

1. 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)

2. 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 (Ca^{2+}) which act before the sodium influx
- E. Sodium ions (Na^+) which permeate the cell when acetylcholine is bound to the sarcolemma receptors

3. 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

4. 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

5. 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

6. 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

7. 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

8. 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

9. 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

10. 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)

11. 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

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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

18. 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

19. 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

20. 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

21. 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

22. 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

23. 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)

24. 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

25. 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

26. 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

27. 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

28. 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)

29. 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

30. 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

31. 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

32. 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

33. 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

34. 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

35. 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

36. 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

37. 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

38. 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

39. 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

40. 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

41. 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

42. The primary tastes include:

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

43. 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

44. 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

45. 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

46. 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

47. 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

48. 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

49. 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

50. 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