

**1. Nerve impulses in the retina are carried:**

- A. Initially, through the optic tract, then through the optic nerve, to the cerebral visual cortex
- B. Initially, through the optic nerve, then through the optic tract, to the cerebral visual cortex
- C. Initially, through the optic chiasm and eventually through the optic tract to the thalamus
- D. At the level of the cerebellar visual cortex
- E. To the cerebral visual cortex, where they are interpreted

**2. The primary tastes include:**

- A. Sour, bitter, spicy
- B. Sour, bitter, umami
- C. Sour, bitter, sweet
- D. Umami, salty, spicy
- E. Sweet, salty, umami

**3. Choose the correct statement(s) referring to the sense of smell:**

- A. It has specialised receptors (olfactory cells)
- B. It is a sense based on chemical insoluble and non-volatile substances
- C. It requires the contact between receptors and the molecules of the substances which are to be detected
- D. It is also called olfactory sense
- E. It is involved in the absorption of water in the gastrointestinal mucosa

**4. Choose the correct associations:**

- A. Free nerve endings in the skin – exteroceptors - pain
- B. Pacinian corpuscles – skin – strong pressure and vibrations
- C. Meissner corpuscles – light pressure – strong vibrations
- D. Hearing – skin receptors – muscle and joint receptors
- E. Merkel discs – skin – tactile stimuli

**5. The following statement(s) is/are true referring to the fragments of calcium carbonate:**

- A. They are also called uroliths and have an organic structure
- B. They are also called otoliths and have an inorganic structure
- C. They belong to the membrane which covers the ciliary cells in the utricular and saccular maculae
- D. They are a part of the tectorial membrane
- E. Otoliths change their position and influence the ciliary cells of the macula due to the pressure caused by changing the position of the head

**6. Choose the correct statement(s) referring to the histological structure of the bone:**

- A. The structural unit of the spongy tissue is the osteoclast, which reshapes the bone
- B. The osteon has a central canal which contains nerves and blood capillaries
- C. The haversian system is a characteristic of the compact bone
- D. The osteon has a central canal called perforating canal
- E. Bones can have tuberosities and trochanters which serve as places for the insertion of skeletal muscles

**7. Choose the correct statement(s) referring to bones and joints:**

- A. The skeleton is made up of bones connected to each other by joints
- B. Joints can be mobile (synarthroses), semi-mobile (amphiarthroses) and fixed joints (diarthroses)
- C. Diaphysis are the extremities of a bone and the epiphysis is the shaft or central part of a bone
- D. Long bones consist of epiphysis and diaphysis
- E. The skeleton supports the body and facilitates locomotion

**8. It is true that long bones:**

- A. Belong to the skeleton of the limbs
- B. Have extensive surfaces for the insertion of tendons
- C. Have a diaphysis or shaft
- D. Have two epiphysis and a diaphysis
- E. Have two diaphysis and an epiphysis

**9. Choose the true statement(s) referring to the periosteum**

- A. Ensures the growing in length of bones because it produces continually osteoclasts
- B. It is a connective tissue which partially covers a long bone
- C. The periosteum is absent from the articular surfaces of a long bone
- D. It covers entirely the epiphyses of limb bones
- E. It covers the long, straight part of certain bones such as the femur or the humerus

**10. The compact bone tissue:**

- A. Can be found in flat and short bones and in the epiphysis
- B. Is absent from the diaphysis of long bones
- C. Contains cavities with red hematopoietic marrow
- D. Is a component of the diaphysis of long bones
- E. Is less dense than spongy tissue

**11. The following statement(s) is/are true about the structure of the skeletal muscle fibre:**

- A. Myofibrils run along the transverse axis in sarcomeres
- B. The repetitive distribution of sarcomeres gives the muscle its characteristic striated aspect
- C. The clear bands are called A bands and are divided in the middle by Z lines
- D. The clear bands, called I bands, are wide and contain actin
- E. Thin filaments consist of actin (contractile protein in the structure of myofibrils)

**12. Muscle contraction requires the following:**

- A. Acetylcholine - neurotransmitter
- B. Adenosine triphosphate – a compound which does not have high energy phosphate links
- C. Adrenalin – the hormone of the suprarenal cortex
- D. Calcium ions ( $\text{Ca}^{2+}$ ) which act before the sodium influx
- E. Sodium ions ( $\text{Na}^+$ ) which permeate the cell when acetylcholine is bound to the sarcolemma receptors

**13. Striated skeletal muscles:**

- A. Are responsible for the motor activity of certain segments of the digestive tract (stomach, small bowel)
- B. Is inserted on bones, the muscle – bone unit ensuring the movements of the body and its various segments
- C. Are responsible for the complex act of locomotion
- D. Can act by triggering body part movements in opposite directions, when they are antagonistic muscles
- E. Can never act one against the other (antagonistic) during the complex act of locomotion

**14. The following statement(s) is/are true about the microscopic structure of the sarcomere:**

- A. There are two types of myofilaments, thick actin filaments and thin myosin filaments
- B. Thin actin myofilaments and thick myosin myofilaments are arranged parallel to each other
- C. Myofilaments are perpendicular on each other
- D. The A-band is divided into two equal halves by the H zone which contains only myosin filaments
- E. Thick filaments consist of myosin, a protein formed of two polypeptide chains twisted around each other

**15. ATPase:**

- A. Is a protein found at the ends of actin filaments
- B. Is an enzyme found at the ends of myosin filaments
- C. Degrades ATP (adenosine triphosphate) into ADP (adenosine diphosphate) and a phosphate group, releasing energy from the molecule
- D. Regenerates ATP (adenosine triphosphate) from AMP (adenosine monophosphate) and phosphate, releasing energy from the molecule
- E. Transfers a phosphate group to an AMP (adenosine monophosphate) molecule, to regenerate an ATP (adenosine triphosphate) molecule

**16. The following statement(s) is/are true about the palate – the structure the forms the roof of the mouth:**

- A. It consists of a hard anterior part and a soft back part
- B. The anterior part of the palate is called the soft palate
- C. The uvula projects inferiorly from the hard palate
- D. The uvula represents a conic projection of the soft palate
- E. The tongue is inserted to the roof of the oral cavity

**17. The tunics of the gastrointestinal tract are:**

- A. The innermost tunic – the serous layer (the parietal layer of the peritoneum)
- B. The external tunic – the serous layer (the visceral layer of the peritoneum)
- C. The submucosa, located exterior to the mucosa
- D. The submucosa, which contains blood vessels, lymph vessels and nerves
- E. A tunic which in the small bowel contains striated muscles arranged in longitudinal and circular pattern

**18. Choose the *false* statements about the pharynx and the oesophagus:**

- A. The pharynx is a segment that is common with the respiratory tract
- B. The oesophagus is the first segment which displays the three layers of the gastrointestinal tract
- C. The oesophagus crosses the diaphragm from the thoracic cavity to the abdominal cavity
- D. The oesophagus extends to the pyloric sphincter, where the stomach begins
- E. The pharynx pushes the food bolus to the oesophagus

**19. Choose the true statement(s) referring to the salivary glands:**

- A. They are considered accessory organs of the digestive system
- B. They have a gustatory function, due to the lingual papillae
- C. The largest salivary gland is the parotid gland, a paired gland
- D. Salivary amylase is the enzyme secreted by the salivary gland serosa
- E. There are two types of small salivary glands

**20. The following structures belong to the stomach:**

- A. Convex lateral surface – the large curvature, and the medial surface – the lesser curvature
- B. The medial convex surface – the lesser curvature connected to the pancreas
- C. The fundus (fornix) and the body (the main part)
- D. The pyloric antrum, a narrow distal part
- E. The inferior oesophageal sphincter (the cardiac sphincter)

**21. Choose the correct statement(s) referring to leukocytes:**

- A. Depending on the presence of cytoplasmic granules, they can be classified into granulocytes and agranulocytes
- B. Depending on their type, they can remain in the blood stream for a few hours up to a few months
- C. Lymphocytes are an example of granulocytes
- D. They migrate from the blood into the tissues by cytolysis
- E. Neutrophils belong to granulocytes

**22. Choose the correct statement(s) referring to haemoglobin metabolising:**

- A. The iron released from haemoglobin is transported to the spinal bone marrow where it contributes to new haemoglobin synthesis
- B. After the release of iron, the heme is initially transformed into biliverdin
- C. Biliverdin is subsequently converted into bilirubin which will be transported from the liver to the spleen and will be excreted into the bile
- D. By means of the bile, bilirubin is transported into the bowel and is subjected to the action of intestinal flora
- E. Under the action of the intestinal bacterial flora, part of the bilirubin is converted into urobilinogen

**23. A normal electrocardiogram shows the following waves:**

- A. Atrial depolarisation wave – ascending wave – P wave
- B. Atrial repolarisation wave – descending wave – P wave
- C. Ventricular depolarisation complex – QRS complex
- D. Ventricular repolarisation complex – QRS complex
- E. Ventricular repolarisation wave – rounded deflection – T wave

**24. White blood cells or leukocytes:**

- A. Their primary role is to protect tissues against infections and foreign substances in the body
- B. They have a nucleus which can have two or more lobes or can have different sizes and shapes
- C. They are anucleated, just like erythrocytes
- D. They have cellular organelles, but they don't have a nucleus
- E. Enter the blood stream by diapedesis and leave the blood stream in the same way

**25. Choose the correct statement(s) referring to blood group B:**

- A. It has B antigen in the serum
- B. It has B antigen on the erythrocyte surface
- C. Can donate blood to blood group 0
- D. Can donate blood to blood group B
- E. Has anti-A antibodies in the serum

**26. Choose the correct statement(s) referring to the respiratory system:**

- A. It carries oxygen and carbon dioxide between the cells of the body and the body's internal environment
- B. It comprises several organs whose function is to transport air to and from the lungs
- C. It contains a conducting zone consisting of a series of branching tubes which form the airways
- D. It is responsible with providing oxygen and nutrients to the tissues
- E. It is responsible with eliminating metabolic products from the tissues

**27. Choose the true statement(s) referring to the ascending branch of the loop of Henle:**

- A. No water reabsorption takes place in it (or only very small amounts)
- B. It is very permeable to water which is reabsorbed through the counter current mechanism
- C. It enables sodium and chloride ion reabsorption
- D. It ascends from the medulla back to the cortex
- E. It is the place where sodium and chloride ions enter from the medullary interstitium

**28. Choose the correct statement(s) referring to the nasal mucosa:**

- A. It lines the external part of the nose
- B. It forms the olfactory region in the inferior wall of the nasal cavity
- C. It contains blood vessels which warm cold air
- D. It secretes mucus which humidifies dry air
- E. It has ciliary cells which carry microorganism-contaminated mucus to the nostrils where it is eliminated

**29. The filtration process:**

- A. Recovers nutrients, salts and water from fluid of the proximal and distal tubules
- B. Is represented by the passage of fluid from blood plasma into the glomerular capsule through sub microscopic apertures
- C. It excretes the molecules from the peritubular capillaries into the nephron tubules
- D. It pushes water and small plasma molecules out of the glomerular capillaries and into Bowman's capsule
- E. It transports urine to the ureters, and from there to the bladder, the urethra and out of the body

**30. The following structures are accessories of the urinary system:**

- A. The ureter, a tubular organ
- B. The urinary bladder, a distensible sac
- C. The urinary bladder, situated anterior to the pubic symphysis
- D. The urethra, whose external opening is the external urethral orifice
- E. The convoluted seminiferous tubules in males

**31. Choose the true statement(s) referring to the male reproductive system:**

- A. It is responsible for producing, storing, maintaining and transporting spermatozoa
- B. It is responsible for producing, storing, maintaining and transporting male gametes
- C. It does not include androgen-hormone producing cells (secreted only by the adrenal gland)
- D. Have several structures similar to those of the female reproductive system: gonads, ducts, glands and accessory organs of the reproductive process
- E. External genitalia are called gonads in men and vulva in women

**32 Which of the following associations are correct?**

- A. Ectoderm – nervous system – the epidermis and its accessories (nails, hair)
- B. Mesoderm – excretory system – digestive tract mucosa
- C. Mesoderm – circulatory system – skeleton – cardiac muscle
- D. Endoderm – hypophysis – dermis – respiratory system
- E. Endoderm – digestive tract mucosa – respiratory tract mucosa

**33. Choose the true statements referring to the seminiferous tubules:**

- A. They are located in the lobules of testis and are also called ductus deferentes
- B. Their epithelium consists of germinal cells and interstitial cells
- C. The germinal cells of the seminiferous tubules produce spermatozoa – the male sexual cells
- D. The supporting cells of the seminiferous tubules produce testosterone
- E. The interstitial cells located outside the seminiferous tubules secrete androgenic hormones (mainly testosterone)

**34. Which of the following statements referring to spermatozoa are true?**

- A. They are diploid somatic cells
- B. They result from the division of the stem cells that migrated to the haematogenous marrow
- C. They are the result of the process of spermatogenesis
- D. They are haploid cells developing in the interstitial cells of the convoluted seminiferous tubules
- E. They are also called male reproductive cells or male gametes

**35. Choose the true statements referring to spermatogenesis:**

- A. It is the process by which male gametes are produced
- B. It takes place in the seminiferous tubules, in the internal layer of the germinal cells
- C. It begins in the outermost layer of the germinal cells in the seminiferous tubules
- D. It takes place in the supporting cells which are components of the straight seminiferous tubules
- E. The cells resulting from this process are called spermatozoa

**36. Choose the correct associations:**

- A. Addison's disease – glucocorticoid hypersecretion – hyperhydration
- B. Cushing syndrome – glucocorticoid hypersecretion – high blood pressure
- C. Addison's disease – glucocorticoid hyposecretion – low blood pressure
- D. Cushing syndrome – glucocorticoid hyposecretion – low blood pressure
- E. Graves disease – thyroxine hypersecretion - exophthalmia

**37. Choose the true statement(s) referring to the endocrine system:**

- A. Digestive endocrine cells can be located in the epithelium that lines the stomach or the small bowel
- B. The liver, the lungs and the kidneys can secrete minute amounts of steroid hormones
- C. Pancreatic cells produce a hormone called erythropoietin which is involved in digestion
- D. Kidney cells produce a hormone called erythropoietin which stimulates haematopoiesis
- E. The liver, the lungs and the kidneys can secrete small amounts of prostaglandins

**38. Which of the following statements characterise hormones?**

- A. They are substances which in the target cells bind to specific receptors
- B. They can have an amine structure (catecholamines)
- C. They decrease substratum activation energy in a chemical reaction, accelerating the reaction
- D. They can be excreted in bile, as biliary acids
- E. They can affect the cell membrane facilitating glucose transport into cells and decreasing blood glucose concentration (insulin)

**39. Choose the true statement(s) about hormones:**

- A. Adrenaline and noradrenaline are involved in emergency situations („fight or flight”)
- B. Calcitonin regulates osteoclast activity and increases blood calcium concentration
- C. Mineralocorticoids regulate lipid and carbohydrate metabolism
- D. Glucocorticoids regulate protein and carbohydrate metabolism
- E. Melatonin can influence the reproductive organs, especially the ovaries

**40. Choose the correct statement(s) referring to the suprarenal (adrenal) glands:**

- A. They are paired glands, located at the bottom of the kidneys
- B. They are in number of two, located at the bottom of the kidneys
- C. They have a cortical (inner) part and a medullar (outer) part
- D. They have a cortical (outer) part and a medullar (inner) part
- E. They have a cortical part, which has an endocrine function, and a medullar part, which has an exocrine function

**41. Choose the correct statement(s) regarding the nucleus:**

- A. The nucleus delimited by the membrane is present in eukaryote cells
- B. The nucleus is present in all the cells of the human body, with the exception of red blood cells (erythrocytes)
- C. The dense mass of the nucleus containing RNA (ribonucleic acid) is called nucleolus
- D. Inside the cell's nucleus, RNA (ribonucleic acid) molecules fold around histone complexes in order to form chromatin
- E. During the interphase period, when chromosomes cannot be distinguished from one another, the dispersed DNA mass and its associated proteins from the cell nucleus are called chromatin

**42. Choose the correct statement(s) referring to the mitochondria:**

- A. These organelles are the site of carbohydrate and lipid breakdown resulting in energy production
- B. Inside the mitochondria, cellular respiration is complete when oxygen combines with hydrogen and electrons and form water
- C. These organelles are the site of glucose synthesis resulting in energy production
- D. The energy produced by the mitochondria is stored as DNA (deoxyribonucleic acid)
- E. They are cellular organelles involved in the cell's energy processes

**43. Select the correct statements referring to cytology:**

- A. It is one of the branches of physiology
- B. It is the science that studies the structures of the body visible without the use of a microscope
- C. It is the study of cells and their functions
- D. It is the study of the excretory system and its functions
- E. It studies of the functions of the nervous system and its involvement in human behaviour

**44. Which of the following statements referring to homeostasis are true?**

- A. All the processes that contribute to maintaining internal stability of the body within normal limits are called homeostasis
- B. Homeostasis is not compatible with meeting the nutritional and energetic demands of body cells
- C. The constant maintaining of temperature and atmospheric pressure are necessary conditions to maintain homeostasis
- D. All organ systems are involved in maintaining homeostasis
- E. Various disorders (diseases), excessive temperature, pain or lack of blood oxygen induce external imbalances without impairing the body's internal environment

**45. Choose the correct statement(s) referring to the rough endoplasmic reticulum:**

- A. Is involved in protein synthesis (achieved by amino acid assembling in the attached ribosomes)
- B. Has certain structures attached, called lysosomes, which host the chemical combination of amino acids
- C. Is the site of lipid degradation
- D. Is an organelle consisting in a complex of membranes, which extend into the cytoplasm and have ribosomes attached in some of their areas
- E. Plays a role in protein synthesis through cellular respiration

**46. Choose the true statement(s) referring to the specific structures which make up the cerebral trunk:**

- A. The bulb hosts the centres which regulate cardiac activity and blood pressure
- B. The mesencephalon closes the cough reflex
- C. The bridge functions as a relay between the two cerebellar hemispheres
- D. The mesencephalon controls the reflex movements of the head and trunk as response to auditory stimuli
- E. The medulla oblongata sends signals to the cerebellum and the thalamus, but does not involve signals from the spinal cord

**47. Choose the correct statement(s) referring to cerebral hemispheres:**

- A. They contain more than 10 billion neurons
- B. They represent the largest part of the encephalon
- C. The shallow groove of the hemispheres is called fissure
- D. Each hemisphere is divided into five lobes
- E. Each hemisphere is divided into four lobes

**48. Which of the following statements describe(s) correctly structural aspects of the cerebral hemispheres?**

- A. They are joined by a bridge called corpus callosum, made of neuronal bodies and glial cells
- B. They are joined by a bridge called corpus callosum, made of nerve fibres
- C. They control complex mental functions (reasoning, learning, creativity)
- D. The frontal lobe lies anterior to each cerebral hemisphere
- E. Their surface is crossed by several grooves and gyri

**49. Choose the true statement(s) referring to the nervous impulse:**

- A. It originates in an electrochemical event triggered by the altered ion distribution in the glial cell
- B. It originates in an electrochemical event triggered by the altered ion distribution in the nerve cell
- C. It is transmitted by the resting neuron
- D. It is also called action potential
- E. When it is generated, a stimulus (electric, mechanical, chemical) changes the resting potential by opening sodium channels and allowing the passage of sodium ions into the nerve cell

**50. The following statement(s) is/are true about the vegetative or autonomic nervous system:**

- A. It regulates the activity of skeletal muscles and exocrine glands
- B. It regulates the activity of involuntary muscles and of glands (endocrine and exocrine)
- C. It regulates the activity of skeletal muscles and of salivary glands
- D. It contains two types of motor nerves: sympathetic and parasympathetic
- E. Parasympathetic nerves ensure the body's relaxation capacity