.

##### Chapter-2 Short

Structure of Cell : Components and its functions

##### Short

- Describe the function of the cell membrane.
- What is the role of the nucleus in a cell?
- Explain the function of mitochondria.
- What are ribosomes, and what do they do in a cell?
- Define the endoplasmic reticulum and its function.
- What is the function of the Golgi apparatus?
- Describe the structure and function of lysosomes.
- What are the main components of the cytoskeleton, and what do they do?
- What is the role of the cytoplasm in a cell?
- Describe & Draw the Structure and function of following.
  - a) Mitochondria
  - b) Golgi Bodies

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## Chapter-2 Long

- Draw a neat and labelled diagram of cell. Describe the structure and functions of mitochondria.
- Describe the Electron Microscopic structure of cell.
- Write a short note on cell division with diagrammatic representation.
- Define the cell & discuss about the various cell organelles or components of the cell.
- Give the diagrammatic view of cell & and label the all components of the cell.

## Chapter-3.

- **Tissues of the human body: Epithelial, Connective, Muscular and Nervous tissues – their sub-types and characteristics.**

### Short

- What are the main types of tissues in the human body?
- Describe the characteristics of epithelial tissue.
- What are the subtypes of epithelial tissue and where are they found?
- Explain the features of connective tissue.
- Name the subtypes of connective tissue and provide examples of each.
- What are the main characteristics of muscular tissue?
- Identify the different types of muscular tissue and their locations.
- Describe the features of nervous tissue.
- What are the subtypes of nervous tissue, and what are their functions?
- How do the four types of tissues work together to maintain bodily functions?
- Define Nerve Tissue
- Classify the Epithelial Tissue

### Long:

- Classify the different types of tissues?
- Describe the structure of a neuron and explain how its different parts facilitate the transmission of nerve impulses.
- What is histology? And discuss about the various types of tissues.
- What do you mean about connective tissue? And discuss different types of connective tissue.

## Chapter-4.

**Osseous system: structure and functions of bones of axial and appendicular skeleton Classification, types and movements of joints, disorders of joints**

### Short

- What is the structure and function of the osseous system?
- Differentiate between the axial and appendicular skeleton.

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- What are some common disorders of joints?
- Explain the function of bones in the axial skeleton.
- What are the major bones in the appendicular skeleton?
- How are joints classified based on their structure?
- What is osteoporosis?
- What is Synovial Joint?
- Define Joint
- Draw a neat clean structure of Neuron.
- Define Bone

**Long:**

- Explain the structure of a long bone and describe the functions of its different components (diaphysis, epiphysis, periosteum, etc.).
- Discuss the causes and potential consequences of osteoporosis.
- Describe the different types of arthritis and their symptoms.
- What are joints?
- Classify them. Explain each type of joints.
- Explain the following disorders
  - i. Gout
  - ii. Rheumatoid arthritis

## Chapter-5

### Haemopoietic system

- **Composition and functions of blood**
- **Process of Hemopoiesis**
- **Characteristics and functions of RBCs, WBCs and platelets**
- **Mechanism of Blood Clotting**

**Short**

- What is the composition of blood?
- What are the primary functions of blood?
- Describe the process of hemopoiesis.
- What are the characteristics of red blood cells (RBCs)?
- What are the functions of white blood cells (WBCs)?
- Explain the role of platelets in the body.
- What is blood clotting, and why is it important?
- How do platelets contribute to the clotting process?
- What are the major components of blood plasma?
- What are the common disorders related to the haemopoietic system?

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## Long:

- Explain the mechanism of blood clotting, including the roles of platelets and various clotting factors.
- Explain the different components of blood (plasma and formed elements) and their respective functions.
- Give an example of each of the five main types of WBCs and describe their specific roles in the immune system.

## Chapter-6

### Lymphatic system

- **Lymph and lymphatic system, composition, function and its formation.**
- **Structure and functions of spleen and lymph node.**

### Short Questions:

- What is lymph, and how does it differ from blood?
- Briefly describe the main function of the lymphatic system.
- Where does lymph formation occur in the body?
- What is the primary function of lymph nodes?
- What are the characteristics of red blood cells (RBCs)?
- What are the functions of white blood cells (WBCs)?
- Explain the role of platelets in the body.
- What is blood clotting, and why is it important?
- How do platelets contribute to the clotting process?
- What are the major components of blood plasma?
- What are the common disorders related to the haemopoietic system?

### Long Questions:

- Describe the composition and functions of blood.-
- Explain the detailed structure of a lymph node and how it functions in filtering lymph and trapping pathogens.
- Explain the process of lymph formation and its importance in maintaining fluid balance within the body.
- Describe the structure of the lymphatic system, including lymphatic vessels and lymph nodes.

## Chapter-7:

### Cardiovascular system

- **Anatomy and Physiology of heart**
- **Blood vessels and circulation (Pulmonary, coronary and systemic circulation)**

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- **Cardiac cycle and Heart sounds, Basics of ECG**
- **Blood pressure and its regulation**

**Short:**

- What is the cardiac cycle?
- What is an electrocardiogram (ECG)?
- What are the main components of the cardiovascular system?
- Describe the anatomy of the heart.
- Explain the physiology of the heart.
- What are the types of blood vessels in the body?
- What is the pathway of blood flow in the pulmonary circulation?
- Describe the four main stages of the cardiac cycle.
- What do the terms systole and diastole refer to in the context of the heart?
- What is the main determinant of blood pressure?

**Long:**

- Draw a neat and labelled diagram of L.S. of heart. Describe the structure and functions of heart.
- Describe the physiology of muscle contraction. What is Rh factor?
- Describe the process of blood flow through the heart, including the role of valves in directing blood flow.
- Discuss the role of the electrical conduction system in coordinating heart contractions.

## Chapter-8 Respiratory System

**Respiratory system**

- **Anatomy of respiratory organs and their functions.**
- **Regulation Mechanism of respiration.**
- **Respiratory volumes and capacities – definitions**

**Short:**

- List the structures of the lower respiratory tract.
- What is the function of the trachea?
- Describe the role of alveoli in gas exchange.
- What are the two main functions of the respiratory system?
- Differentiate between tidal volume and vital capacity.

**Long Questions:**

- Detail the function of the respiratory muscles in breathing.
- Discuss the mechanisms that regulate breathing rate and depth, including the roles of the lungs and brainstem.

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## Chapter-9 Digestive system

### Respiratory system

- **Anatomy of respiratory organs and their functions.**
- **Regulation Mechanism of respiration.**
- **Respiratory volumes and capacities – definitions**

#### Short:

- What are the main organs of the gastrointestinal tract?
- What are the functions of saliva in digestion?
- What is the function of enzymes in digestion?
- Describe the process of mechanical digestion.
- Explain the role of hydrochloric acid in the stomach.
- How are nutrients absorbed in the small intestine?
- What is the significance of villi and microvilli in absorption?
- Describe the location and function of the liver.
- Name the enzymes produced by the pancreas and their functions.
- What is the role of bile in digestion?
- Name the four layers of the digestive tract wall.
- Explain the function of peristalsis in digestion.

#### Long:

- Discuss the structure and function of each segment of the gastrointestinal tract from the mouth to the anus.
- Explain the importance of the enteric nervous system in gastrointestinal function.
- Describe the process of digestion and absorption in the small intestine.
- How does the structure of the stomach contribute to its function in digestion?
- Discuss the role of enzymes in the digestion of carbohydrates, proteins, and lipids.
- Discuss the role of the large intestine in the absorption of water and electrolytes.
- How does the structure of the small intestine contribute to its function in nutrient absorption?

## Chapter-10

### Skeletal muscles

#### Skeletal muscles

- Histology
- Physiology of muscle contraction
- Disorder of skeletal muscles

#### Short:

- What are skeletal muscles?

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- How are skeletal muscles different from smooth and cardiac muscles?
- Describe the histology of skeletal muscles.
- What is the role of neurotransmitters in muscle contraction?
- What is muscular dystrophy?
- What is the primary symptom of myasthenia gravis?

**Long:**

- Explain the factors that influence the force and duration of muscle contractions.

## Chapter-11 Nervous system

**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)**

**Short:**

- What is the nervous system and how is it classified?
- What are the functions of the cerebellum?
- Name the four basic types of tissues in the human body.
- Describe the role of the basal ganglia in the brain.
- Explain the anatomy of the sympathetic nervous system.
- What are the functions of the parasympathetic nervous system?
- Describe the anatomy of the cerebrum.

**Long:**

- Describe the structure of a skeletal muscle fiber and explain how this structure relates to its function.

## Chapter-12 Sense organs –

**Sense organs –**

**Anatomy and physiology of**

- **Eye**
- **Ear**



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- Skin
- Tongue
- Nose

## Short:

- What is the function of the retina in the eye?
- What are the three main parts of the ear and their functions?
- What are the three layers of the skin and their functions?
- How does the skin regulate body temperature?
- What is the role of the nose in respiration?

## Long:

- Describe the structure of the human nose and its role in respiration and olfaction.
- Describe the structure and function of the human eye, including the roles of the cornea, iris, lens, and retina.
- Describe the anatomy of the human ear and explain how it facilitates hearing.

## Chapter-13 Urinary System:

### Urinary system

- Anatomy and physiology of urinary system
- Physiology of urine formation
- Renin – angiotensin system
- Clearance tests and micturition

### Short

- What is the function of the kidneys in the urinary system?
- Describe the anatomy of the kidneys.
- Explain the physiology of urine formation.
- What is micturition?
- What are nephrons and their function?
- Discuss the role of the urinary bladder.

### Long:

- Describe the anatomy and physiology of the urinary system, including the roles of the kidneys, ureters, bladder, and urethra.
- Explain the process of micturition, including the roles of the detrusor muscle and internal and external sphincters.
- Explain the role of the urinary system in maintaining homeostasis in the body.



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- Discuss the role of the Loop of Henle in the concentration of urine.
- Explain the micturition reflex and discuss factors that can affect normal micturition.

## Chapter-14

### Endocrine system (Hormones and their functions)

- Pituitary gland
- Adrenal gland
- Thyroid and parathyroid gland
- Pancreas and gonads

#### Short

- What is the endocrine system and what is its function?
- Discuss the functions of insulin and glucagon.
- What are the gonads and what hormones do they produce?
- Describe the roles of testosterone and estrogen in the body.
- What hormones are produced by the thyroid gland?
- What hormones are produced by the thyroid gland?

#### Long:

- Discuss the role of insulin and glucagon in blood glucose regulation.
- Explain the role of the urinary system in maintaining homeostasis in the body.
- Describe the different hormones produced by the pituitary gland and their target organs/functions.

## Chapter-15

### Reproductive system

- Anatomy of male and female reproductive system
- Physiology of menstruation
- Spermatogenesis and Oogenesis
- Pregnancy and parturition

#### Short:

- What is the function of the ovaries?
- Where do sperm cells develop?
- Explain spermatogenesis.
- What is menstruation, and what are its main physiological processes?
- What is parturition?
- What are the stages of pregnancy?

#### Long:

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- Discuss the hormonal changes that occur during pregnancy and their effects on the body.
- Explain the process of parturition (childbirth) and the role of hormones in this process.
- Explain the physiological changes that occur during the menstrual cycle.
- Explain the process of fertilization, implantation, and fetal development during pregnancy.

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