

1. The following statement(s) is/are true about myoglobin:

- A. It represents the molecule which contains heme and carries oxygen to the erythrocytes
- B. It binds oxygen molecules and stores them temporarily in the muscles
- C. Its presence in the muscle fibre decreases the necessity of a constant oxygen supply to the muscle during contraction
- D. It represents a deposit of high-energy phosphate bonds
- E. It participates in the completion of Krebs cycle

2. The following statement(s) is/are true about the cardiac muscle:

- A. It receives impulses generated by the cells of the excito-conductor system
- B. It is not under voluntary nervous control
- C. It has elongated and always unramified muscle fibres
- D. It has a striated microscopic aspect
- E. It has intercalated discs, common to all muscle tissue types

3. Muscle fibres contain:

- A. Proteins – myosin, troponin, actin in the striated muscle
- B. Protein – calmodulin, in the smooth muscle
- C. Troponin, calcium-fixating protein in the smooth muscle
- D. Actin and myosin in a 1: 16 ratio in the smooth muscle
- E. Calcium ions (Ca^{3+}) in the intracellular sarcoplasmic reticulum in the smooth muscle

4. Filament sliding cycles in striated muscles:

- A. Take place as long as adenosine triphosphate is available
- B. Take place very quickly, at millions of myosin ends
- C. Take place slowly, at both ends of the sarcomere
- D. Induce muscle relaxation by shortening sarcomeres
- E. Take place as long as there is a nerve stimulus

5. The following statement(s) is/are true about the smooth muscle:

- A. Its cytoplasm contains actin and myosin filaments, forming similar structures to that of microfibrils
- B. The contraction of the rectum wall muscle contributes to the elimination of the rectal content
- C. It has well-structured neuromuscular junctions
- D. It has diffuse junctions where neurotransmitters are released
- E. It can be classified into multi-unit and pluriunit smooth muscle

6. The tonsils:

- A. Consist in a bundle of lymphatic tissue located in the mucosa
- B. Are of three types: palatine, pharyngeal, lingual
- C. Belong to the lymphatic system
- D. Have a role in the body's defence
- E. Are of three types: submaxillary, submandibular, sublingual

7. The visceral peritoneum:

- A. Forms the external tunic of the gastrointestinal tract
- B. Is continuous with the parietal peritoneum
- C. Forms the internal tunic of the gastrointestinal tract
- D. Contains cells that secrete a fluid which lubricates the external surface of the organs
- E. Together with the parietal peritoneum, they form a space called „peritoneal cavity”

8. Dentin:

- A. Is one of the tooth's main components
- B. Is softer than dental enamel
- C. Lies on the tooth's external surface
- D. Is located inside the tooth's pulp
- E. Surrounds the tooth's pulp

9. Dentin – false statements:

- A. Surrounds the tooth's pulp, which is vascularised and innervated
- B. Is softer than dental enamel
- C. Lies under the enamel and represents the tooth's largest part
- D. Mainly consists of hydroxyapatite, having the same hardness as enamel
- E. Contains blood vessels, nerves and the tooth's connective tissue

10. The following statement(s) is/are true about deglutition and peristalsis:

- A. During deglutition, the tongue depresses and presses food to the roof of the mouth
- B. During deglutition, the tongue elevates and presses the bolus to the hard palate, pushing it towards the pharynx
- C. The food bolus enters the oesophagus after having passed the epiglottis which covers the pharynx
- D. Once it passes the epiglottis which covers the larynx, the food bolus enters the oesophagus
- E. Oesophageal peristalsis refers to the occurrence of contraction waves of the oesophageal smooth muscle layer (waves which push the food bolus to the stomach)

11. The following arteries contribute to the vascularisation of the limbs:

- A. The right axillary artery (for the right upper limb)
- B. The brachial, radial and ulnar arteries (for the arm and forearm)
- C. The superficial palmar arch (for the forearm)
- D. The external iliac artery, a branch of the femoral artery (for the lower limb)
- E. The femoral, popliteal, anterior tibial, posterior tibial and the dorsal arch (for the lower limb)

12. Choose the correct statement(s) about the pulse:

- A. It represents a pressure wave in the arteries, due to the contractions of the left ventricle
- B. It is normally measured at the radial artery at wrist level
- C. It can be measured at all the branches of the carotid artery
- D. It has the same rate as the heart rate, an average of 70 – 75 beats/minute
- E. Pulse becomes stronger as the blood gets farther from the heart

13. Choose the true statement(s) referring to blood:

- A. It transports respiratory gases to and from the lungs
- B. It contains figurative elements, embedded in a solid, yellowish substance called plasma
- C. It carries metabolic products from the cells to the kidney
- D. It is more viscous than water and its normal pH ranges between 7.35 – 7.45
- E. Its major components are represented by plasma and figurative elements

14. Choose the correct statement(s) about the heart and the cardiovascular system:

- A. The heart is responsible for the transport of respiratory gases in dissolved form
- B. The cardiovascular system consists of the heart and blood vessels
- C. The cardiovascular system includes a set of tubes which transport blood (blood vessels)
- D. The heart is the organ which acts like a pump in the cardiovascular system
- E. The cardiovascular system actually supplies only certain regions of the body

15. The following statement(s) is/are true about haemoglobin:

- A. It is a plasma protein, synthesized in the liver
- B. Contains 4 polypeptide chains: two called alpha and two called beta
- C. Each of the polysaccharide chains of haemoglobin is attached to a heme group
- D. Each haemoglobin molecule can transport a single oxygen atom
- E. Each haemoglobin molecule can transport four oxygen molecules (O₂)

16. 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

17. 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 submicroscopic 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

18. The following structures are accessories of the urinary system:

- A. The ureter, a tubular organ
- B. The urinary bladder, a distensible sak
- 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

19. Choose the correct answers from below:

- A. The nasal cavity is associated with the olfactory sense
- B. The part of the mucosa lining the nasal cavities, responsible for the sense of smell, forms the respiratory area
- C. The olfactory region is situated in the upper wall of the nasal cavities
- D. The nose is not adapted to warm up air, only to cool it down
- E. The blood vessels in the nasal mucosa warm up cold air

20. The following statement(s) is/are true about the airways:

- A. The bronchi are the smallest branches of the airways
- B. The smallest branches of the respiratory zone end in areolae
- C. The smallest branches of the respiratory system airways end in alveoli
- D. The smallest branches of the respiratory system conducting zone end in alveoli
- E. The airways include, in descending order, the bronchi, the bronchioles, the trachea and the larynx

21. Choose the correct statements about the foetal membranes:

- A. At the end of foetal development, the vitelline membrane develops, delimiting the amnion
- B. During its development, the embryo is surrounded by several membranes
- C. The chorion is the origin of the chorionic villi
- D. The allantois is a part of the umbilical cord
- E. The allantois is situated in the fallopian tubes, between the embryo and the vitelline sac

22. Which of the following statements referring to the vagina are true?

- A. It is a fibromuscular canal that extends from the cervix to the vaginal opening in the vestibule
- B. It has the property to distend and to extend superiorly and towards the anterior part of the pelvic cavity
- C. The walls of the vagina contain a vast network of blood vessels and layers of striated muscles
- D. The hymen is a thin fold of epithelium which partially or totally blocks the penetration of the vagina before intercourse
- E. The only function of the vagina is to eliminate fluids during the menstrual period

23. About the ovary, it is true that:

- A. It is an unpaired, median, organ of about 5 cm long/2.5 cm wide
- B. It is an unpaired, retroperitoneal, organ of about 5 cm long/2.5 cm wide
- C. It is supported by a pair of ligaments (the ovarian ligament and the suspensory ligament)
- D. It contains several groups of cells which form the white body (corpus albicans) responsible for producing female gametes
- E. It has follicles containing maturing oocytes that will be released during ovulation

24. The following statement(s) is/are true about the component parts of the uterus:

- A. Its upper part forms the body of the uterus
- B. The upper part of the body of the uterus is called cervix
- C. The inferior part of the uterus is called isthmus
- D. The uterine cavity continues with the vagina, and the latter continues with the cervix
- E. The cervical canal opens into the vagina through the external orifice of the cervix

25. Which of the following statements are true?

- A. The secretion of the cells lining the epididymis does not influence the composition of the seminal fluid
- B. The seminal fluid adapts its composition according to the secretions or the cells lining the epididymis
- C. Degradation products of stored sperm give seminal fluid its basic pH
- D. The pH of the seminal fluid is acid due to the degradation products of stored sperm
- E. Spermatozoa gain mobility in the epididymis in approximately two weeks

26. Choose the true statement(s) about hormones:

- A. Somatotrophic hormone (STH) stimulates body growth
- B. Thyroid hormones, amine hormones can be synthesized only when food contains a proper iodine contents
- C. Prolactin and STH are neurohypophyseal hormones
- D. Luteinizing hormone (LH) is a tropic hormone and stimulates testicular interstitial cell maturation
- E. Glucocorticoids are represented mainly by cortisol

27. Which of the following series of substances contain at least one hormone:

- A. Maltase, maltose, glycine, secretin, haemoglobin
- B. Acetylcholinesterase, intrinsic factor, myoglobin, erythropoiesis
- C. Phosphocreatine, histone, acetylcholine, prostaglandins, epinephrine
- D. Tyrosine, catalase, cyclic adenosine monophosphate, troponin
- E. Rh factor, fibrin, thromboplastin, cholecystokinin

28. Choose the true statement(s) referring to the adrenal medulla:

- A. It represents the innermost part of the adrenal gland
- B. It secretes hormones with complementary action to that of the sympathetic nervous system
- C. Its hormones are derived from cholesterol
- D. Its hormones are represented by adrenaline (epinephrine) and noradrenaline (norepinephrine)
- E. It secretes three types of hormones: mineralocorticoids, glucocorticoids and amine hormones

29. Choose the correct associations from below:

- A. Parathormone hyposecretion – low bone density
- B. Parathormone hypersecretion – low bone density
- C. Graves disease – thyroxine and triiodothyronine deficiency
- D. Myxoedema – thyroxine and triiodothyronine deficiency
- E. Inactive pancreatic beta cells – diabetes insipidus

30. The following statement(s) is/are true about the thymus:

- A. It is located in the inferior mediastinum
- B. It is situated behind the sternum
- C. It secretes thymosin
- D. It develops with age
- E. It contributes to B lymphocyte maturation

31. Choose the correct statement(s) referring to the plasma membrane:

- A. It mainly consists of proteins and phospholipids
- B. The lipids in the plasma membrane are arranged in two layers (bilayer structure)
- C. The proteins in the plasma membrane are arranged in two layers (bilayer structure)
- D. Has a solid mosaic structure due to the cholesterol which reduces its fluidity
- E. The proteins in the membrane carry out various functions (enzymatic, transmembrane transport)

32. The following statement(s) is/are true about adenosine triphosphate (ATP):

- A. When it eliminates its terminal phosphate group, it releases an energy equivalent to 7.3 kcal/mol
- B. When it decomposes in order to produce energy, it releases ribose and adenosine
- C. It serves as an energy source during muscle contraction
- D. It contains a single phosphate group with a high energy level, which is released under the action of ATP-ase
- E. In the muscle fiber, ATP must be constantly regenerated from ADP and phosphate groups

33. 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

34. Choose the correct associations from the statements below:

- A. Cleavage furrow – a groove in the kinetochore
- B. Cytokinesis – takes place after the telophase
- C. Mitosis and cytokinesis – make possible the growth of the body through sexual reproduction
- D. Mitosis and cytokinesis – replacement of old and deteriorated cells by forming new cells
- E. Cellular cleavage – strangulation of the cytoplasm by the cell membrane resulting in the formation of daughter cells

35. The following statement(s) referring to lysosomes is/are true:

- A. They contain enzymes which play a role in the cell digestion processes
- B. They represent the site for the cell's sodium and calcium deposits
- C. They contain enzymes which degrade the nutrient particles inside a cell and offers the final products to the cell
- D. They represent a source of salts such as sodium chloride
- E. They are vesicles which derive from the sacs of Golgi apparatus and contain enzymes for intracellular digestion

36. The following statement(s) is/are true referring to the cerebrospinal fluid:

- A. Cannot be found outside the dura mater
- B. Can be found in the space between the dura mater and the arachnoid
- C. It is collected by spinal tap (lumbar puncture) whenever a bacterial infection is suspected
- D. Whenever a disorder of the nervous system is suspected, a sample can be collected by spinal tap (lumbar puncture) for lab analysis
- E. Its function is to ensure the necessary nutrients required by the nerve cells of the central nervous system

37. The following statement(s) is/are true about serotonin:

- A. It is the single neurotransmitter in the parasympathetic nervous system
- B. It is not involved in sleep regulation
- C. It is a neurotransmitter present both in the encephalon and in the spinal cord
- D. It can be involved in certain mental functions or in the circadian rhythm
- E. It is the neurotransmitter specific to the motor plate

38. Choose the true statement(s) referring to the structure of the neuron:

- A. The cell body represents the major part of the cell's total size
- B. The cell body represents a small part of the cell's total size
- C. Dendrites are specialised in receiving nervous impulses and sending them from the cell body
- D. The surface of dendrites is covered with thousands of spines which help dendrites connect to other neurons
- E. The neuron's cell body contains the nucleus, mitochondria, Golgi apparatus, lysosomes, Nissl bodies

39. Referring to the central nervous system (CNS), the following statements are true:

- A. It consists of the encephalon (located in the cranial cavity) and the spinal cord (located in the spinal canal)
- B. It consists of 12 pairs of cranial nerves which connect the receptors and effectors with the encephalon
- C. It is the body's central control centre
- D. Certain CNS components receive the incoming information and release the appropriate reactions
- E. It consists of 31 pairs of spinal nerves which connect the encephalon to the spinal cord

40. The following statement(s) is/are true about the cranial nerves:

- A. They belong to the peripheral nervous system, together with the spinal nerves
- B. They belong to the central nervous system, together with the cerebral trunk
- C. Some of them originate in the cerebellar hemispheres
- D. They are designated by numbers (I – XII) and a different name for each
- E. The nerves I olfactory, II optic and VIII vestibulocochlear are sensory nerves

41. Choose the correct statement(s) referring to primary tastes:

- A. They are four in number: bittersweet, sourness, bitterness, saltiness
- B. They include the tastes of sweet and bitter
- C. The taste umami (savouriness) is connected to glutamate
- D. The taste bitter is perceived mainly at the back of the tongue
- E. The taste sour is mainly perceived by the receptors near the pharynx

42. The following statement(s) is/are true referring to the compartments of the eye:

- A. Both the anterior and the posterior compartment are subdivided into two regions
- B. The anterior compartment has two regions: the aqueous chamber and the vitreous chamber
- C. The anterior compartment has two regions: the anterior chamber and the posterior chamber
- D. The anterior chamber of the anterior compartment contains the aqueous humour
- E. The posterior chamber of the anterior compartment contains a gelatinous substance

43. The receptors for the perception of the 5 primary tastes are located as follows:

- A. For umami – near the larynx
- B. For umami – near the pharynx
- C. For sweetness – mainly at the tip of the tongue
- D. For sourness – at the back of the tongue
- E. For bitterness – at the back of the tongue

44. Choose the true statements referring to the iris:

- A. It is a component of the eyeball's middle layer
- B. It controls the quantity of light that passes through the pupil
- C. It contains pigments which are responsible for image formation
- D. It consists of two layers of striated muscles (a constrictive muscle and a dilator muscle)
- E. It belongs to the eyeball's middle layer together with the choroid and the ciliary body

45. The following statement(s) is/are true about pressure and vibration (related to the sense of touch):

- A. Light pressures and vibrations on the skin are not detected by Meissner corpuscles
- B. Strong vibrations on the skin are detected by Meissner corpuscles
- C. Strong pressure to the skin is detected by the Pacinian corpuscles
- D. Pain is perceived by all tactile receptors, with the exception of free nerve endings
- E. The impulses gathered by the pressure and vibration receptors are sent to the encephalon, where they are interpreted

46. The diaphysis and the epiphysis are components of:

- A. The ribs and sternum
- B. Carpal bones
- C. Bones of the pelvic girdle
- D. Humerus, femur, ulna
- E. Tibia, fibula, sternum

47. The following statement(s) referring to joints is/are true:

- A. They are organs connecting bones and muscles
- B. The term joint refers to the connexion between two or more bones
- C. One of their classification criteria is the range of movement they allow
- D. The term joint refers to the connection between muscles and ligaments
- E. The term joint refers to the connection between muscles and tendons

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

- A. The compact bone has concentric rings organised in systems called osteons
- B. The osteon has perforating canals which connect the central canals to the bone canals
- C. The lacunae are concentric lamellae of the osteon and they contain osteocytes
- D. The concentric bone lamellae contain lacunae which contain osteocytes
- E. Unlike the perforating canals, the central canal has no blood vessels

49. Choose the true statement(s) referring to bone formation:

- A. It is the result of a process called ossification
- B. It is called intramembranous if it occurs in the connective membranes (in the case of long bones)
- C. All the bones are formed as a result of intramembranous ossification
- D. Osteoblasts are the main bone-forming cells
- E. There are two types of bone formation: intramembranous for flat bones and endochondral for long bones

50. Synarthrosis is a joint found:

- A. Between the diaphyses of the radius and the ulna, where it's called syndesmosis
- B. Between the flat bones of the skull, where it's called suture
- C. At the junction between the radius and the humerus, where it's called gomphosis
- D. Between the vertebral bodies, where it's called intervertebral disc
- E. Between the parietal bones, where it's called suture