# Unit - I

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization

### Part-01

1. Study of the structure of human body is called
   (A) Anatomy (B) Physiology
   (C) Pharmacology (D) Geology
2. Study of the function of the organ is called
   (A) Anatomy (B) Physiology
   (C) Pharmacology (D) None of the above
3. Who introduced the term Physiology?
   (A) Jean Fernel (B) Andrease Vesalius
   (C) Robert Hooke (D) None of the above
4. Who introduced the term Anatomy?
   (A) Andrease Vesalius (B) Robert Hooke
   (C) Xavier Bichat (D) None of the above
5. Study of human body part and organ is called
   (A) Gross anatomy (B) Cytology
   (C) Histology (D) None of the above
6. Gross anatomy is also known as
   (A) Microscopic Anatomy (B) Macroscopic Anatomy
   (C) Cytology (D) None of the above
7. Microscopic anatomy is also called as
   (A) Cytology (B) Histology
   (C) Gross anatomy (D) None of the above

8. The science of the origin and development of the individual from fertilization is termed as
   (A) Histology (B) Embryology
   (C) Cytology (D) None of the above

9. The branch of physiology which concerned with endocrine glands is called
   (A) Endocrinology (B) Cytology
   (C) Pathophysiology (D) None of the above

10. The study of the anatomy of tissue which is based on their visualization on X-ray films is
    (A) Pathophysiology (B) Immunology
    (C) Radiographic anatomy (D) None of the above

11. The study of anatomy of diseased tissues is called as
    (A) Pathological anatomy (B) Embryology
    (C) Radiographic anatomy (D) None of the above

12. The study of the circulatory system is called as
    (A) Renal physiology (B) Cardiovascular physiology
    (C) Immunology (D) None of the above

13. The study of the body's immune system is termed as
    (A) Immunology (B) Respiratory physiology
    (C) Renal physiology (D) Endocrinology

14. The branch of human physiology focusing on respiration is studied under
    (A) Endocrinology (B) Immunology
    (C) Renal physiology (D) Respiratory physiology

15. The branch of science associated with a disease or an injury is studied under
    (A) Pathophysiology (B) Embryology
    (C) Histology (D) None of the above

16. The study of the function of the human body during various acute and chronic exercise condition is known as
    (A) Pathophysiology (B) Exercise physiology
    (C) Histology (D) None of the above

17. The study of physiology of kidney in included under
    (A) Renal physiology (B) Pathophysiology
    (C) Respiratory physiology (D) Exercise physiology

18. The fluid outside the cell is called
    (A) Interstitial fluid (B) Extracellular fluid
    (C) Intracellular fluid (D) None of the above

19. Liquid contains inside the cell membranes is
    (A) Intracellular fluid (B) Extracellular fluid
    (C) Interstitial fluid (D) None of the above

20. Liquid found between the cells of the body is termed as
    (A) Extracellular fluid (B) Interstitial fluid
    (C) Intracellular fluid (D) None of the above

21. The position is used in all anatomical description to ensure accuracy and consistency are called
    (A) Anatomical position (B) Directional terms
    (C) Regional terms (D) None of the above

22. Nearer to the midline is called as
    (A) Medial (B) Lateral
    (C) Distal (D) Proximal

23. Further (Away) from the midline is called as
    (A) Medial (B) Proximal
    (C) Lateral (D) None of the above

24. The directional term “Superior” means
    (A) Nearer the head
    (B) Nearer the front of the body
    (C) Nearer the back of the body
    (D) None of the above

25. Nearer to the front of the body is termed as
    (A) Lateral (B) Anterior
    (C) Posterior (D) Inferior

26. The paired terms are used to describes the locomotion of the body in relation to other
    (A) Directional terms (B) Anatomical terms
    (C) Regional terms (D) None of the above

27. The skull is superior to the scapulae is an example of which directional terms
    (A) Lateral (B) Superior
    (C) Inferior (D) None of the above

28. Foot is inferior to the ankle is an example of
    (A) Inferior (B) Anterior
    (C) Superior (D) None of the above

29. Which of the following is a type of body plane?
    (A) Median plane (B) Frontal plane
    (C) Transverse plane (D) All of the above

30. When the body is divided longitudinally through the midline into right and left halves then this division is called as
    (A) Median plane (B) Frontal plane
    (C) Transverse plane (D) None of the above

31. Which plane is also called as coronal plane?
    (A) Median plane (B) Frontal plane
    (C) Transverse plane (D) None of the above

32. Which plane divide the body longitudinally into anterior and posterior section?
    (A) Frontal plane (B) Median plane
    (C) Transverse plane (D) None of the above

33. The section provides a cross – section dividing the body or body part into upper and lower part is known as
    (A) Median plane (B) Transverse plane
    (C) Frontal plane (D) None of the above

34. Which is refers to the back aspects of the body?
    (A) Median plane (B) Lateral plane
    (C) Posterior plane (D) None of the above

35. Which plane divide the body into two equal symmetrical halves?
    (A) Transverse plane (B) Median plane
    (C) Frontal plane (D) None of the above

36. Any vertical plane that is parallel to the median plane is known as
    (A) Sagittal plane (B) Median plane
    (C) Frontal plane (D) None of the above

37. Opposite of proximal position is known as
    (A) Distal (B) Lateral
    (C) Median (D) None of the above

38. Inferior directional terms represent
    (A) Nearer the head (B) Further from the head
    (C) Nearer the front of the body (D) None of the above

39. Cervical vertebrae are anatomically
    (A) Superior to the rib cage
    (B) Inferior to the thoracic vertebrae
    (C) Located between the thoracic and sacral vertebrae
    (D) None of the above

40. Adrenal gland located at
    (A) Superior to the kidney (B) Inferior to the kidney
    (C) Frontal to the kidney (D) None of the above

41. Thigh, leg, ankle and foot comes under
    (A) Lower limb (B) Upper limb
    (C) Trunk (D) Neck

42. Shoulder, armpit, arm, wrist and hand comes under
    (A) Trunk (B) Upper limb
    (C) Lower limb (D) Neck

43. Trunk consists of
    (A) Face (B) Pelvis
    (C) Head (D) Leg

44. Head consist of
    (A) Face and skull (B) Chest and pelvis
    (C) Arm and hand (D) Leg and foot

45. Major body cavity is/are
    (A) Dorsal cavity
    (B) Ventral cavity
    (C) Both (A) and (B)
    (D) None of the above

46. Which cavity contains organs of the nervous system that coordinate the body's function
    (A) Dorsal cavity
    (B) Ventral cavity
    (C) Pelvic cavity
    (D) Abdominal cavity

47. Dorsal cavity includes
    (A) Cranial cavity
    (B) Spinal cavity
    (C) Both (A) and (B)
    (D) None of the above

48. Cranial cavity contains
    (A) Spinal cord
    (B) Brain
    (C) Stomach
    (D) Spleen

49. Spinal cord is included under
    (A) Vertebral cavity
    (B) Cranial cavity
    (C) Thoracic cavity
    (D) None of the above

50. Which cavity contains organs that maintain the internal environment of the body
    (A) Ventral cavity
    (B) Dorsal cavity
    (C) Cranial cavity
    (D) None of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-01)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = Anatomy | 26 | A = Directional Terms |
| 02 | B = Physiology | 27 | B = Superior |
| 03 | A = Jean Fernel | 28 | A = Inferior |
| 04 | A = Andrease Vesalium | 29 | D = All of the Above |
| 05 | A = Gross Anatomy | 30 | A = Median Plane |
| 06 | B = Macroscopic Anatomy | 31 | B = Frontal Plane |
| 07 | B = Histology | 32 | A = Frontal Plane |
| 08 | B = Embryology | 33 | B = Transverse Plane |
| 09 | A = Endocrinology | 34 | C = Posterior Plane |
| 10 | C = Radiographic Anatomy | 35 | B = Median Plane |
| 11 | A = Pathological Anatomy | 36 | A = Sagittal Plane |
| 12 | B = Cardiovascular Physiology | 37 | A = Distal |
| 13 | A = Immunology | 38 | B = Further from the Head |
| 14 | D = Respiratory Physiology | 39 | A = Superior to the Rib Cage |
| 15 | A = Pathophysiology | 40 | A = Superior to the Kidney |
| 16 | B = Exercise Physiology | 41 | A = Lower Limb |
| 17 | A = Renal Physiology | 42 | B = Upper Limb |
| 18 | B = Extracellular Fluid | 43 | B = Pelvis |
| 19 | A = Intracellular Fluids | 44 | A = Face and Skull |
| 20 | B = Intestinal Fluids | 45 | C = Both A and B |
| 21 | A = Anatomical Position | 46 | A = Dorsal cavity |
| 22 | A =Medial | 47 | C = Both A and B |
| 23 | C = Lateral | 48 | B = Brain |
| 24 | A = Nearer to the Head | 49 | A = Vertebral Cavity |
| 25 | B = Anterior | 50 | A = Ventral Cavity |

## Part-02

1. Which of the following cavity is surrounding by the rib cage?
   (A) Pelvic cavity (B) Abdominal cavity
   (C) Thoracic cavity (D) Cranial cavity

2. Thoracic cavity consists of
   (A) Pericardial cavity (B) Mediastinum
   (C) Two pleural cavities (D) All of the above

3. The lungs are consisting in which of the following cavity
   (A) Two pleural cavities (B) Pericardial cavity
   (C) Abdominal cavity (D) None of the above

4. Which cavity contains fluid filled space that surrounds the heart
   (A) Pericardial cavity (B) Abdominal cavity
   (C) Two pleural cavities (D) None of the above

5. Which cavity is central part of the thoracic?
   (A) Pericardial cavity (B) Mediastinum
   (C) Two pleural cavities (D) None of the above

6. Which cavity consist of oesophagus
   (A) Mediastinum (B) Pericardial cavity
   (C) Pelvic cavity (D) None of the above

7. Abdominopelvic cavity includes
   (A) Abdominal cavity (B) Pelvic cavity
   (C) Both (A) and (B) (D) None of the above

8. Which cavity contains stomach and spleen
   (A) Pelvic cavity (B) Abdominal cavity
   (C) Pericardial cavity (D) Mediastinum

9. Which cavity contains urinary bladder
   (A) Pelvic cavity (B) Mediastinum
   (C) Pericardial cavity (D) None of the above

10. At rest the heart contracts, or beats at which of the following rate
    (A) 72 times per minute (B) 56 times per minute
    (C) 97 times per minute (D) 104 times per minute

11. The main organ of circulatory system is
    (A) Heart (B) Lungs
    (C) Liver (D) Brain

12. Lymphatic system consists of
    (A) Lymph node (B) Lymph vessels
    (C) Thymus (D) All of the above

13. The main function of lymphatic system is/are
    (A) Removal of excess fluid from body tissue
    (B) Production of immune cells
    (C) Transports fats from digestive system
    (D) All of the above

14. Central nervous system consists of which of the following organ
    (A) Brain (B) Spinal cord
    (C) Both (A) and (B) (D) None of the above

15. The peripheral nervous system is a network of nerve fibres which include
    (A) Sensory or afferent nerves (B) Motor or efferent nerves
    (C) Both (A) and (B) (D) None of the above

16. Somatic senses include which of the following sensation
    (A) Pain (B) Touch
    (C) Heat and cold (D) All of the above

17. Nerves impulses can travel at speeds of
    (A) 30 metres per second (B) 100 metres per second
    (C) 300 metres per second (D) 500 metres per second

18. Reflex action involves which of the following action
    (A) Withdrawal of a finger from a very hot surface
    (B) Constriction of pupil in response to bright light
    (C) Control of blood pressure
    (D) All of the above

19. Synapse is the junction between two
    (A) Muscles (B) Neurons
    (C) Cells (D) Tissue

20. The site where communication takes place is called
    (A) Synapse (B) Muscles
    (C) Cells (D) Tissue

21. Nerve communicates with each other by releasing
    (A) Neurotransmitter (B) Hormones
    (C) Fluids (D) None of the above

22. Sensory receptors control vital functions which are
    (A) Heart rate (B) Respiratory rate
    (C) Blood pressure (D) All the above

23. The smallest independent units of living matter are
    (A) Cells (B) Tissue
    (C) Organ (D) None of the above

24. The specialised function of nerves is
    (A) To transmit electrical signal
    (B) These are integrated and coordinated
    (C) To provide a rapid and sophisticated communication system
    (D) All of the above

25. Organs is made up of number of different types of
    (A) Cells (B) Tissues
    (C) Nerve cells (D) None of the above

26. Stomach is made up of
    (A) Layer of smooth muscle tissue (B) Layer of epithelial tissue
    (C) Both (A) and (B) (D) None of the above

27. Which of the following is an example of accessory organ?
    (A) Pancreas (B) Salivary glands
    (C) Liver (D) All of the above

28. Which of the following is an example of body system?
    (A) Digestive system (B) Circulatory system
    (C) Nervous system (D) All of the above

29. Digestive system contributes in the process of
    (A) Ingestion (B) Digestion
    (C) Absorption (D) All of the above

30. Communication is a transport system that include
    (A) Blood (B) Cardiovascular system
    (C) Lymphatic system (D) All of the above

31. Which of the following is a type of communication?
    (A) Internal communication (B) External communication
    (C) Both (A) and (B) (D) None of the above

32. Internal communication is important in the maintenance of
    (A) Homeostasis
    (B) Regulation of vital body functions
    (C) Both (A) and (B)
    (D) None of the above

33. Communication with external environment involves
    (A) Special senses (B) Verbal activities
    (C) Non – verbal activities (D) All of the above

34. Survival for the life needs which of the following activity
    (A) Communication (B) Intake of raw material
    (C) Protection of the body (D) All of the above

35. The main function of blood is/are
    (A) Transport (B) Protection
    (C) Regulation (D) All of the above

36. Red blood cellsis alsotermed as
    (A) Erythrocytes (B) Leukocytes
    (C) Thrombocytes (D) None of the above

37. Leukocytes also known as
    (A) Red blood cells (B) White blood cells
    (C) Platelets (D) None of the above

38. In adults' body the amount of blood is
    (A) 2-3 litres (B) 1-2 litres
    (C) 5-6 litres (D) None of the above

39. The amount of water contains in plasma is
    (A) 90 % (B) 50 %
    (C) 40 % (D) None of the above

40. Plasma contains
    (A) Nutrients (B) Oxygen
    (C) Hormones (D) All of the above

41. Which of the following is a type of blood vessels?
    (A) Arteries (B) Veins
    (C) Capillaries (D) All of the above

42. Which blood vessel carry blood away from the heart
    (A) Arteries (B) Veins
    (C) Capillaries (D) None of the above

43. Which of the following is very tiny blood vessels?
    (A) Veins (B) Capillaries
    (C) Arteries (D) None of the above

44. Which of the following is pulmonary circulation?
    (A) Kidney (B) Liver
    (C) Lungs (D) None of the above

45. Which gland secrete hormones directly into the bloodstream
    (A) Endocrine glands (B) Exocrine
    (C) Both (A) and (B) (D) None of the above

46. Hormones stimulate
    (A) Target glands or tissue (B) Influence metabolism
    (C) Regulate body growth (D) All of the above

47. Special senses include
    (A) Sight (B) Hearing
    (C) Smell (D) All of the above

48. Production of sound in the larynx is comes under which communication
    (A) Verbal communication
    (B) Non - verbal communication
    (C) Both (A) and (B)
    (D) None of the above

49. Posture and movements are often associated with
    (A) Verbal communication
    (B) Non - verbal communication
    (C) Both (A) and (B)
    (D) None of the above

50. Which of the following example comes under non - verbal communication
    (A) Nodding the head
    (B) Shrugging the shoulder
    (C) Both (A) and (B)
    (D) None of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-02)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | C = Thoracic Cavity | 26 | C = Both A and B |
| 02 | D = All of the Above | 27 | D = All of the above |
| 03 | A = Two Pleural Cavities | 28 | D = All of the above |
| 04 | A = Pericardial Cavity | 29 | D = All of the Above |
| 05 | B = Mediastinum | 30 | D = All of the Above |
| 06 | A = Mediastinum | 31 | C = Both A and B |
| 07 | C = Both A and B | 32 | C = Both A and B |
| 08 | B = Abdominal Cavity | 33 | D = All of the above |
| 09 | A = Pelvic Cavity | 34 | D = All of the Above |
| 10 | A = 72 Time Per Minute | 35 | D = All of the above |
| 11 | A = Heart | 36 | A = Erythrocytes |
| 12 | D = All of the Above | 37 | B = White Blood Cells |
| 13 | D = All of the Above | 38 | C = 5 to 06 Litres |
| 14 | C = Both A and B | 39 | A = 90% |
| 15 | C = Both A and B | 40 | D = All of the Above |
| 16 | D = All of the Above | 41 | D = All of the Above |
| 17 | B = 100 meters per second | 42 | A = Arteries |
| 18 | D = All of the Above | 43 | B = Capillaries |
| 19 | B = Neurons | 44 | C = Lungs |
| 20 | A = Synapse | 45 | A = Endocrine Glands |
| 21 | A = Neurotransmitters | 46 | D = All of the Above |
| 22 | D = All of the above | 47 | D = All of the Above |
| 23 | A = Cells | 48 | A = Verbal Communication |
| 24 | D = All of the Above | 49 | B = Nonverbal Commination |
| 25 | B = Tissues | 50 | C = Both A and B |

## Part-03

1. The excretory system involves
   (A) Respiratory system (B) Digestive system
   (C) Urinary system (D) All of the above

2. The substance which is excreted from the body is/are
   (A) Carbon dioxide (B) Urine
   (C) Feces (D) All of the above

3. The atmospheric air contains which amount of oxygen gas
   (A) 21 % (B) 75 %
   (C) 9 % (D) 46 %

4. In which part of respiratory system exchange of gases occurs or take place
   (A) Larynx (B) Pharynx
   (C) Alveoli (D) Trachea

5. A million of tiny air sacs are present in
   (A) Bronchi (B) Alveoli
   (C) Trachea (D) Pharynx

6. The atmospheric air contains which percentage of nitrogen
   (A) 21 % (B) 80 %
   (C) 14 % (D) 11 %

7. A balance diet is important for health because
   (A) They provide nutrients
   (B) They promote body function
   (C) They promote body growth
   (D) All of the above

8. Nutrient includes
   (A) Carbohydrates (B) Proteins
   (C) Vitamins (D) All of the above

9. The process in which complex food material break down into smallest material is called as
   (A) Digestion (B) Respiration
   (C) Circulation (D) None of the above

10. Digestive system consists of
   (A) Alimentary canal (B) Accessory organ
   (C) Both (A) and (B) (D) None of the above

11. Which of the following is not a part of alimentary canal?
   (A) Pharynx (B) Esophagus
   (C) Stomach (D) Pancreas

12. Which of the following is an accessory organ?
   (A) Salivary gland (B) Liver
   (C) Pancreas (D) All of the above

13. Digestive enzyme is synthesized by
   (A) Salivary gland (B) Pancreas
   (C) Both (A) and (B) (D) None of the above

14. Bile is secreted by
   (A) Liver (B) Pancreas
   (C) Salivary gland (D) Kidney

15. Metabolic reaction is classified into
   (A) Anabolism (B) Catabolism
   (C) Both (A) and (B) (D) None to the above

16. Most carbon dioxide excreted through the lungs during
   (A) Expiration (B) Inspiration
   (C) Both (A) and (B) (D) None of the above

17. The function of kidney is/are
   (A) Removal of waste material (B) Regulate water balance
   (C) Maintain body pH (D) All of the above

18. Urine contains which of the following constituents as their contents
   (A) Water (B) Urea
   (C) Ammonia (D) All of the above

19. The function of defensive system is/are
    (A) Protection against the environment
    (B) Defense against infection
    (C) Movement and survival of the species
    (D) All of the above

20. Superficial layer of skin is called as
    (A) Epidermis (B) Dermis
    (C) Hypodermis (D) Myocytes

21. Which layer of skin consists of dead flattened cells
    (A) Hypodermis (B) Epidermis
    (C) Dermis (D) Basal cells

22. The function of skin is/are
    (A) Protection against microbes
    (B) Protection against chemicals
    (C) Prevent dehydration
    (D) All of the above

23. Which layer of skin contains tiny sweat gland
    (A) Dermis (B) Epidermis
    (C) Hypodermis (D) Myocytes

24. Which layer of skin is rich in sensory nerve ending?
    (A) Hypodermis (B) Dermis
    (C) Epidermis (D) Melanocyte

25. Sensory nerve endings of skin are sensitive to
    (A) Pain (B) Temperature
    (C) Touch (D) All of the above

26. The defense mechanism of body is
    (A) Specific defense mechanism
    (B) Non- specific defense mechanism
    (C) Both (A) and (B)
    (D) None of the above

27. The musculoskeletal system includes the
    (A) Bone of skeleton (B) Skeletal muscles
    (C) Joint (D) All of the above

28. The function of skeleton is/are
    (A) Provide rigid body framework (B) Movement
    (C) Protect organs (D) All of the above

29. Function of skeletal muscles is/are
    (A) Control of the voluntary nervous system
    (B) Maintain posture and balance
    (C) Move the skeleton
    (D) All of the above

30. Growth is characterized by
    (A) Increase in body (B) Increase in cell size
    (C) Increase in cell number (D) All of the above

31. The process of development of specialized cell from unspecialized is called
    (A) Differentiation (B) Growth
    (C) Reproduction (D) None of the above

32. The condition of equilibrium that is maintained by keeping the body's internal environment care called as
    (A) Homeostasis (B) Hemostasis
    (C) Both (A) and (B) (D) None of the above

33. The basic component of homeostasis
    (A) Detector (B) Control center
    (C) Effector (D) All of the above

34. The term 'homeostasis' was coined by
    (A) Walter B. cannon (B) Chris Crick
    (C) John Mathew (D) Francis Crick

35. The significance of homeostasis in the survival of an organism was first discussed by
    (A) Chris Crick (B) Claude Bernard
    (C) John Mathew (D) Robert Hooke

36. The feedback mechanism of homeostasis includes
    (A) Positive feedback mechanism
    (B) Negative feedback mechanism
    (C) Both (A) and (B)
    (D) None of the above

37. Which system monitors the changes in the internal environment
    (A) Detector
    (B) Control center
    (C) Effector
    (D) None of the above

38. Which of the following system sends input in the form of nerve impulse to the control center?
    (A) Effector
    (B) Detector
    (C) Both (A) and (B)
    (D) None of the above

39. The function of control center is/are
    (A) Evaluate the input coming from detector
    (B) Generate the output in the form of nerve impulse
    (C) Send nerve impulse to the effector
    (D) All of the above

40. Which of the following system receives output from control center
    (A) Effector
    (B) Detector
    (C) Both (A) and (B)
    (D) None of the above

41. In negative feedback system, the response generated by the
    (A) Effector reverse or opposes the stimulus
    (B) Effector enhance or intensifies the stimulus
    (C) Bothe (A) and (B)
    (D) None of the above

42. In positive feedback system, the response is generated by the
    (A) Effector reverse or opposes the stimulus
    (B) Effector enhance or intensifies the stimulus
    (C) Both (A) and (B)
    (D) None of the above

43. Body temperature is one of the examples of a physiological variable which is controls by
    (A) Negative feedback system
    (B) Positive feedback system
    (C) Both (A) and (B)
    (D) None of the above
44. Body temperature is controlled by
    (A) Cerebrum
    (B) Hypothalamus
    (C) Cerebellum
    (D) Medulla oblongata
45. When body temperature rises, the hypothalamus activates and give symptom, that is/are
    (A) Stimulation of skeletal muscles causing shivering
    (B) Narrowing the blood vessels
    (C) Behavioral changes
    (D) All of the above
46. Blood pressure is regulated by
    (A) Negative feedback mechanism
    (B) Positive feedback mechanism
    (C) Alpha feedback mechanism
    (D) Gamma feedback mechanism
47. Change in blood pressure is detected by
    (A) Baroreceptor
    (B) Chemoreceptor
    (C) Thermoreceptor
    (D) Hydro receptor
48. Release of oxytocin hormone during child birth is an example of
    (A) Negative feedback mechanism
    (B) Positive feedback mechanism
    (C) Both (A) and (B)
    (D) None of the above
49. Oxytocin hormone enhances the process of
    (A) Contractions of uterus muscle
    (B) Relaxation of uterus muscle
    (C) Both (A) and (B)
    (D) None of the above
50. When homeostatic system getimbalanced, then body give sign and symptom which is /are
    (A) Headache
    (B) Nausea
    (C) Anxiety
    (D) All of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-03)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | D = All of the Above | 26 | C = Both A and B |
| 02 | D = All of the Above | 27 | D = All of the Above |
| 03 | A = 21% | 28 | D = All of the above |
| 04 | C = Alveoli | 29 | D = All of the Above |
| 05 | B = Alveoli | 30 | D = All of the Above |
| 06 | B = 80% | 31 | A = Differentiation |
| 07 | D = All of the Above | 32 | A = Homeostasis |
| 08 | D = All of the Above | 33 | D = All of the Above |
| 09 | A = Digestion | 34 | A = Walter B. Cannon |
| 10 | C = Both A and B | 35 | B = Claude Bernard |
| 11 | D = Pancreas | 36 | C = Both A and B |
| 12 | D = All of the above | 37 | A = Detector |
| 13 | C = Both A and B | 38 | B = Detector |
| 14 | A = Liver | 39 | D = All of the Above |
| 15 | C = Both A and B | 40 | A = Effector |
| 16 | A = Expiration | 41 | A = Effector Reverse or Oppose the Stimulus |
| 17 | D = All of the Above | 42 | B = Effector Enhance or Intensify the Stimulus |
| 18 | D = All of the Above | 43 | A = Negative Feedback System |
| 19 | D = All of the Above | 44 | B = Hypothalamus |
| 20 | A = Epidermis | 45 | D = All of the Above |
| 21 | B = Epidermis | 46 | A = Negative Feedback Mechanism |
| 22 | D = All of the Above | 47 | A = Baroreceptor |
| 23 | A = Dermis | 48 | B = Positive Feedback Mechanism |
| 24 | B = Dermis | 49 | A = Contraction of Uterus Muscle |
| 25 | D = All of the Above | 50 | D = All of the Above |

## Part-04

1. Body's smallest functional unit is
   (A) Cells (B) Tissues
   (C) Organs (D) Organ system
2. Cell is grouped together to formed
   (A) Tissue (B) Organ
   (C) Organ system (D) None of the above
3. Cell is discovered by
   (A) Robert Koch (B) Robert Hooke
   (C) Robert Brown (D) Louis Pasteur
4. The study of the structure and function of the cell is called
   (A) Histology (B) Pathophysiology
   (C) Cytology (D) Immunology
5. The main part of cells is
   (A) Plasma membrane (B) Nucleus
   (C) Cytoplasm (D) All of the above
6. Human body developed from single cell which is termed as
   (A) Zygote (B) Nerve cell
   (C) Blood cell (D) Bone cell
7. Which of the following cell formed after fusion of ovum and spermatozoa
   (A) Embryo (B) Zygote
   (C) Foetus (D) Oocyte
8. A single cell performs all function of body in
   (A) Unicellular organism (B) Multicellular organism
   (C) Tricellular organism (D) Bicellular organism
9. Cell is surrounded by
   (A) Plasma membrane (B) Mucous membrane
   (C) Epithelial membrane (D) Serous membrane

10. Thickness of plasma membrane is
    (A) 7-10 nm (B) 2-3 nm
    (C) 11-12 nm (D) 14-15 nm

11. Function of plasma membrane includes
    (A) Protect the organelles of cell
    (B) Separates the extracellular fluid and intracellular fluid
    (C) Maintain the cells internal environment
    (D) All of the above

12. Which part of cell consist phospholipid bilayer
    (A) Plasma membrane (B) Nucleus
    (C) Ribosomes (D) Nucleolus

13. Phospholipid bilayer consist of following types of layers
    (A) Hydrophilic (water loving)
    (B) Hydrophobic (water hating)
    (C) Both (A) and (B)
    (D) None of the above

14. The phospholipid bilayer is made up of
    (A) Phospholipid (B) Cholesterol
    (C) Glycolipid (D) All of the above

15. The percent of phospholipid present in lipid bilayer is
    (A) 75% (B) 20%
    (C) 51% (D) 10%

16. The percent of glycolipid present in lipid bilayer is
    (A) 20% (B) 45%
    (C) 5% (D) 26%

17. The percent of cholesterol present in lipid bilayer is
    (A) 20% (B) 60%
    (C) 46% (D) 6%

18. The structure of the plasma membrane is best described using a structural model called
    (A) Fluid mosaic model (B) Watson and Crick model
    (C) Stiff flat model (D) Torso model

19. Fluid mosaic model of plasma membrane was proposed by
    (A) Singer and Nicolson (B) Watson and crick
    (C) George Mendel (D) David Robertson

20. Function of membrane protein is/are
    (A) They act as receptor
    (B) Transport substance across the membrane
    (C) Some protein act as enzymes
    (D) All of the above

21. The head present in phospholipid molecule is termed as
    (A) Polar (B) Non polar
    (C) Neutral (D) amphiphilic

22. The tail present in phospholipid molecule is called
    (A) Non polar (B) Polar
    (C) Neutral (D) Amphiphilic

23. Which of the following is lipid soluble molecules which is freely passes through plasma membrane?
    (A) Glucose (B) Steroids
    (C) Electrolyte (D) Urea

24. Which of the following is an example of water-soluble substance which is not freely passes through plasma membrane?
    (A) Glucose (B) Carbon dioxide
    (C) Steroids (D) Oxygen

25. An example of fat-soluble substance is/are
    (A) Oxygen (B) Carbon dioxide
    (C) Steroid (D) All of the above

26. The head part of phospholipid is of following nature
    (A) Hydrophilic (B) Hydrophobic
    (C) Amphiphilic (D) None of the above

27. The tail part of phospholipid is of following nature
    (A) Hydrophobic (B) Hydrophilic
    (C) Amphiphilic (D) None of the above

28. The hydrophilic layer is water loving and are polar in nature
    (A) True (B) False

29. The hydrophobic layer is water hating and are nonpolar in nature
    (A) True (B) False

30. Which of the following is not an example of water-soluble substance?
    (A) Glucose (B) Urea
    (C) Steroid (D) Electrolyte

31. The glycolipid means
    (A) The lipid attached with carbohydrate group
    (B) The lipid attached with protein group
    (C) The lipid attached with amino acid group
    (D) The protein attached with carbohydrate

32. Which part of a cell act as barrier and allow only selected substance can pass through it
    (A) Plasma membrane (B) Cytoplasm
    (C) Nucleus (D) Ribosomes

33. Ion channels are located in
    (A) Ribosomes (B) Nucleus
    (C) Mitochondria (D) Plasma membrane

34. Which channel is present in plasma membrane?
    (A) Potassium channel (B) Calcium channel
    (C) Sodium channel (D) All of the above

35. Receptor is composed of
    (A) Lipid (B) Protein
    (C) Carbohydrate (D) Fat

36. The substance moves inside the cell to support the cell's metabolic reaction
    (A) Nutrients (B) Water
    (C) Electrolytes (D) All of the above

37. An example of unwanted substance which move out of the cell is/are
    (A) Carbon dioxide (B) Urea
    (C) Nitrogenous compounds (D) All of the above

38. The transport mechanism can be classified into
    (A) Passive transport (B) Active transport
    (C) Both (A) and (B) (D) None of the above

39. The movement of substances along the concentration gradient from the region of higher concentration to lower concentration without using energy is called
    (A) Passive transport (B) Osmosis
    (C) Active transport (D) Endocytosis

40. Which of the following is a type of diffusion?
    (A) Simple diffusion (B) Facilitated diffusion
    (C) Both (A) and (B) (D) None of the above

41. Which transport mechanism follows concentration gradient phenomenon
    (A) Passive transport (B) Active transport
    (C) Endocytosis (D) Pinocytosis

42. The process of movement of chemical substance from an area of higher concentration to an area of lower concentration until it reaches equilibrium is called
    (A) Simple diffusion (B) Facilitated diffusion
    (C) Osmosis (D) Phagocytosis

43. Simple diffusion occurs mainly in
    (A) Gases (B) Liquid
    (C) Solution (D) All of the above

44. Transfer of oxygen from lungs into body is an example of
    (A) Facilitated diffusion (B) Osmosis
    (C) Simple diffusion (D) None of the above

45. The substance which is transfer through simple diffusion is/are
    (A) Oxygen (B) Carbon dioxide
    (C) Alcohol (D) All of the above

46. The electrolytes diffusion through the protein layer of the plasma membrane as some integral protein channel
    (A) $K^+$ (B) $Na^+$
    (C) $Cl^-$ (D) All of the above

47. Which of the following is water - soluble material and can cross the membrane by passing through water - filled channels?
    (A) Oxygen (B) Sodium
    (C) Fatty acid (D) Steroids

48. Which of the following is lipid - soluble material and can cross the membrane by dissolving in the lipid part of the membrane?
    (A) Sodium (B) Potassium
    (C) Calcium (D) Fatty acid

49. The passive process is used by the substance that are unable to diffuse through the semipermeable membrane is
    (A) Facilitated diffusion (B) Osmosis
    (C) Bulk transport (D) Endocytosis

50. Passive transport mechanism is
    (A) Osmosis (B) Facilitated diffusion
    (C) Simple diffusion (D) All of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-04)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = Cells | 26 | A = Hydrophilic |
| 02 | A = Tissue | 27 | A = Hydrophobic |
| 03 | B = Robert Hooke | 28 | A = True |
| 04 | C = Cytology | 29 | A = True |
| 05 | D = All of the Above | 30 | C = Steroids |
| 06 | A = Zygote | 31 | A = The Lipid Attached with carbohydrate group |
| 07 | B = Zygote | 32 | A = Plasma membrane |
| 08 | A = Unicellular Organism | 33 | D = Plasma Membrane |
| 09 | A = Plasma Membrane | 34 | D = All of the Above |
| 10 | A = 07 to 10nm | 35 | B = Proteins |
| 11 | D = All of the Above | 36 | D = All of the Above |
| 12 | A = Plasma Membrane | 37 | D = All of the Above |
| 13 | C = Both A and B | 38 | C = Both A and B |
| 14 | D = All of the Above | 39 | A = Passive Transport |
| 15 | A = 75 % | 40 | C = Both A and B |
| 16 | C = 5% | 41 | A = Passive Transport |
| 17 | A = 20% | 42 | A = Simple Diffusion |
| 18 | A = Fluid Mosaic Model | 43 | D = All of the Above |
| 19 | A = Singer and Nicolson | 44 | C = Simple Diffusion |
| 20 | D = All of the Above | 45 | D = All of the Above |
| 21 | A = Polar | 46 | D = All of the Above |
| 22 | A = non-Polar | 47 | B = Sodium |
| 23 | B = Steroids | 48 | D = Fatty Acids |
| 24 | A = Glucose | 49 | A = Facilitated Diffusion |
| 25 | D = All of the Above | 50 | D = All of the Above |

## Part-05

1. The movement of solvent from an area of lower concentration to higher concentration through semipermeable membrane is called
   (A) Osmosis (B) Diffusion
   (C) Facilitated diffusion (D) Bulk transport

2. Osmosis is a type of
   (A) Passive transport (B) Active transport
   (C) Endocytosis (D) Exocytosis

3. Osmotic pressure of solution is directly proportional to
   (A) Concentration of solution (B) Temperature
   (C) Lowering of vapour pressure (D) All of the above

4. If RBC is placed in a solution, where the salt concentration outside the RBC is equals to the salt concentration inside the RBC then the solution is called as
   (A) Isotonic solution (B) Hypertonic solution
   (C) Hypotonic solution (D) Monotonic solution

5. RBC is placed in a solution in which no change observed in the shape of RBC is called
   (A) Hypertonic solution (B) Hypotonic solution
   (C) Isotonic solution (D) Monotonic solution

6. The concentration of sodium chloride in isotonic solution is
   (A) 0.9 % w/v (B) 0.09 % w/v
   (C) 0.1 % w/v (D) 1.9 % w/v

7. When RBC is placed in hypotonic solution, which changes is occurred
   (A) Swelling of RBC (B) Shrinking of RBC
   (C) No change observed in RBC (D) None of the above

8. If RBC is placed in a solution where the water molecules are in higher concentration outside the RBC, then the solution is called
   (A) Hypertonic solution (B) Hypotonic solution
   (C) Isotonic solution (D) Monotonic solution

9. When RBC is placed in hypertonic solution which changes will occur
   (A) Swelling of RBC (B) Shrinking of RBC
   (C) No change observed in RBC (D) None of the above

10. If RBC is placed in a solution where water molecules are in lower concentration outside the RBC, then the solution is called
   (A) Hypertonic solution (B) Hypotonic solution
   (C) Isotonic solution (D) Monotonic solution

11. Factor affecting the rate of diffusion is/are
   (A) Concentration gradient (B) Temperature
   (C) Surface area (D) All of the above

12. The greater the concentration gradient the rate of diffusion become
   (A) Higher (B) Lower
   (C) No change (D) None of the above

13. The higher the temperature the rate of diffusion become
   (A) Decrease (B) Increase
   (C) No change (D) None of the above

14. Rate of diffusion is inversely proportional to the
   (A) Concentration gradient (B) Size of molecule
   (C) Temperature (D) Surface area

15. The movement of the substance against the concentration gradient from lower concentration to higher concentration is called
   (A) Passive transport (B) Active transport
   (C) Osmosis (D) Facilitated transport

16. Which process require energy to move the solutes across the membrane against the concentration gradient
   (A) Active transport (B) Passive transport
   (C) Osmosis (D) Facilitated diffusion

17. Type of active transport
   (A) Primary active transport
   (B) Secondary active transport
   (C) Both (A) and (B)
   (D) None of the above

18. Ions that are actively transported across the plasma membrane
    (A) $Na^+$ (B) $H^+$
    (C) $K^+$ (D) All of the above

19. In which transport system energy is obtained directly from the hydrolysis of ATP
    (A) Primary active transport
    (B) Secondary active transport
    (C) Pinocytosis
    (D) Phagocytosis

20. The pump responsible for the distribution of $Na^+$ and $K^+$ ions across the plasma membrane is
    (A) Calcium ATPase pump
    (B) Sodium potassium ATPase pump
    (C) Hydrogen potassium ATPase pump
    (D) Chloride ATPase pump

21. The mechanism maintains the anequal concentration of sodium and potassium ions on either side of the plasma membrane is
    (A) Active transport mechanism
    (B) Passive transport mechanism
    (C) Pinocytosis
    (D) Phagocytosis

22. Major intracellular cation is
    (A) Potassium (B) Sodium
    (C) Calcium (D) Chloride

23. Major extracellular cation is
    (A) Sodium (B) Calcium
    (C) Chloride (D) Potassium

24. The ions much higher inside the cell than out side
    (A) Sodium (B) Potassium
    (C) Calcium (D) Chloride

25. The ions much higher out the cell then inside
    (A) Sodium (B) Calcium
    (C) Potassium (D) Chloride

26. In sodium potassium pump how much ATP energy required
    (A) 10% (B) 30%
    (C) 80% (D) 5%

27. How many sodium ions can pump towards the out of the cell?
    (A) Two (B) Three
    (C) Four (D) One

28. How many potassium ions pumps towards the inside the cell?
    (A) Two (B) One
    (C) Three (D) Four

29. Which enzyme activate the binding of $Na^+$ and $K^+$ ions which trigger the hydrolysis of ATP into ADP
    (A) ATPase (B) Transferase
    (C) Lyase (D) Ligase

30. The transport in which the transporter protein simultaneously binds to substance and transports the other substance against its concentration gradient is
    (A) Secondary active transport (B) Primary active transport
    (C) Pinocytosis (D) Passive diffusion

31. Type of secondary active transport
    (A) Sodium cotransport (B) Sodium counter transport
    (C) Both (A) and (B) (D) None of the above

32. In which prosses the transporter moves $Na^+$ and another substance in the same direction
    (A) Sodium counter transport (B) Sodium cotransport
    (C) Facilitated diffusion (D) Osmosis

33. Symporter involve in
    (A) Sodium cotransport (B) Sodium counter transport
    (C) Endocytosis (D) Osmosis

34. $Na^+$/ glucose and $Na^+$/ amino acid transporter is an example of
    (A) Secondary active transport (B) Primary active transport
    (C) Facilitated diffusion (D) Simple diffusion

35. $Na^+$ / $H^+$ antiporter is an example of
    (A) Primary active transport
    (B) Secondary active transport
    (C) Facilitated diffusion
    (D) Simple diffusion

36. The process in which the transporter moves $Na^+$ and another substance in the opposite direction across the membrane is called
    (A) Sodium counter transport
    (B) Sodium cotransport
    (C) Osmosis
    (D) Facilitated

37. Antiporters involve in
    (A) Sodium cotransport
    (B) Sodium counter transport
    (C) Simple diffusion
    (D) Phagocytosis

38. Which transporter regulates the pH of the cytoplasm
    (A) $Na^+$/ $H^+$ counter - transport
    (B) $Na^+$/ $Ca^{2+}$ counter - transport
    (C) $Na^+$/ glucose symporter
    (D) $Na^+$/ amino acid symporter

39. $Na^+$/ $Ca^{2+}$ transporter is an example of
    (A) Sodium cotransporter
    (B) Sodium counter transporter
    (C) Facilitate diffusion
    (D) Osmosis

40. Which substance transported by bulk transport mechanism
    (A) Bacteria
    (B) Red blood cells
    (C) Macromolecule
    (D) All of the above

41. The process in which large molecules enter into cells
    (A) Simple diffusion
    (B) Endocytosis
    (C) Osmosis
    (D) Facilitated diffusion

42. The macromolecules that cannot cross the plasma membrane and are transported by
    (A) Pinocytosis
    (B) Phagocytosis
    (C) Both (A) and (B)
    (D) None of the above

43. Which of the following is types of endocytosis?
    (A) Pinocytosis (B) Phagocytosis
    (C) Receptor mediated endocytosis (D) All of the above

44. Which process is also called "cell drinking"?
    (A) Pinocytosis
    (B) Phagocytosis
    (C) Osmosis
    (D) Receptor mediated endocytosis

45. Which process involves the uptake of tiny droplets of solutes dissolved in the extracellular fluid
    (A) Phagocytosis (B) Pinocytosis
    (C) Receptor mediated endocytosis (D) Exocytosis

46. Which process is also called "cell eating"?
    (A) Pinocytosis (B) Phagocytosis
    (C) Receptor mediated endocytosis (D) Simple diffusion

47. Phagocytes includes
    (A) Neutrophils (B) Monocytes
    (C) Tissue macrophages (D) All of the above

48. The area of the plasma membrane folds inwards around the droplets to form a vesicle the vesicle is called
    (A) Endosome (B) Liposome
    (C) Noisome (D) Centrosome

49. The cells in the body show phagocytosis and the cells is termed as
    (A) Phagocytes (B) Lipocyte
    (C) Adipocyte (D) Osteocyte

50. Process mainly engulf and destroy foreign substances and protect the body from disease
    (A) Pinocytosis
    (B) Phagocytosis
    (C) Facilitate diffusion
    (D) Receptor – mediated endocytosis

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-05)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = Osmosis | 26 | B = 30% |
| 02 | A = Passive Transport | 27 | B = Three |
| 03 | D = All of the Above | 28 | A = Two |
| 04 | A = Isotonic Solution | 29 | A = ATPase |
| 05 | C = Isotonic Solution | 30 | A = Secondary Active Transport |
| 06 | A = 0.9 %W/V | 31 | C = Both A and B |
| 07 | A = Swelling of RBC | 32 | B = Sodium Co-transport |
| 08 | B = Hypotonic Solution | 33 | A = Sodium Co-transport |
| 09 | B = Shrinking of RBC | 34 | A = Secondary Active Transport |
| 10 | A = Hypertonic Solution | 35 | B = Secondary Active Transport |
| 11 | D = All of the Above | 36 | A = Sodium Counter Transport |
| 12 | A = Higher | 37 | B = Sodium Counter Transport |
| 13 | B = Increase | 38 | A = $Na^+/H^+$ Counter Transport |
| 14 | B = Size of Molecule | 39 | B = Sodium Counter Transport |
| 15 | B = Active Transport | 40 | D = All of the Above |
| 16 | A = Active Transport | 41 | B = Endocytosis |
| 17 | C = Both A and B | 42 | C = Both A and B |
| 18 | D = All of the above | 43 | D = All of the Above |
| 19 | A = Primary Active Transport | 44 | A = Pinocytosis |
| 20 | B = Sodium Potassium ATPase Pump | 45 | B = Pinocytosis |
| 21 | A = Active Transport Mechanism | 46 | B = Phagocytosis |
| 22 | A = Potassium | 47 | D = All of the Above |
| 23 | A = Sodium | 48 | A = Endosome |
| 24 | B = Potassium | 49 | A = Phagocytes |
| 25 | A = Sodium | 50 | B = Phagocytosis |

## Part-06

1. In phagocytosis process which particle are taken into the cell
   (A) Cell fragments
   (B) Foreign material
   (C) Microbes
   (D) All of the above

2. The process by which the ligands bind to the receptors present on the plasma membrane and are taken inside the cell is called
   (A) Receptor mediated endocytosis
   (B) Receptor mediated exocytosis
   (C) Pinocytosis
   (D) Phagocytosis

3. By which process hormones and vitamins uptake into the cell take place
   (A) Pinocytosis
   (B) Phagocytosis
   (C) Receptor mediated endocytosis
   (D) Exocytosis

4. Clathrin is a receptor protein which involved in
   (A) Receptor mediated endocytosis
   (B) Pinocytosis
   (C) Exocytosis
   (D) Phagocytosis

5. The process in which ligand receptor complexes move across the cell inside the vesicles and ejected on the opposite side is
   (A) Transcytosis
   (B) Exocytosis
   (C) Pinocytosis
   (D) Phagocytosis

6. The process by which substance move out of a cell
   (A) Exocytosis
   (B) Endocytosis
   (C) Pinocytosis
   (D) Phagocytosis

7. Exocytosis involved the release of secretory substance like
   (A) Hormones
   (B) Digestive enzyme
   (C) Neurotransmitter
   (D) All of the above

8. The substance secreted and are store in membrane - enclosed vesicles called
   (A) Transport vesicle (B) Secretory vesicle
   (C) Inhibitory vesicle (D) Excitatory vesicle

9. The fluid portion present inside the cell is called
   (A) Cytoplasm (B) Mitochondria
   (C) Nucleus (D) Lysosome

10. Cytoplasm is divided into which of the following components
   (A) Cytosol (B) Organelles
   (C) Both (A) and (B) (D) None of the above

11. Cytosol is the watery fluid present in
   (A) Cytoplasm (B) Mitochondria
   (C) Plasma membrane (D) Lysosome

12. The amount of water present in cytosol is
   (A) 10-20% (B) 75-90%
   (C) 35-50% (D) 50-70%

13. Cytosol contains suspended substance such as
   (A) Ions (B) glucose
   (C) amino acid (D) All of the above

14. Which of the following is organelle of cell?
   (A) Golgi apparatus (B) Lysosome
   (C) Mitochondria (D) All of the above

15. The type of organelle presents in cytoplasm
   (A) Non membranous organelles (B) Membranous organelles
   (C) Both (A) and (B) (D) None of the above

16. The organelles lack of membrane and are in direct contact with the cytosol is called
   (A) Non membranous organelles (B) Membranous organelles
   (C) Filamentous organelles (D) None of the above

17. Which of the following is an example of non membranous organelle?
   (A) Ribosomes (B) Mitochondria
   (C) Lysosomes (D) Golgi apparatus

18. Which of the following is not an organelle of membranous organelles?
    (A) Mitochondria (B) Cytoskeleton
    (C) Lysosome (D) Golgi apparatus

19. The organelles are surrounded by the lipid bilayer membrane is called
    (A) Membranous organelles
    (B) Non membranous organelles
    (C) Filamentous organelles
    (D) None of the above

20. An example of membranous organelles is/are
    (A) Lysosomes (B) Mitochondria
    (C) Golgi apparatus (D) All of the above

21. Aerobic respiration take place in
    (A) Mitochondria (B) Ribosome
    (C) Lysosome (D) Golgi apparatus

22. Which organelle produces energy in the form of ATP
    (A) Lysosome (B) Mitochondria
    (C) Ribosome (D) Endoplasmic reticulum

23. Cristae present in
    (A) Cytoplasm (B) Mitochondria
    (C) Lysosome (D) Ribosome

24. Most of the ATP generate in which organelle of cell
    (A) Cytoplasm (B) Endoplasmic reticulum
    (C) Lysosomes (D) Mitochondria

25. Which of the following is ATP generation process occurs in mitochondria?
    (A) Citric acid cycle (B) Electron transport system
    (C) Both (A) and (B) (D) None of the above

26. The “Power house of the cell” is
    (A) Mitochondria (B) Lysosome
    (C) Ribosome (D) Cytoplasm

27. Larger number of mitochondria are present in
    (A) Muscles (B) Liver
    (C) Kidneys (D) All of the above

28. Lysosomes are formed by
    (A) Golgi apparatus (B) Ribosome
    (C) Endoplasmic reticulum (D) Cytoplasm

29. Which enzymeis found in lysosomes
    (A) Lipases (B) Nucleases
    (C) Proteases (D) All of the above

30. The molecule breakdown by the lysosomes is
    (a) DNA (b) RNA
    (c) Protein (d) All of the above

31. Lysosomal enzymes are also called
    (A) Lysozymes (B) Lipozymes
    (C) Ribozymes (D) Liozymes

32. Autophagy is the process of
    (A) Self - eating (B) Self - drinking
    (C) Self - repairing (D) Self - death

33. Which of the following is the function of lysosomes?
    (A) Autolysis (B) Digestion
    (C) Autophagy (D) All of the above

34. Which organelle is called "suicidal bag" of cell?
    (A) Ribosome (B) Mitochondria
    (C) Lysosome (D) Cytoplasm

35. Which of the following is hydrolytic enzyme?
    (A) Phosphatase (B) Lipase
    (C) Protease (D) All of the above

36. Lysosomes that have not entered into the digestive event are called
    (A) Primary lysosomes (B) Secondary lysosomes
    (C) Tertiary lysosomes (D) None of the above

37. Lysosomes undergo digestion is called
    (A) Secondary lysosomes (B) Primary lysosomes
    (C) Tertiary lysosomes (D) None of the above

38. Which organelle contain enzymes which involved in lipid metabolism
    (A) Peroxisomes (B) Cytoplasm
    (C) Nucleus (D) Endoplasmic reticulum

39. Peroxisomes contain oxidative enzymes that are capable of oxidising of various organic substance such as
    (A) Amino acids (B) Fatty acids
    (C) Alcohol (D) All of the above

40. Which by product is generated in the oxidation reaction in peroxisomes
    (A) Dihydrogen trioxide (B) Hydrogen peroxide
    (C) Nitrogen dioxide (D) Carbon trioxide

41. The series of interconnecting membranous canals in the cytoplasm is called
    (A) Endoplasmic reticulum (B) Mitochondria
    (C) Lysosome (D) Ribosome

42. Cisternae is a flattened sacs or tubules which is found in
    (A) Ribosomes (B) Endoplasmic reticulum
    (C) Cytoplasm (D) Nucleus

43. Which of the following forms a link between the nucleus and plasma membrane?
    (A) Golgi apparatus (B) Ribosomes
    (C) Lysosomes (D) Endoplasmic reticulum

44. Which of the following is the type of endoplasmic reticulum?
    (A) Rough endoplasmic reticulum
    (B) Smooth endoplasmic reticulum
    (C) Both (A) and (B)
    (D) None of the above

45. The outer surface of rough endoplasmic reticulum is studded with
    (A) Ribosomes (B) Lysosomes
    (C) Peroxisomes (D) Mitochondria

46. Function of endoplasmic reticulum is/are
    (A) Synthesis of lipid
    (B) Synthesis of steroid hormones
    (C) Detoxification of some drug
    (D) All of the above

47. In which endoplasmic reticulum protein is synthesized
    (A) Rough endoplasmic reticulum
    (B) Smooth endoplasmic reticulum
    (C) Both (A) and (B)
    (D) None of the above

48. Smooth endoplasmic reticulum does not have ……...on the outer surface of its membrane
    (A) Ribosome
    (B) Lysosome
    (C) Nucleolus
    (D) Peroxisome

49. Smooth endoplasmic reticulum synthesis the
    (A) Lipid
    (B) Estrogens
    (C) Testosterone
    (D) All of the above

50. Which of the following is associated with the detoxification of certain toxic substances and drugs?
    (A) Smooth endoplasmic reticulum
    (B) Rough endoplasmic reticulum
    (C) Nucleus
    (D) Ribosome

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-06)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | D = All of the Above | 26 | A = Mitochondria |
| 02 | A = Receptor mediated Endocytosis | 27 | D = All of the Above |
| 03 | C = Receptor mediated Endocytosis | 28 | A = Golgi Apparatus |
| 04 | A = Receptor mediated Endocytosis | 29 | D = All of the Above |
| 05 | A = Transcytosis | 30 | D = All of the Above |
| 06 | A = Exocytosis | 31 | A = Lysozyme |
| 07 | D = All of the Above | 32 | A = Self Eating |
| 08 | B = Secretory Vesicle | 33 | D = All of the Above |
| 09 | A = Cytoplasm | 34 | C = Lysosome |
| 10 | C = Both A and B | 35 | D = All of the Above |
| 11 | A = Cytoplasm | 36 | A = Primary Lysosome |
| 12 | B = 75-90% | 37 | A = Secondary Lysosome |
| 13 | D = All of the Above | 38 | A = Peroxisome |
| 14 | D = All of the Above | 39 | D = All of the Above |
| 15 | C = Both A and B | 40 | B = Hydrogen Peroxide |
| 16 | A = Non-Membranous Organelles | 41 | A = Endoplasmic Reticulum |
| 17 | A = Ribosome | 42 | B = Endoplasmic Reticulum |
| 18 | B = Cytoskeleton | 43 | D = Endoplasmic Reticulum |
| 19 | A = Membranous Organelles | 44 | C = Both A and B |
| 20 | D = All of the above | 45 | A = Ribosomes |
| 21 | A = Mitochondria | 46 | D = All of the Above |
| 22 | B = Mitochondria | 47 | A = Rough Endoplasmic Reticulum |
| 23 | B = Mitochondria | 48 | A = Ribosome |
| 24 | D = Mitochondria | 49 | D = All of the Above |
| 25 | C = Both A and B | 50 | A = Smooth Endoplasmic Reticulum |

## Part-07

1. Ribosomes is composed of which type of RNA
   (A) rRNA (B) mRNA
   (C) tRNA (D) none of the above

2. Ribosomes is the site of synthesis for
   (A) Protein (B) Lipid
   (C) Fat (D) Vitamin

3. Which organelle is called "Protein Factories" of the cell?
   (A) Ribosomes (B) Lysosomes
   (C) Mitochondria (D) Nucleus

4. Golgi apparatus is also called as
   (A) Golgi body (B) Golgi complex
   (C) Both (A) and (B) (D) None of the above

5. Golgi apparatus consist of flattened membranous sacs called
   (A) Cisternae (B) Sisternae
   (C) Cristae (D) Syristae

6. The major function of Golgi apparatus is/are
   (A) Processing of protein
   (B) Packaging of protein
   (C) Delivering of protein to different part of the cell
   (D) All of the above

7. The cytoskeleton is composed of protein fibers which are
   (A) Microfilaments (B) Intermediate filaments
   (C) Microtubules (D) All of the above

8. Thinnest fibers of cytoskeleton are
   (A) Microfilaments (B) Intermediate filaments
   (C) Microtubules (D) Macrotubules

9. The microfilaments provide
   (A) Structural support
   (B) Maintain shape of cell
   (C) Responsible for cellular movements
   (D) All of the above

10. Which cytoskeleton is thicker than microtubules?
   (A) Microfilaments (B) Intermediate filaments
   (C) Macrotubules (D) None of the above

11. Most of the microfilaments are composed of the protein which is
   (A) Actin (B) Elastin
   (C) Collagen (D) Keratin

12. Largest cytoskeletal component is
   (A) Microtubules (B) Microfilament
   (C) Intermediate filaments (D) Macrotubules

13. Microtubules mainly composed of protein, which is called as
   (A) Tubulin (B) Collagen
   (C) Keratin (D) Elastin

14. Function of microtubules is/are
   (A) They give structural strength to cell
   (B) Responsible for movement of the organelles within the cell
   (C) Chromosomes during cell division
   (D) All of the above

15. Centrosomes located near the
   (A) Nucleus (B) Ribosomes
   (C) Mitochondria (D) Golgi apparatus

16. Centrosome consists of which of the following component
   (A) Pericentriolar area (B) Centrioles
   (C) Both (A) and (B) (D) None of the above

17. During cell division pericentriolar area is responsible for the formation of
   (A) Mitotic spindle (B) Meiotic spindle
   (C) Bipolar spindle (D) Mother centriole

18. How many groups of tubules consist in each centrosome?
    (A) Nine (B) Seven
    (C) Eleven (D) Five

19. The motile projections of the plasma membrane that consists of microtubules called
    (A) Cell extension (B) Cell expansion
    (C) Cell division (D) Cell separation

20. The small, hair – like projections that extend from the cell surface is called
    (A) Cilia (B) Flagella
    (C) Microvilli (D) Pili

21. Mostly cilia are present in
    (A) Lungs (B) Heart
    (C) Kidney (D) Liver

22. The long, whip- like projections that move an entire cell called
    (A) Flagella (B) Cilia
    (C) Microvilli (D) Pili

23. Microvilli is the absorptive cells that found in the line of
    (A) Small intestine (B) Lungs
    (C) Liver (D) Kidney

24. Function of microvilli in small intestine is/are
    (A) Increase surface area
    (B) Make structure of the cells
    (C) Maximizing the absorption of nutrient
    (D) All of the above

25. Tail of spermatozoa is an example of
    (A) Flagella (B) Cilia
    (C) Microvilli (D) None of the above

26. Which organelle present in the center of the cell
    (A) Mitochondria (B) Ribosomes
    (C) Lysosome (D) Nucleus

27. The cell which does not contain nucleus
    (A) WBC (B) Nerve cell
    (C) Mature RBC (D) Muscle cell

28. Which of the following is the largest organelle of cell?
    (A) Nucleus (B) Mitochondria
    (C) Golgi apparatus (D) Ribosome

29. The nucleus is covered by a double layered membrane called
    (A) Nuclear membrane (B) Serous membrane
    (C) Synovial membrane (D) Mucous membrane

30. The outer layer of nuclear membrane is continuous with the
    (A) Endoplasmic reticulum (B) Golgi apparatus
    (C) Ribosome (D) Mitochondria

31. The movement of substance between nucleus and cytoplasm is regulated by
    (A) Nuclear pore (B) Chromatin
    (C) Nucleoplasm (D) Chromosome

32. Which organelle contain genetic materials contain in form of DNA
    (A) Nucleus (B) Cytoplasm
    (C) Golgi apparatus (D) Endoplasmic reticulum

33. The nucleus membrane encloses various structure which include
    (A) Nucleoplasm (B) Nucleoli
    (C) Both (A) and (B) (D) None of the above

34. The fluid medium of nucleus is
    (A) Nucleoplasm (B) Nucleoli
    (C) Nuclear membrane (D) Nuclear pore

35. The spherical bodies present inside the nucleus is called
    (A) Nucleoli (B) Nucleoplasm
    (C) Chromatin (D) Nuclear pore

36. Nucleoli are composed of clusters of
    (A) DNA (B) RNA
    (C) Proteins (D) All of the above

37. Which of the following is not a component of nucleus?
    (A) Chromosomes (B) Nuclear membrane
    (C) Nucleolus (D) Mitochondria

38. Hereditary units of cell are called
    (A) Genes (B) Chromosomes
    (C) DNA (D) RNA

39. Thread - like linear strand of DNA is called
    (A) Chromosomes (B) Genes
    (C) RNA (D) Protein

40. How many numbers of chromosomes contain in the cells of human body?
    (A) 46 (B) 40
    (C) 42 (D) 48

41. How many pair of chromosomes contain in the cells of human body?
    (A) 21 pair (B) 23 pair
    (C) 12 pair (D) 26 pair

42. Function of nucleus is/ are
    (A) Control activities of the cell
    (B) Contains hereditary material that is pass from one generation to next
    (C) Facilitate protein synthesis
    (D) All of the above

43. The process by which cell divides into two and duplicate its genetic material is called
    (A) Cell division (B) Cell separation
    (C) Cell extension (D) Cell expansion

44. Types of cell division are
    (A) Somatic cell division (B) Reproductive cell division
    (C) Both (A) and (B) (D) None of the above

45. In somatic cell division, cell undergoes a nuclear division called
    (A) Mitosis (B) Meiosis
    (C) Binary fission (D) Cytosis

46. The special kind of two – step division is called
    (A) Meiosis (B) Mitosis
    (C) Binary fission (D) Cytosis

47. Which cell division is responsible for the formation of gametes?
    (A) Somatic cell division (B) Reproductive cell division
    (C) Both (A) and (B) (D) None of the above

48. The main stage in somatic cell division is
    (A) Interphase (B) Mitosis
    (C) Cytokinesis (D) All of the above

49. Which of the following is not subphase of interphase?
    (A) $G_1$ phase (B) S phase
    (C) $G_2$ phase (D) Telophase II

50. Primary growth phase of cell division is
    (A) S phase (B) $G_1$ phase
    (C) $G_2$ phase (D) Prophase II

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-07)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = r-RNA | 26 | D = Nucleus |
| 02 | A = Protein | 27 | C = Mature RBC |
| 03 | A = Ribosome | 28 | A = Nucleus |
| 04 | C = Both A and B | 29 | A = Nuclear Membrane |
| 05 | A = Cisternae | 30 | A = Endoplasmic Reticulum |
| 06 | D = All of the Above | 31 | A = Nuclear Pore |
| 07 | D = All of the Above | 32 | A = Nucleus |
| 08 | A = Microfilaments | 33 | C = Both A and B |
| 09 | D = All of the Above | 34 | A = Nucleoplasm |
| 10 | B = Intermediate Filaments | 35 | A = Nucleoli |
| 11 | A = Actin | 36 | D = All of the Above |
| 12 | A = Microtubules | 37 | D = Mitochondria |
| 13 | A = Tubulin | 38 | A = Genes |
| 14 | D = All of the Above | 39 | A = Chromosome |
| 15 | A = Nucleus | 40 | A = 46 |
| 16 | C = Both A and B | 41 | B = 23 Pair |
| 17 | A = Mitotic Spindle | 42 | D = All of the Above |
| 18 | A = Nine | 43 | A = Cell Division |
| 19 | A = Cell Extension | 44 | C = Both A and B |
| 20 | A = Cilia | 45 | A = Mitosis |
| 21 | A = Lungs | 46 | A = Meiosis |
| 22 | A = Flagella | 47 | B = Reproductive Cell Division |
| 23 | A = Small Intestine | 48 | D = All of the Above |
| 24 | D = All of the Above | 49 | D = Telophase II |
| 25 | A = Flagella | 50 | B = $G_1$ Phase |

## Part-08

1. The interval between the G1 and G2 phase is
   (A) S phase (B) Anaphase
   (C) Telophase (D) Cytokinesis

2. The chromosome resembles a fine network of dark thread called
   (A) Chromatin (B) Cristae
   (C) Cisternae (D) Cytoskeleton

3. G1 phase is also known as
   (A) First gap phase (B) Second gap phase
   (C) Third gap phase (D) Fourth gap phase

4. In which phase replication of centrosome begin
   (A) G2 phase (B) S- phase
   (C) Telophase (D) Anaphase

5. In which phase the chromosomes replicate and forms two identical copies of DNA
   (A) S-phase (B) G2 phase
   (C) G1 phase (D) None of the above

6. Which of the following is the final phase for the preparation of cell division?
   (A) G2 phase (B) S phase
   (C) G1 phase (D) Telophase

7. In which phase the centrosome finishes its replication
   (A) S- phase (B) G1 phase
   (C) G2 phase (D) Anaphase

8. How many identical nuclei is formed as a result of mitosis?
   (A) Two (B) Three
   (C) One (D) Four

9. Which of the following is not stage of mitosis?
   (A) Prophase (B) Metaphase
   (C) Anaphase (D) G1 phase

10. Longer phase of cell cycle is
    (A) Interphase (B) Anaphase
    (C) Telophase (D) Metaphase

11. In prophase the two chromatids are joined to each other at
    (A) Centromere (B) Centrosome
    (C) Spindle fibres (D) Cytoskeleton

12. In prophase the mitotic apparatus appears and consists
    (A) Three centriole (B) Two centrioles
    (C) Four centrioles (D) One centriole

13. In which phase nuclear envelope disappears
    (A) Prophase (B) Anaphase
    (C) Metaphase (D) Telophase

14. Mitotic spindle disappears in which of the following phase
    (A) Prophase (B) Telophase
    (C) Anaphase (D) Metaphase

15. In which phase chromatids align on the centre of the spindle, attached by their centromere
    (A) Metaphase (B) Telophase
    (C) Anaphase (D) Prophase

16. In telophase which of the following activities occurs
    (A) Mitotic spindle disappears (B) The chromosomes uncoil
    (C) Nuclear envelope reforms (D) All of the above

17. Which of the following is shortest stage of mitosis?
    (A) Anaphase (B) Telophase
    (C) Prophase (D) Metaphase

18. In which phase the actual separation of the cell into two new daughter cell takes place
    (A) Cytokinesis (B) S-phase
    (C) Prophase (D) Anaphase

19. In which organ reproductive cell division by meiosis occurs
    (A) Female gonads or ovaries (B) Male gonads or testis
    (C) Both (A) and (B) (D) None of the above

20. Reproductive cell division result in the production of gametes that contain half of genetic material i.e.
    (A) 23 chromosomes (B) 21 chromosomes
    (C) 20 chromosomes (D) 26 chromosomes

21. During meiosis the chromosomes reduced in number is called
    (A) Haploid (B) Diploid
    (C) Triploid (D) Biploid

22. Which of the following is somatic cells which contain 23 pair of chromosomes?
    (A) Brain cells (B) Stomach cells
    (C) Kidney cells (D) All of the above

23. The chromosomes that make up each pair and they contain similar genes arranged in the same order is called
    (A) Homologous chromosomes (B) Haploid
    (C) Autosome (D) Chromosome

24. Sex chromosomes is designated as
    (A) X (B) Y
    (C) Both (A) and (B) (D) None of the above

25. In female the homologous pair of sex chromosomes consist of
    (A) Two X chromosomes (B) One X chromosomes
    (C) Two Y chromosomes (D) Four Y chromosomes

26. In male the homologous pair of sex chromosomes consist of
    (A) One X and one Y chromosomes (B) Two Y chromosomes
    (C) Two X chromosomes (D) Four X chromosomes

27. The 22 pairs of chromosomes are called
    (A) Homologous chromosomes (B) Haploid
    (C) Autosomes (D) Centromere

28. The stage of meiosis includes
    (A) Meiosis I (B) Meiosis II
    (C) Both (A) and (B) (D) None of the above

29. Which of the following is phase of meiosis I?
    (A) Prophase I (B) Metaphase I
    (C) Anaphase I (D) All of the above

30. In which stage of meiosis-I, the replication of chromosomes shorten, coil, thicken and become visible.
    (A) Prophase I (B) Metaphase I
    (C) Anaphase I (D) Telophase I

31. In which stage the nuclear membrane and nucleoli disappear
    (A) Prophase I (B) Metaphase I
    (C) Telophase I (D) Anaphase I

32. The chromosomes pair up with their homologue and are brought so close together by a process called
    (A) Synapsis (B) Cytokinesis
    (C) Autosomes (D) Tetrad

33. The pair of homologous chromosomes in which each pair contains two sister chromatids is called
    (A) Tetrad (B) Haploid
    (C) Diploid (D) Autosomes

34. The process in which the sister chromatids are so close together that they may exchange genetic material is called
    (A) Binding (B) Pairing
    (C) Crossing over (D) Joining

35. Which of the following is not a stage of meiosis I
    (A) Prophase I (B) Telophase I
    (C) Anaphase I (D) Interphase

36. In metaphase I the centromeres of the two homologous chromosomes attached to the
    (A) Microtubules (B) Microfilament
    (C) Microfilament (D) Macrotubules

37. In which phase of meiosis-I, the homologous pairs of chromosomes line along the equatorial plate of the cell
    (A) Anaphase I (B) Telophase I
    (C) Metaphase I (D) Prophase I

38. In which phase of meiosis-I the pairs of homologous chromosomes spilt up
    (A) Telophase I (B) Anaphase I
    (C) Prophase I (D) Metaphase I

39. In which phase of meiosis-I the spindle disappears and new nuclear membrane forms around each cluster of chromosomes at opposite poles
    (A) Anaphase I (B) Telophase I
    (C) Metaphase I (D) Prophase I

40. Which of the following is phase of meiosis II?
    (A) Prophase II (B) Telophase II
    (C) Anaphase II (D) All of the above

41. In which phase of meiosis II, the nuclear membrane disappears but no duplication of DNA occurs
    (A) Prophase II (B) Metaphase II
    (C) Telophase II (D) Anaphase II

42. In which phase of meiosis II, the chromosomes line up on the equatorial plate
    (A) Prophase II (B) Metaphase II
    (C) Anaphase II (D) Telophase II

43. In which phase of meiosis II, the centromeres spilt and sister chromatids separates and move towards opposite poles of the cell
    (A) Anaphase II (B) Prophase II
    (C) Telophase II (D) Metaphase II

44. In which phase of meiosis II, the spindle disappears and a new nuclear membrane form around the separated chromatids
    (A) Metaphase II (B) Telophase II
    (C) Anaphase II (D) Prophase II

45. The formation and maintenance of specialized tissues of multicellular organisms depend on the coordinated regulation of
    (A) Cell number (B) Cell morphology
    (C) Cell location (D) All of the above

46. The cell has to communicate with each other, which accomplished by a process called
    (A) Cell signalling (B) Cell replication
    (C) Cell division (D) Cell metabolism

47. The communicate between two cells in called
    (A) Intercellular signalling (B) Intracellular signalling
    (C) Extracellular signalling (D) External signalling

48. Higher organisms have to coordinate a large number of physiological activities such as
    (A) Intermediary metabolism (B) Cell growth
    (C) Cell morphology (D) All of the above

49. Which of the following is an example of extracellular signalling molecule?
    (A) Growth factors (B) Hormones
    (C) Neurotransmitters (D) All of the above

50. Which of the following is an example of chemical signalling?
    (A) Endocrine signalling (B) Autocrine signalling
    (C) Paracrine signalling (D) All of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-08)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = S Phase | 26 | A = One X and One Y Chromosome |
| 02 | A = Chromatin | 27 | C = Autosomes |
| 03 | A = First Gap Phase | 28 | C = Both A and B |
| 04 | B = S-Phase | 29 | D = All of the Above |
| 05 | A = S-Phase | 30 | A = Prophase I |
| 06 | A = $G_2$ Phase | 31 | A = Prophase I |
| 07 | C = $G_2$ Phase | 32 | A = Synapsis |
| 08 | A = Two | 33 | A = Tetrad |
| 09 | D = $G_1$ Phase | 34 | C = Crossing Over |
| 10 | A = Interphase | 35 | D = Interphase |
| 11 | A = Centromere | 36 | A = Microtubules |
| 12 | B = Two centrioles | 37 | C = Metaphase I |
| 13 | A = Prophase | 38 | B = Anaphase I |
| 14 | B = Telophase | 39 | B = Telophase I |
| 15 | A = Metaphase | 40 | D = All of the Above |
| 16 | D = All of the Above | 41 | A = Prophase II |
| 17 | A = Anaphase | 42 | B = Metaphase II |
| 18 | A = Cytokinesis | 43 | A = Anaphase II |
| 19 | C = Both A and B | 44 | B = Telophase II |
| 20 | A = 23 Chromosome | 45 | D = All of the Above |
| 21 | A = Haploid | 46 | A = Cell Signalling |
| 22 | D = All of the Above | 47 | A = Intracellular Signalling |
| 23 | A = Homologous Chromosome | 48 | D = All of the Above |
| 24 | C = Both A and B | 49 | D = All of the Above |
| 25 | A = Two X Chromosome | 50 | D = All of the Above |

## Part-09

1. The signaling in which the cell that is producing the messenger will expresses receptors on its surface so that can respond to that messenger is called
   (A) Paracrine signaling (B) Autocrine signaling
   (C) Endocrine signaling (D) Exocrine signaling

2. In which signaling the messenger molecules travel only to a short distance through the extracellular space to cells that are close proximity to the cell that is generating the message
   (A) Paracrine signaling (B) Endocrine signaling
   (C) Autocrine signaling (D) Exocrine signaling

3. The signaling in which messenger molecules reach their target cells via passage through bloodstream is called
   (A) Endocrine signaling (B) Paracrine signaling
   (C) Autocrine signaling (D) Exocrine signaling

4. How many types of cells signaling are?
   (A) Four (B) Five
   (C) Seven (D) Nine

5. Intercellular signaling controls
   (A) Growth (B) Cell division
   (C) Metabolic fluxes (D) All of the above

6. Which signaling is "self – targeting"
   (A) Autocrine signaling (B) Endocrine signaling
   (C) Paracrine signaling (D) Exocrine signaling

7. The signaling which is responsible for cells infected with virus
   (A) Endocrine signaling (B) Paracrine signaling
   (C) Autocrine signaling (D) Exocrine signaling

8. In breast cancer the progesterone has been found to act as
   (A) Endocrine signaling (B) Autocrine signaling
   (C) Paracrine signaling (D) Exocrine signaling

9. The nerve cells communicate with each other at synapses through neurotransmitter is called
   (A) Synaptic signaling (B) Autocrine signaling
   (C) Endocrine signaling (D) Direct contact signaling

10. Synaptic sign is a type of
   (A) Endocrine signaling (B) Paracrine signaling
   (C) Autocrine signaling (D) Direct contact signaling

11. Autocrine hormones or cell signal are
   (A) Growth factor (B) Cytokines
   (C) Both (A) and (B) (D) None of the above

12. The gland that produces hormones that act on their own glandular cell is called
   (A) Autocrine gland (B) Endocrine gland
   (C) Exocrine gland (D) Paracrine gland

13. Which of the following is a long-distance cell signaling?
   (A) Endocrine signaling (B) Autocrine signaling
   (C) Paracrine signaling (D) Direct contact signaling

14. In which signaling the signals travel to distant cell through circulatory system
   (A) Paracrine signaling (B) Autocrine signaling
   (C) Direct contact signaling (D) Endocrine signaling

15. Direct contact signaling is also referred as
   (A) Cell to cell signaling (B) Endocrine signaling
   (C) paracrine signaling (D) Autocrine signaling

16. The autocrine signaling involve in
   (A) Fibroblast growth factors
   (B) Heparin – binding epidermal growth factor
   (C) Angiopoietin – like protein
   (D) All of the above

17. Blood platelets secrete eicosanoids which influence their own activity is an example of
   (A) Autocrine signaling (B) Endocrine signaling
   (C) Direct contact signaling (D) Paracrine signaling

18. The release of chemokines by neutrophils which attract other cells is an example of
    (A) Paracrine signaling (B) Autocrine signaling
    (C) Exocrine signaling (D) Endocrine signaling

19. Which of the following is types of receptors?
    (A) Internal receptors (B) Cell surface receptors
    (C) Both (A) and (B) (D) None of the above

20. Internal receptors also known as
    (A) Intracellular receptors (B) Extracellular receptors
    (C) Intercellular receptors (D) Cell surface receptors

21. Internal receptors are found in
    (A) Cell surface (B) Cytoplasm
    (C) Extracellular fluids (D) Interstitial space

22. Cell surface receptors are found in
    (A) Surface of the cell (B) Cytoplasm
    (C) Extracellular fluids (D) Interstitial space

23. Cell surface receptors are also known as
    (A) Transmembrane receptor (B) Transdermal receptor
    (C) Transcellular receptor (D) Intracellular receptor

24. The self – sustaining growth of cancer cells is attributed to
    (A) Paracrine signaling (B) Autocrine signaling
    (C) Endocrine signaling (D) Exocrine signaling

25. Which of the following is correct for growth factors?
    (A) Fats (B) Polypeptides
    (C) Vitamins (D) Carbohydrates

26. The ligand may be
    (A) Drugs (B) Neurotransmitters
    (C) Hormones (D) All of the above

27. The channel that connects two neighboring cells and help in communication is
    (A) Gap junction (B) Space junction
    (C) Neighbor junction (D) Side junction

28. Function of gap junction is/ are
    (A) Allow a direct exchange of metabolites
    (B) Signaling molecules between the cells
    (C) Both (A) and (B)
    (D) None of the above

29. Gap junction are coated by
    (A) Proteins (B) Lipids
    (C) Fats (D) Carbohydrates

30. Cell communicates via
    (A) Messenger substance (B) Gap junction
    (C) Surface proteins (D) All of the above

31. The chemical signals which are proteins or other molecules are produced by
    (A) Sending cell (B) Target cell
    (C) Non – target cell (D) Gap junction

32. The molecules secreted from the signaling cell and released into
    (A) Extracellular space (B) Intracellular space
    (C) Cytoplasm (D) Nucleus

33. The signals released by a cell are detected by
    (A) Target cell (B) Non – target cell
    (C) Sending cell (D) Gap junction

34. Which of the following signal molecules does not interact with cell surface receptors?
    (A) Glucagon (B) Testosterone
    (C) Gastrin (D) Insulin

35. Hormones signaling is mainly regulated via
    (A) External trigger signals (B) Feedback loops
    (C) Amount of receptor (D) All of the above

36. The transmission of a signal from a sending cell to a receiving cell is called
    (A) Tissue – tissue signaling (B) Organ – organ signaling
    (C) Cell - cell signaling (D) Cell interaction

37. The junction between two nerve cells where signal transmission occurs is called
    (A) Synapse (B) Muscle
    (C) Nucleus (D) Cell body

38. When the impulse reaches the synapse, it triggers the release of ligands called
    (A) Neurotransmitters (B) Hormones
    (C) Pheromones (D) None of the above

39. Endocrine gland release hormones which include
    (A) Thyroid (B) Hypothalamus
    (C) Pituitary (D) All of the above

40. Pituitary gland release growth hormone, which is an example of
    (A) Endocrine signaling (B) Paracrine signaling
    (C) Autocrine signaling (D) Direct contact signaling

41. The water – filled channel directly connect neighboring cells and allow small signaling molecules called
    (A) Extracellular mediators (B) Intracellular mediators
    (C) Intercellular mediators (D) Interstitial mediators

42. Mechanism of activation of signaling proteins is via
    (A) Binding of activators (B) Covalent modifications
    (C) Membrane association (D) All of the above

43. Cell surface receptors are
    (A) Hydrophilic (B) Large
    (C) Act as ligand (D) All of the above

44. A cell – surface receptor has domain
    (A) An extracellular ligand – binding domain
    (B) A hydrophobic domain extended through the membrane
    (C) Intracellular domain
    (D) All of the above

45. The major signal transducers are
    (A) Receptor (B) Signaling enzyme
    (C) Regulatory GTPases (D) All of the above

46. The messenger enters into target cell and binds and activates the receptor localized in the
    (A) Cytosol
    (B) Mitochondria
    (C) Ribosome
    (D) Lysosome

47. Receipt of external signals occurs by
    (A) Transmembrane receptors
    (B) Cytosolic or nuclear localized receptors
    (C) Both (A) and (B)
    (D) None of the above

48. Small intracellular mediators are
    (A) cAMP
    (B) $Ca^{++}$
    (C) Nitric oxide
    (D) All of the above

49. Which of the following is type of signalingligands
    (A) Small hydrophobic ligand
    (B) Nitric oxide gas serves as ligand
    (C) Water soluble ligand
    (D) All of the above

50. The release of prostaglandins is an example of
    (A) Autocrine signaling
    (B) Paracrine signaling
    (C) Endocrine signaling
    (D) Direct contact signaling

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-09)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | B = Autocrine Signalling | 26 | D = All of the Above |
| 02 | A = Paracrine Signalling | 27 | A = Gap Junction |
| 03 | A = Endocrine Signalling | 28 | C = Both A and B |
| 04 | A = Four | 29 | A = Proteins |
| 05 | D = All of the above | 30 | D = All of the Above |
| 06 | A = Autocrine Signalling | 31 | A = Sending Cells |
| 07 | C = Autocrine Signalling | 32 | A = Extracellular Space |
| 08 | B = Autocrine Signalling | 33 | A = Target Cells |
| 09 | A = Synaptic Signalling | 34 | B = Testosterone |
| 10 | B = Paracrine Signalling | 35 | D = All of the Above |
| 11 | C = Both A and B | 36 | C = Cell-Cell Signalling |
| 12 | B = Endocrine Gland | 37 | A = Synapse |
| 13 | A = Endocrine Signalling | 38 | A = Neurotransmitters |
| 14 | D = Endocrine Signalling | 39 | D = All of the Above |
| 15 | A = Cell to cell Signalling | 40 | A = Endocrine Signalling |
| 16 | D = All of the Above | 41 | B = Intracellular Mediators |
| 17 | A = Autocrine Signalling | 42 | D = All of the Above |
| 18 | A = Paracrine Signalling | 43 | D = All of the Above |
| 19 | C = Both A and B | 44 | D = All of the Above |
| 20 | A = Intracellular Receptor | 45 | D = All of the Above |
| 21 | B = Cytoplasm | 46 | A = Cytosol |
| 22 | A = Surface of the Cell | 47 | C = Both A and B |
| 23 | A = Transmembrane Receptor | 48 | D = All of the Above |
| 24 | B = Autocrine Signalling | 49 | D = All of the Above |
| 25 | B = Polypeptides | 50 | A = Autocrine Signalling |

## Part-10

1. A group of similar cells that work together to perform a specialized function are called
   (A) Tissue (B) Organ
   (C) Organ system (D) Nerves

2. The science that deals with the study of tissues is called
   (A) Cytology (B) Pathophysiology
   (C) Histology (D) Immunology

3. Body tissues can be classified into
   (A) Epithelial tissue (B) Connective tissue
   (C) Muscle tissue (D) All of the above

4. Which tissue covers the body and lines cavities, hollow organs and tubes
   (A) Connective tissue (B) Muscle tissue
   (C) Epithelial tissue (D) Nervous tissue

5. Which of the following tissue is found in glands
   (A) Epithelial tissue (B) Connective tissue
   (C) Muscle tissue (D) Nervous tissue

6. Epithelial tissue performs function which include
   (A) Protection of underlying tissues (B) Secretion
   (C) Absorption (D) All of the above

7. Epithelial tissues are found in
   (A) Outer layer of skin (B) Lining of intestine
   (C) Sweat gland (D) All of the above

8. Protection of skin from dehydration and mechanical or chemical damage is an example of
   (A) Epithelial tissue (B) Connective tissue
   (C) Muscle tissue (D) Nervous tissue

9. All gland which are involved in secretion are made up of
   (A) Connective tissue (B) Nervous tissue
   (C) Epithelial tissue (D) Muscle tissue

10. Which tissue present in the lining of small intestine which absorbs nutrients from the digested food
   (A) Connective tissue (B) Nervous tissue
   (C) Muscle tissue (D) Epithelial tissue

11. Which of the following tissue present in lining of respiratory tract?
   (A) Connective tissue (B) Epithelial tissue
   (C) Nervous tissue (D) Muscle tissue

12. In epithelial tissue, cells usually lie on a
   (A) Basement membrane (B) Synovial membrane
   (C) Cutaneous membrane (D) Serous membrane

13. Function of basement membrane is/are
   (A) Support epithelium (B) Serves as ultrafilter
   (C) Maintenance of epithelial integrity (D) All of the above

14. Component of basement membrane is/are
   (A) Laminin (B) Entactin
   (C) Heparan sulphate (D) All of the above

15. Epithelial membrane is/are
   (A) Mucous membrane (B) Serous membrane
   (C) Both (A) and (B) (D) None of the above

16. Which junction keep the neighbouring tissues well cemented together
   (A) Adhering junction (B) Gap junction
   (C) Tight junction (D) Synapse

17. Which junction prevent leakage across tissues
   (A) Tight junction (B) Adhering junction
   (C) Gap junction (D) Synapse

18. Which of the following tissue are present in the lining of excretory tract?
   (A) Muscle tissue (B) Epithelial tissue
   (C) Connective tissue (D) Nervous tissue

19. Which junction facilitate the movement of ions and molecules across the tissue
    (A) Gap junction (B) Tight junction
    (C) Adhering junction (D) Synapse

20. The epithelial membrane consists of a layer of epithelial tissue and has underlying
    (A) Connective tissue (B) Nervous tissue
    (C) Muscle tissue (D) None of the above

21. Mucus is secreted by
    (A) Mast cells (B) Goblet cells
    (C) Nerve cells (D) Stem cells

22. Mucus helps in
    (A) Lubrication (B) Protection
    (C) Easy movement of materials (D) All of the above

23. In which tract mucus membrane lies
    (A) Respiratory tract (B) Digestive tract
    (C) Both (A) and (B) (D) None of the above

24. Sensory receptor is present in the epithelial tissue of
    (A) Nose (B) Eye
    (C) Test bud (D) All of the above

25. Various gland made up of epithelial cells which secrete
    (A) Hormones (B) Sweat
    (C) Enzyme (D) All of the above

26. Which membrane lines in the body cavities which do not open outside the body
    (A) Serous membrane (B) Mucous membrane
    (C) Synovial membrane (D) Cutaneous membrane

27. Which of the following epithelial forms the inner lining of lung alveoli and blood vessels?
    (A) Cuboidal epithelial (B) Columnar epithelial
    (C) Squamous epithelial (D) Ciliated columnar

28. Simple epithelium consists of
    (A) Single layer of identical cells
    (B) Double layer of identical cells
    (C) Triple layer of identical cells
    (D) Multiple layers of identical cells

29. Gap, tight and adhering junctions are found in
    (A) Epithelial tissue (B) Muscular tissue
    (C) Connective tissue (D) Nervous tissue

30. Epithelial tissue can be divided into
    (A) Covering and lining epithelium (B) Glandular epithelium
    (C) Both (A) and (B) (D) None of the above

31. On the basis of arrangement of cells epithelial cells can be divided into
    (A) Simple epithelium (B) Stratified epithelium
    (C) Pseudo stratified epithelium (D) All of the above

32. The epithelium which are flat and sheet link appearance are called
    (A) Squamous epithelium
    (B) Cuboidal epithelium
    (C) Columnar epithelium
    (D) Stratified squamous epithelium

33. Type of simple epithelium is/are
    (A) Simple squamous (B) Simple cuboidal
    (C) Simple columnar (D) All of the above

34. Simple squamous form the lining of
    (A) Heart (B) Blood vessels
    (C) Alveoli of lungs (D) All of the above

35. The line of heart, blood vessels and lymphatic vessels is also known as
    (A) Endothelium (B) Mesothelium
    (C) Exothelium (D) Metathelium

36. The major function of simple squamous epithelium is/are
    (A) Secretion (B) Diffusion
    (C) Absorption (D) All of the above

37. Which epithelium consist of single layer of cube- shaped cells
    (A) Simple cuboidal epithelium
    (B) Simple squamous epithelium
    (C) Simple columnar epithelium
    (D) Stratified squamous epithelium

38. Simple cuboidal epithelium forms the lining of
    (A) Kidney tubules
    (B) Smaller ducts of many gland
    (C) Surface of ovary
    (D) All of the above

39. Which epithelium consists of a single layer of cylindrical cells
    (A) Simple columnar epithelium
    (B) Simple squamous epithelium
    (C) Simple cuboidal epithelium
    (D) Stratified squamous epithelium

40. Simple columnar epithelium exists in the form of
    (A) Non ciliated simple columnar epithelium
    (B) Ciliated simple columnar epithelium
    (C) Both (A) and (B)
    (D) None of the above

41. Which tissue found in glomerular (Bowmen's) capsule of kidneys
    (A) Simple squamous epithelium
    (B) Simple cuboidal epithelium
    (C) Simple columnar epithelium
    (D) Stratified cuboidal epithelium

42. The free surface of the simple columnar epithelium lining of small intestine is covered with
    (A) Cilia (B) Microvilli
    (C) Flagella (D) Goblet cell

43. In trachea columnar epithelium is ciliated and also contains
    (A) Goblets cell (B) Microvilli
    (C) Flagella (D) None of the above

44. The non - ciliated simple columnar epithelium consist of cells with
    (A) Microvilli (finger like projection)
    (B) Goblet cell (secrete mucous)
    (C) Both (A) and (B)
    (D) None of the above

45. The ciliated simple columnar epithelium contains cells with
    (A) Cilia
    (B) Microvilli
    (C) Goblet cell
    (D) Flagella

46. Which of the following agent propel the ova present in uterine tubes towards the uterus?
    (A) Microvilli
    (B) Cilia
    (C) Mucous
    (D) Flagella

47. On the basis of shape of cells epithelium can be divided into
    (A) Squamous cells
    (B) Cuboidal cells
    (C) Columnar cells
    (D) All of the above

48. The cells change shape from cuboidal to flat, and beck, as the body part expand or stretch
    (A) Transitional cells
    (B) Cuboidal cells
    (C) Squamous cells
    (D) Columnar cells

49. Which epithelium consists of several layer of cells of various shapes
    (A) Simple epithelium
    (B) Cuboidal epithelium
    (C) Columnar epithelium
    (D) Stratified epithelium

50. Types of stratified epithelium
    (A) Stratified squamous epithelium
    (B) Stratified columnar epithelium
    (C) Stratified cuboidal epithelium
    (D) All of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-10)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | A = Tissue | 26 | A = Serous Membrane |
| 02 | C = Histology | 27 | C = Squamous Epithelial |
| 03 | D = All of the Above | 28 | A = Single Layer Identical Cell |
| 04 | C = Epithelial Tissue | 29 | A = Epithelial Tissue |
| 05 | A = Epithelial Tissue | 30 | C = Both A and B |
| 06 | D = All of the Above | 31 | D = All of the Above |
| 07 | D = All of the Above | 32 | A = Squamous Epithelium |
| 08 | A = Epithelial Tissue | 33 | D = All of the Above |
| 09 | C = Epithelial Tissue | 34 | D = All of the Above |
| 10 | D = Epithelial Tissue | 35 | A = Endothelium |
| 11 | B = Epithelial Tissue | 36 | D = All of the Above |
| 12 | A = Basement membrane | 37 | A = Simple Cuboidal Epithelium |
| 13 | D = All of the Above | 38 | D = All of the above |
| 14 | D = All of the Above | 39 | A = Simple Columnar Epithelium |
| 15 | C = Both A and B | 40 | C = Both A and B |
| 16 | A = Adhering Junction | 41 | A = Simple Squamous Epithelium |
| 17 | A = Tight Junction | 42 | B = Microvilli |
| 18 | B = Epithelial Tissue | 43 | A = Goblet cells |
| 19 | A = Gap Junction | 44 | C = Both A and B |
| 20 | A = Connective Tissue | 45 | A = Cilia |
| 21 | B = Goblet Cells | 46 | B = Cilia |
| 22 | D = All of the Above | 47 | D = All of the Above |
| 23 | C = Both A and B | 48 | A = Transitional Cells |
| 24 | D = All of the Above | 49 | D = Stratified Epithelium |
| 25 | D = All of the Above | 50 | D = All of the Above |

## Part-11

1. In stratified epithelium tissue, cells exist in forms of
   (A) Keratinized
   (B) Non – keratinized
   (C) Both (A) and (B)
   (D) None of the above

2. Which protein contains over the surface of keratinized epithelial cells
   (A) Keratin
   (B) Albumin
   (C) Tubulin
   (D) Elastin

3. An example of keratinized stratified squamous epithelium is/are
   (A) Skin
   (B) Hair
   (C) Nails
   (D) All of the above

4. Which epithelium consists several layers of cells in which the superficial layer is of flattened cells arranged in layer upon a basal membrane
   (A) Stratified squamous epithelium
   (B) Simple squamous epithelium
   (C) Stratified columnar epithelium
   (D) Simple columnar epithelium

5. Which epithelium found on dry surfaces subjected to face wear and tear
   (A) Non – keratinized stratified squamous epithelium
   (B) Keratinized stratified squamous epithelium
   (C) Stratified cuboidal epithelium
   (D) Stratified columnar epithelium

6. An example of non – keratinized stratified squamous epithelium is/are
   (A) Mouth
   (B) Oesophagus
   (C) Tongue
   (D) All of the above

7. Which epithelial forms a tough, relatively waterproof protective layer that prevents drying of live cells underneath
   (A) Keratinized stratified squamous epithelium
   (B) Non – keratinized stratified squamous epithelium
   (C) Stratified cuboidal epithelium
   (D) Stratified columnar epithelium

8. Which epithelium consists of two or more layers of cube – shaped cells
   (A) Stratified cuboidal epithelium
   (B) Stratified columnar epithelium
   (C) Simple squamous epithelium
   (D) Stratified squamous epithelium

9. Stratified cuboidal epithelium present in
   (A) Male urethra
   (B) Ducts of sweat glands
   (C) Sweat glands
   (D) All of the above

10. Which epithelium consists of several layers of cylindrical cells
   (A) Stratified cuboidal epithelium
   (B) Stratified columnar epithelium
   (C) Stratified squamous epithelium
   (D) Simple squamous epithelium

11. Which epithelium composed of several layers of pear – shaped cells
   (A) Transitional epithelium
   (B) Columnar epithelium
   (C) Squamous epithelium
   (D) Cuboidal epithelium

12. The adjacent epithelial cells are held together by
   (A) Desmosomes
   (B) Liposomes
   (C) Microsomes
   (D) Macrosomes

13. Which epithelial consists of a group of highly specialized epithelial cells that secrete substances into ducts, into blood or in the surface
   (A) Glandular epithelium
   (B) Cuboidal epithelium
   (C) Squamous epithelium
   (D) Transitional epithelium

14. Type of glands are
   (A) Endocrine gland
   (B) Exocrine gland
   (C) Both (A) and (B)
   (D) None of the above

15. Which gland are also called “ductless gland”?
   (A) Endocrine gland
   (B) Exocrine gland
   (C) Merocrine gland
   (D) Holocrine gland

16. An example of unicellular exocrine gland is
   (A) Goblet cells
   (B) Sweat gland
   (C) Salivary gland
   (D) Pancreas

17. An example of multicellular exocrine glands is
    (A) Salivary gland (B) Pancreas
    (C) Sweat gland (D) All of the above

18. Which gland form the secretion and release it from the cells
    (A) Merocrine gland (B) Apocrine gland
    (C) Holocrine gland (D) Endocrine gland

19. An example of merocrine gland
    (A) Salivary gland (B) Sebaceous gland
    (C) Pituitary gland (D) Thyroid gland

20. Multicellular exocrine gland can be functionally classified into
    (A) Merocrine gland (B) Apocrine gland
    (C) Holocrine gland (D) All of the above

21. Which gland accumulate the secretion at the apical surface of the cell
    (A) Holocrine gland (B) Apocrine gland
    (C) Merocrine gland (D) Adrenal gland

22. Which gland accumulate the secretion in the cytosol of the skin
    (A) Holocrine gland (B) Apocrine gland
    (C) Merocrine gland (D) Pituitary gland

23. Sebaceous gland of skin is an example of
    (A) Apocrine gland (B) Merocrine gland
    (C) Holocrine gland (D) Pituitary gland

24. Which gland present as ducts at the surface of covering
    (A) Exocrine gland (B) Endocrine gland
    (C) Pituitary gland (D) Thyroid gland

25. Which of the following tissue is the most abundant and widely distributed tissue in the body?
    (A) Connective tissue (B) Muscle tissue
    (C) Nervous tissue (D) Epithelial tissue

26. Which of the following is function of connective tissue?
    (A) Structural support (B) Protection
    (C) Transportation (D) All of the above

27. Bones protect the vital organs of the body such as
    (A) Heart (B) Lungs
    (C) Brain (D) All of the above

28. Major transport system within the body is/are
    (A) Blood (B) Nutrient
    (C) Hormones (D) All of the above

29. Type of connective tissue include
    (A) Bone (B) Cartilage
    (C) Fat (D) All of the above

30. Connective tissues contain which type of fibres
    (A) Collagen fibres (B) Elastic fibres
    (C) Reticulate fibres (D) All of the above

31. The different type of cells presents in connective tissues include
    (A) Fibroblast (B) Mast cells
    (C) Fat cell (D) All of the above

32. The cells are the most numerous, large, flat, with irregular process is called
    (A) Fibroblast (B) Fat cells
    (C) Plasma cell (D) Mast cell

33. Fibroblasts makes
    (A) Collage fibres (B) Elastic fibres
    (C) Both (A) and (B) (D) None of the above

34. The cells store triglyceride (Fats) and are abundant in the adipose connective tissue
    (A) Macrophage (B) Fat cells
    (C) Mast cells (D) Plasma cells

35. Fat cells also known as
    (A) Adipocytes (B) Leukocyte
    (C) Lymphocyte (D) Hepatocyte

36. Which cells are irregular shaped that are capable of engulfing foreign matter by phagocytosis?
    (A) Fat cells (B) Plasma cells
    (C) Mast cells (D) Macrophages

37. Plasma cells developed from
    (A) T- lymphocyte (B) B- lymphocyte
    (C) Fat cells (D) Mast cells

38. Which cells secrete antibodies that attack and neutralize the foreign substance in the body
    (A) Plasma cells (B) Fat cells
    (C) Fibroblast (D) Nerve cells

39. Which cells mainly found in loose connective tissue and around blood vessels
    (A) Fat cells (B) Mast cells
    (C) Plasma cells (D) Macrophage

40. Which chemical is released by mast cell which involved in inflammatory response
    (A) Histamine (B) Serotonin
    (C) Adrenaline (D) Melanin

41. The matrix consists major component, including
    (A) Ground substances (B) Fibres
    (C) Both (A) and (B) (D) None of the above

42. Which of the following consist of collagen protein and provide strength to the connective tissue?
    (A) Elastic fibres (B) Collagen fibres
    (C) Reticular fibres (D) Spindle fibres

43. Which of the following consist of elastin protein and provide strength as well as elasticity?
    (A) Elastic fibres (B) Collagen fibres
    (C) Reticular fibres (D) Spindle fibres

44. Which of the following consist of collagen with a coating of glycoprotein and provide support and strength to the cell?
    (A) Collagen fibres (B) Reticular fibres
    (C) Elastic fibres (D) Spindle fibres

45. The connective tissue can be classified into
    (A) Loose connective tissue (B) Dense connective tissue
    (C) Specialised connective tissue (D) All of the above

46. Which tissue consist of a large number of cells and fibres that are loosely woven among them
    (A) Dense connective tissue
    (B) Loose connective tissue
    (C) Elastic connective tissue
    (D) Specialised connective tissue

47. Adipose tissue consists of
    (A) Fat cells
    (B) Plasma cells
    (C) Fibroblast
    (D) Mast cells

48. Which of the following prevents blood coagulation?
    (A) Histamine
    (B) Heparin
    (C) Serotonin
    (D) Melanin

49. Which connective tissue is mainly found in the epidermis of the skin and subcutaneous layer?
    (A) Areolar connective tissue
    (B) Reticular connective tissue
    (C) Dense connective tissue
    (D) Specialized connective tissue

50. Type of adipose tissue
    (A) White adipose tissue
    (B) Brown adipose tissue
    (C) Both (A) and (B)
    (D) None of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-11)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | C = Both A and B | 26 | D = All of the above |
| 02 | A = Keratin | 27 | D = All of the Above |
| 03 | D = All of the Above | 28 | D = All of the Above |
| 04 | A = Stratified Squamous Epithelium | 29 | D = All of the Above |
| 05 | B = Keratinized Stratified Squamous Epithelium | 30 | D = All of the Above |
| 06 | D = All of the Above | 31 | D = All of the Above |
| 07 | A = Keratinized Stratified Squamous Epithelium | 32 | A = Fibroblast |
| 08 | A = Stratified Cuboidal Epithelium | 33 | C = Both A and B |
| 09 | D = All of the Above | 34 | B = Fat Cells |
| 10 | B = Stratified Columnar Epithelium | 35 | A = Adipocytes |
| 11 | A = Transitional Epithelium | 36 | D = Macrophage |
| 12 | A = Desmosomes | 37 | B = B-Lymphocytes |
| 13 | A = Glandular Epithelium | 38 | A = Plasma Cells |
| 14 | C = Both A and B | 39 | B = Mast Cells |
| 15 | A = Endocrine Gland | 40 | A = Histamines |
| 16 | A = Goblet Cells | 41 | C = Both A and B |
| 17 | D = All of the Above | 42 | B = Collagen Fibres |
| 18 | A = Merocrine Gland | 43 | A = Elastic Fibres |
| 19 | A = Salivary Glands | 44 | B = Reticular Fibres |
| 20 | D = All of the Above | 45 | D = All of the Above |
| 21 | B = Apocrine Gland | 46 | B = Loose Connective Tissue |
| 22 | A = Holocrine Gland | 47 | A= Fat Cells |
| 23 | C = holocrine Gland | 48 | B = Heparin |
| 24 | A = Exocrine Gland | 49 | A = Areolar Connective Tissue |
| 25 | A = Connective Tissue | 50 | C = Both A and B |

## Part-12

1. How much of white adipose tissue up body weight in adult
   (A) 2-3% (B) 20-25%
   (C) 10-12% (D) 70-80%

2. Which hormones is secreted by white adipose tissue?
   (A) Leptin (B) Insulin
   (C) Cortisol (D) Thyroid

3. Adipose tissue is distributed within
   (A) Subcutaneous fat (B) Visceral fat
   (C) Bone marrow fat (D) All of the above

4. The main function of white adipocytes is to store excess energy in the form of
   (A) Fatty molecule (B) Vitamin
   (C) Protein (D) Carbohydrate

5. Which tissue act as a thermal insulator and store energy
   (A) Reticular tissue (B) Adipose tissue
   (C) Loose connective tissue (D) Dense connective tissue

6. Transitional epithelium found in
   (A) Pelvis (B) Ureter
   (C) Urinary bladder (D) All of the above

7. Which cells produce collagen, reticular fibers and ground substance and are seen to be active during wound repair
   (A) Fibroblast (B) Mast cell
   (C) Pigment cell (D) Macrophage

8. Visceral fat is predominantly found around the organs in the abdominal cavity such as
   (A) Liver (B) Intestines
   (C) Kidney (D) All of the above

9. Melanin is produced by
   (A) Plasma cells (B) Pigment cells
   (C) Mast cells (D) Adipose cells

10. Pigment cells is also known as
   (A) Melanocyte (B) Adipocyte
   (C) Leukocyte (D) Histocytes

11. Pigment cells are present in
   (A) Skin (B) Choroid
   (C) Iris of eye ball (D) All of the above

12. Collagen fibers are produced by fibroblast and are present in
   (A) Bone (B) Cartilage
   (C) Tendons (D) All of the above

13. Mast cells is found in
   (A) Epithelial tissue (B) Connective tissue
   (C) Muscle tissue (D) Nervous tissue

14. Which tissue generates more heat on metabolism and thus maintains the body temperature in new born
   (A) Brown adipose tissue (B) Loose connective tissue
   (C) Dens connective tissue (D) Reticular connective tissue

15. Which connective tissue of a fine network of reticular fibers and reticular cells
   (A) Dense connective tissue (B) Loose connective tissue
   (C) Reticular connective tissue (D) Areolar connective tissue

16. The reticular connective tissue supports the organs such as
   (A) Liver (B) Bone marrow
   (C) Spleen (D) All of the above

17. Reticular tissue contains
   (A) Reticular cells (B) Monocytes
   (C) Lymphocytes (D) All of the above

18. Which tissue made up of closely packed bundles of collagen fibers with very little matrix
    (A) Fibrous connective tissue (B) Elastic connective tissue
    (C) Reticular connective tissue (D) Loose connective tissue

19. Which of the following present in fibrous connective tissue between the bundles of collagen fibers?
    (A) Fibroblasts (B) Mast cells
    (C) Plasma cells (D) Fat cells

20. Fibrous connective tissue is found in
    (A) Tendons (B) Ligament
    (C) Periosteum of bone (D) All of the above

21. Muscle to bones isattached by
    (A) Ligament (B) Tendons
    (C) Cartilage (D) Hyaline cartilage

22. Bone to boneareattached by
    (A) Cartilage (B) Tendon
    (C) Ligaments (D) Hyaline cartilage

23. In fibrous connective tissue which fibers are responsible for strength and help to attach various structures strongly
    (A) Collagen fibers (B) Elastic fibers
    (C) Reticular fibers (D) Spindle fibers

24. Which connective tissue is capable of considerable extension and recoil?
    (A) Fibrous connective tissue
    (B) Elastic connective tissue
    (C) Loose connective tissue
    (D) Reticular connective tissue

25. Which connective tissue found in organs where stretching or alteration of shape is required
    (A) Elastic connective tissue
    (B) Reticular connective tissue
    (C) Dense connective tissue
    (D) Adipose connective tissue

26. Elastic connective tissues are presents in
    (A) Trachea (B) Bronchi
    (C) Lungs (D) All of the above

27. Cells of cartilage is called
    (A) Chondrocytes (B) Adipocytes
    (C) Leukocytes (D) Monocytes

28. Which of the following is a type of cartilage?
    (A) Hyaline cartilage (B) Fibrocartilage
    (C) Elastic cartilage (D) All of the above

29. The most abundant cartilage in the body is
    (A) Hyaline cartilage (B) Elastic cartilage
    (C) Fibrocartilage (D) Reticular tissue

30. Which cartilage consists of small groups of chondrocytes within lacunae embedded in the matrix with fine collagen fibers
    (A) Elastic cartilage (B) Hyaline cartilage
    (C) Fibrocartilage (D) Reticular tissue

31. Hyaline cartilageare found in
    (A) On the end of long bones
    (B) Anterior ends of ribs
    (C) Forming part of the larynx, trachea and bronchi
    (D) All of the above

32. Which cartilage consists of a dense mass of collagen fibers embedded in the matrix with chondrocytes widely dispersed in it
    (A) Fibrocartilage (B) Hyaline cartilage
    (C) Elastic cartilage (D) Reticular tissue

33. Fibrocartilage found in
    (A) Intervertebral discs
    (B) Pubic symphysis
    (C) On the rim of the bony sockets of the hip and shoulder joints
    (D) All of the above

34. Which cartilage consists of chondrocytes embedded in the matrix consisting of elastic fibers
    (A) Fibrocartilage (B) Elastic cartilage
    (C) Hyaline cartilage (D) Reticular tissue

35. Elastic cartilage found in
    (A) Lobe of the ear (B) Epiglottis
    (C) Auditory tubes (D) All of the above

36. Bone cells are called
    (A) Osteocytes (B) Leukocytes
    (C) Adipocytes (D) Melanocytes

37. Which of the following are surrounded by a matrix of collagen fibers, strengthened by organic salts, especially calcium and phosphate?
    (A) Bone cells (B) Blood cells
    (C) Mast cells (D) Plasma cells

38. Bone matrix is rich in
    (A) Calcium and potassium (B) Calcium and phosphate
    (C) Sodium and potassium (D) Sodium and calcium

39. Bone is made up of
    (A) Compact bone (B) Spongy bone
    (C) Bone marrow (D) All of the above

40. Function of bone is/are
    (A) Allow movement (B) Makes blood cells
    (C) Provides protections of organs (D) All of the above

41. Types of bone can be identified by naked eye
    (A) Compact bone, having a solid or dense appearance
    (B) Spongy or cancellous bone, having a 'spongy' or fine honeycomb appearance
    (C) Both (A) and (B)
    (D) None of the above

42. Which of the following is fluid connective tissue?
    (A) Blood (B) Bone
    (C) Cartilage (D) Tendons

43. Which of the following is the component of blood?
    (A) Red blood cells (B) White blood cells
    (C) Platelets (D) All of the above

44. Red blood cells are also called as
    (A) Leukocytes (B) Erythrocytes
    (C) Thrombocytes (D) Osteocytes

45. Leukocytes are also called as
    (A) Red blood cells (B) Platelets
    (C) White blood cells (D) Bone cells

46. Platelets are also called as
    (A) Thrombocytes (B) Osteocytes
    (C) Erythrocytes (D) Leukocytes

47. Blood transports
    (A) Oxygen (B) Carbon dioxide
    (C) Waste products (D) All of the above

48. Lymphoid tissue found in
    (A) Lymph nodes (B) Thymus
    (C) Spleen (D) All of the above

49. The tissue consists of fibers that have ability to contract and relax
    (A) Muscle tissue (B) Epithelial tissue
    (C) Nervous tissue (D) Connective tissue

50. Muscle contraction requires a rich blood supply providing
    (A) Sufficient oxygen (B) Calcium and nutrients
    (C) Removing waste products (D) All of the above

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-12)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | B = 20 -25 % | 26 | D = All of the Above |
| 02 | A = Leptin | 27 | A = Chondrocytes |
| 03 | D = All of the Above | 28 | D = All of the Above |
| 04 | A = Fatty Molecules | 29 | A = Hyaline Cartilage |
| 05 | B = Adipose Tissue | 30 | B = Hyaline Cartilage |
| 06 | D = All of the Above | 31 | D = All of the Above |
| 07 | A = Fibroblast | 32 | A = Fibrocartilage |
| 08 | D = All of the Above | 33 | D = All of the above |
| 09 | B = Pigment Cells | 34 | B = Elastic Cartilage |
| 10 | A = Melanocytes | 35 | D = All of the above |
| 11 | D = All of the Above | 36 | A = Osteocytes |
| 12 | D = All of the Above | 37 | A = Bone Cells |
| 13 | B = Connective Tissue | 38 | B = Calcium and Phosphate |
| 14 | A = Brown Adipose Tissue | 39 | D = All of the Above |
| 15 | C = Reticular Connective Tissue | 40 | D = All of the above |
| 16 | D = All of the Above | 41 | C = Both and B |
| 17 | D = All of the Above | 42 | A = Blood |
| 18 | A = Fibrous Connective Tissue | 43 | D = All of the Above |
| 19 | A = Fibroblast | 44 | B = Erythrocytes |
| 20 | D = All of the Above | 45 | C = White Blood Cells |
| 21 | B = Tendons | 46 | A = Thrombocytes |
| 22 | C = Ligaments | 47 | D = All of the Above |
| 23 | A = Collagen Fibres | 48 | D = All of the Above |
| 24 | B = Elastic Connective Tissue | 49 | A = Muscle Tissue |
| 25 | A = Elastic Connective Tissue | 50 | D = All of the Above |

## Part-13

1. What is the percent of globulins present in plasma protein?
   (A) 56 %
   (B) 38 %
   (C) 15 %
   (D) 10 %

2. What is the percent of albumins present in plasma protein?
   (A) 55 %
   (B) 30 %
   (C) 26%
   (D) 14 %

3. Types of muscle tissues is/are
   (A) Skeletal muscle tissue
   (B) Smooth muscle tissue
   (C) Cardiac muscle tissue
   (D) All of the above

4. Which of the following is contractile proteins in muscle fibers?
   (A) Actin and myosin
   (B) Albumin and globulin
   (C) Keratin and elastin
   (D) Collagen and albumin

5. Which of the following are cylindrical, multinucleated, striated and under voluntary control?
   (A) Skeletal muscle fibers
   (B) Smooth muscle cells
   (C) Cardiac muscle tissue
   (D) Hyaline cartilage

6. Which muscle are attached to the bones of the skeleton?
   (A) Smooth muscle tissue
   (B) Skeletal muscle tissue
   (C) Cardiac muscle tissue
   (D) Loose connective tissue

7. The outermost layer of bone is
   (A) Periosteum
   (B) Epidermis
   (C) Interstitial matrix
   (D) Dermis

8. The major function of skeletal muscle tissue is
   (A) Maintenance of posture
   (B) Movement of bones
   (C) Both (A) and (B)
   (D) None of the above

9. Which muscle tissue named as “striated muscle tissue”
   (A) Skeletal muscle tissue
   (B) Smooth muscle tissue
   (C) Reticular tissue
   (D) Nervous tissue

10. Which muscle tissue is non striated and involuntary because of lacks of striations?
    (A) Skeletal muscle tissue (B) Loose connective tissue
    (C) Smooth muscle tissue (D) Areolar connective tissue

11. Which muscle fibers is small, spindle shaped with only one central nucleus?
    (A) Smooth muscle fibers (B) Skeletal muscle fibers
    (C) Cardiac muscle fibers (D) Loose connective tissue

12. Smooth muscle tissue found in the walls of hollow organ such as
    (A) Blood vessel (B) Stomach
    (C) Gallbladder (D) All of the above

13. Voluntary muscle is found in
    (A) Lungs (B) Liver
    (C) Heart (D) Arms

14. Which tissue found only in the wall of heart
    (A) Skeletal muscle tissue (B) Cardiac muscle tissue
    (C) Smooth muscle tissue (D) Loose connective tissue

15. Which muscle fibers are cylindrical, branched and usually have only one nucleus?
    (A) Skeletal muscle fibers (B) Cardiac muscle fibers
    (C) Smooth muscle fibers (D) Areolar muscle fibers

16. In which muscle tissue intercalated disc are present
    (A) Smooth muscle tissue (B) Cardiac muscle tissue
    (C) Skeletal muscle tissue (D) Areolar muscle tissue

17. Harversian system is found in
    (A) Plasma cells (B) Bone
    (C) Cartilage (D) Nerve cells

18. How much of total body mass comprises skeletal muscle?
    (A) 30 – 40 % (B) 5 – 10 %
    (C) 70 – 80 % (D) 15 – 20 %

19. Which cell convert stimuli into nerve impulses
    (A) Fat cell (B) Nerve cell
    (C) Bone cell (D) Plasma cell

20. Type of tissue found in the nervous system
    (A) Excitable cells (B) Non – excitable cells
    (C) Both (A) and (B) (D) None of the above

21. Neurons are having following component in its body
    (A) Cell body (B) Dendrites
    (C) Axons (D) All of the above

22. Which part of neuron contains nucleus
    (A) Cell body (B) Axon
    (C) Dendrites (D) Axonal knobs

23. Which part of neuron receive stimuli and conduct them to cell body
    (A) Nucleus (B) Dendrites
    (C) Axon (D) Axonal knobs

24. Which part of neuron transmit the impulses towards another neuron or some other tissue
    (A) Axon (B) Cell body
    (C) Nucleus (D) Dendrites

25. Excitable cells are also known as
    (A) Neurons (B) Glial cells
    (C) Fat cells (D) Blood cells

26. Non - excitable cells are also known as
    (A) Glial cells (B) Neurons
    (C) Fat cells (D) Bone cells

27. Which neurons having single process
    (A) Bipolar (B) Unipolar
    (C) Multipolar (D) Tripolar

28. Which neuron found in the nervous system of embryo
    (A) Tripolar (B) Bipolar
    (C) Unipolar (D) Multipolar

29. Which neurons having one dendron and one axon
    (A) Bipolar (B) Multipolar
    (C) Tripolar (D) Unipolar

30. Which neuron found in the retina of eye
    (A) Unipolar (B) Bipolar
    (C) Tripolar (D) Multipolar

31. Which neuron having many dendron and one axon
    (A) Multipolar (B) Unipolar
    (C) Tripolar (D) Bipolar

32. The most common amino acid of collagen fibers is
    (A) Proline (B) Glycine
    (C) Lysin (D) Alanine

33. The most common cells of connective tissue
    (A) Nerve cell (B) Osteoblast
    (C) Fibroblast (D) Adipocyte

34. Heparin is produced by
    (A) Mast cells (B) Osteocytes
    (C) Nerve cells (D) Osteoblast

35. Bile is produced by which cells
    (A) Hepatocytes (B) Osteocytes
    (C) Melanocytes (D) Adipocytes

36. β - cells of pancreas produce
    (A) Glucagon (B) Insulin
    (C) Oxytocin (D) Thyroxin

37. The vagina is lined by which epithelium
    (A) Simple cuboidal epithelium
    (B) Stratified cuboidal epithelium
    (C) Simple squamous epithelium
    (D) Stratified squamous epithelium

38. Ameloblasts are derived from
    (A) Inner dental epithelium (B) Dental sac
    (C) Dental papilla (D) Outer dental epithelium

39. Endometrium is lined by which epithelium
    (A) Stratified cuboidal epithelium
    (B) Simple columnar epithelium
    (C) Transitional epithelium
    (D) Pseudostratified epithelium

40. Calcitonin is secreted by which gland
    (A) Thyroid gland (B) Salivary gland
    (C) Adrenal gland (D) Pineal gland

41. Which of the following epithelium found in gall bladder?
    (A) Simple columnar epithelium
    (B) Stratified cuboidal epithelium
    (C) Stratified squamous epithelium
    (D) Pseudostratified epithelium

42. $\alpha$ - cells of pancreas secretes
    (A) Insulin (B) Glucagon
    (C) Vasopressin (D) Oxytocin

43. Melatonin is secreted by which of the following gland
    (A) Pineal gland (B) Pituitary gland
    (C) Salivary gland (D) Thyroid gland

44. Which of the following hormone is secreted by pituitary gland?
    (A) Growth hormone (B) Oxytocin
    (C) Luteinizing hormone (D) All of the above

45. The group of cancer cell of epithelial cells are called
    (A) Carcinoma (B) Sarcoma
    (C) Melanoma (D) Leukemia

46. The tip of the nose and external ears have
    (A) Ligament (B) Cartilage
    (C) Bone (D) Areolar tissue

47. A disease of muscles in which fibers do not function resulting in muscular weakness
    (A) Myalgia (B) Myositis
    (C) Myopathy (D) Fibrositis

48. Sarcomas is a form of cancer of connective tissue occurs in
    (A) Muscles (B) Bones
    (C) Cartilages (D) All of the above

49. The gaps between two adjacent myelin sheaths are called
    (A) Nodes of Ranvier (B) Dendrites
    (C) Nucleus (D) Cell body

50. In which tissue rapid healing of wound is found
    (A) Epithelial tissue (B) Muscular tissue
    (C) Connective tissue (D) Nervous tissue

# Answer Key

## Introduction to Human Body, Cellular Levels of Structural Organization, Tissue Level of Organization (Part-13)

| Question | Answer | Question | Answer |
|---|---|---|---|
| 01 | B = 38 % | 26 | A = Glial Cells |
| 02 | A = 55% | 27 | B = Unipolar |
| 03 | D = All of the above | 28 | C = Unipolar |
| 04 | A = Actin and Myosin | 29 | A = Bipolar |
| 05 | A = Skeletal Muscle Fibres | 30 | B = Bipolar |
| 06 | B = Skeletal Muscle Tissue | 31 | A = Multipolar |
| 07 | A = Periosteum | 32 | B = Skin |
| 08 | C = Both A and B | 33 | C = Skin |
| 09 | A = Skeletal Muscle Tissue | 34 | A = 1.5 to 02 Square Meter |
| 10 | C = Smooth Muscle Tissue | 35 | A = All of the Above |
| 11 | A = Smooth Muscle Fibres | 36 | B = All of the Above |
| 12 | D = All of the Above | 37 | D = Skin |
| 13 | D = Arms | 38 | A = Dermatology |
| 14 | B = Cardiac Muscle Tissue | 39 | B = Both A and B |
| 15 | B = Cardiac Muscle Fibres | 40 | A = Epidermis |
| 16 | B = Cardiac Muscle Tissue | 41 | A = Stratified Squamous Keratinized Epithelium |
| 17 | B = Bone | 42 | B = Dermis |
| 18 | A = 30 to 40 % | 43 | A = Hypodermis |
| 19 | B = Nerve Cells | 44 | D = Hypodermis |
| 20 | C = Both A and B | 45 | A = Dermis |
| 21 | D = All of the Above | 46 | B = Hypodermis |
| 22 | A = Cell Body | 47 | C = Hypodermis |
| 23 | B = Dendrites | 48 | D = All of the Above |
| 24 | A = Axon | 49 | A = Melanocytes |
| 25 | A = Neurons | 50 | A = Epidermis |

# Notes