

## MEDICAL UNIVERSITY - PLEVEN, BULGARIA

**BIOLOGY EXAM Sample Test – v.3****Part A: Multiple Choice Questions**

1. **The functions of connective tissue are:**
  - A. Storage, secretion, isolation
  - B. Protection, secretion, transport
  - C. Support, protection, storage, isolation
  - D. Contraction, transport, conductivity
2. **What is the bone surface covered with?**
  - A. Yellow bone marrow
  - B. Red bone marrow
  - C. Periosteum
  - D. Adipose tissue
3. **Epithelial tissue is characterized by each of these traits, EXCEPT that \_\_\_\_\_.**
  - A. It lacks blood vessels.
  - B. It functions in secretion, absorption, and excretion.
  - C. Epithelial cells are loosely packed and have much intercellular material.
  - D. It is anchored to a basement membrane.
4. **What is the skeletal system?**
  - A. All the bones in the body.
  - B. All the muscles and tendons.
  - C. All the body's organs, both soft and hard tissue.
  - D. All the bones in the body and the tissues that connect them.
5. **How many bones are there in the average person's body?**
  - A. 33
  - B. 206
  - C. 639
  - D. 106
6. **Which of the following statement is INCORRECT?**
  - A. Bone is where most blood cells are made.
  - B. Bone serves as a storehouse for various minerals.
  - C. Bone is a dry and non-living supporting structure.
  - D. Bone protects and supports the body and its organs.
7. **Besides the brain, the skull also protects:**
  - A. The lungs
  - B. The diaphragm
  - C. The body's cells
  - D. The sense organs
8. **What makes bones so strong?**
  - A. Silica
  - B. Cartilage
  - C. Blood and marrow
  - D. Calcium and phosphorous
9. **The tongue is covered with:**
  - A. Cartilage
  - B. Periosteum
  - C. Connective tissue
  - D. Epithelial tissue
10. **The basic structural and functional unit of the kidneys is the:**
  - A. Urethra
  - B. Pelvis
  - C. Nephron
  - D. Bladder
11. **Which muscle tissue is multinucleate, voluntary, and bears striations?**
  - A. Skeletal muscle.
  - B. Smooth muscle.
  - C. Multiunit smooth muscle.
  - D. Cardiac muscle.

- 12. The kidney tubules are lined with \_\_\_\_\_ epithelial cells.**
- A. Columnar.
  - B. Cuboidal.
  - C. Squamous.
  - D. Ciliated.
- 13. What are the two main functions of the pancreas?**
- A. The manufacture of digestive juices and the production of the hormone insulin.
  - B. The storage of bile and the production of the hormone oestrogen.
  - C. The filtering of waste products and the manufacture of immune system cells.
- 14. How does the liver contribute to digestion?**
- A. It grinds food.
  - B. It removes excess water and returns it to the bloodstream.
  - C. It processes food nutrients.
  - D. It supports digestive processes by supplying substances useful to the digestive process
- 15. The heart has \_\_\_\_\_ chambers.**
- A. 2
  - B. 4
  - C. 6
  - D. 3
- 16. The thickest layer of the heart, which comprises all cardiac muscles is the:**
- A. Pericardium
  - B. Myocardium
  - C. Endocardium
  - D. Periosteum
- 17. The protein that makes RBCs red is:**
- A. Globulin
  - B. Hemoglobin
  - C. Myoglobin
  - D. Albumin
- 18. A major role in secretion is played by a membrane bound organelle, called:**
- A. Lysosome
  - B. Ribosome
  - C. Golgi complex
  - D. Nucleus
- 19. What is the central nervous system (CNS)?**
- A. The brain and the spinal cord.
  - B. The brain and the heart.
  - C. The heart and the spinal cord.
  - D. The spinal cord and the lungs.
- 20. The monomers of proteins are:**
- A. Amino acids.
  - B. Nucleotides.
  - C. Nitrogen bases.
  - D. Monosaccharides.
- 21. Which of the following statements is NOT true? Catalytic functions are characteristic of:**
- A. RNA.
  - B. DNA.
  - C. Proteins.
  - D. Enzymes.
- 22. Which of the biopolymers have all of the following biological functions of: storage of genetic information, transcription of genetic information, formation of inner cell structures, catalytic functions?**
- A. DNA.
  - B. RNA.
  - C. proteins.
  - D. polysaccharides.
- 23. The quaternary structure of proteins is characterized by:**
- A. The folding of polypeptide chain into a beta sheet.
  - B. The folding of polypeptide chain into a uniform spiral.
  - C. It is present only in proteins with catalytic functions.
  - D. It is built up of several polypeptide chains.

**24. The active transport is:**

- A. Also called osmosis.
- B. An energy-dependent process.
- C. Directed from the higher toward the lower concentration.
- D. Also called diffusion.

**25. Ribosomes:**

- A. Are only found in prokaryotic cells.
- B. Can be free or bonded to the endoplasmic reticulum.
- C. Are synthesized in the nucleus of prokaryotic cells.
- D. Are only found in eukaryotic cells.

**26. Main function of Golgi complex is:**

- A. The synthesis of proteins and lipids.
- B. Formation of ribosomes.
- C. Packing of secretions.
- D. Synthesis of sugars and proteins.

**27. Secretory vesicles are formed by:**

- A. The Golgi complex.
- B. The lysosomes.
- C. The mitochondria.
- D. Nucleus.

**28. Which of the following characteristics are common for both mitochondria and chloroplasts?**

- A. They are found in all organisms.
- B. The synthesis of ATP in electron-carrying chains takes place within them.
- C. They use equal energy sources for ATP synthesis.
- D. They contain DNA.

**29. Which of the following structures is common for both plant and animal cells?**

- A. Mitochondria.
- B. Cell wall.
- C. Chloroplast.
- D. Glycocalyx.

**30. Bacteria:**

- A. Are only unicellular.
- B. Have nuclei.

C. Are eukaryotic organisms.

D. Obtain energy only through the breaking down of substances in the absence of oxygen.

**31. The biocatalysts are:**

- A. Substances of sugar nature.
- B. Deoxyribonucleic acids.
- C. Specific.
- D. Nonspecific.

**32. DNA replication results in:**

- A. 2 completely new DNA molecules.
- B. 1 new DNA molecule, 1 old DNA molecule is conserved.
- C. 2 DNA molecules that each contains a strand of the original.
- D. 1 new RNA molecule

**33. Catabolic processes:**

- A. Are reduction processes.
- B. Are dissimilative processes.
- C. Cause biosynthesis of macromolecules.

**34. Which of the following compounds are end products in the Krebs cycle and the respiratory chain?**

- A. Carbon dioxide, water and ATP.
- B. Oxalic acid.
- C. Citric acid.
- D. Pyruvic acid.

**35. Coenzyme A is:**

- A. A protein.
- B. A strong reducer.
- C. A compound that participates in the biosynthesis of proteins.
- D. A key intermediate metabolite.

**36. A dominant gene usually shows itself over a:**

- A. Homozygous gene.
- B. Heterozygous gene.
- C. Recessive gene.
- D. Sex-linked trait.

**37. Oxidative phosphorylation is a process in which:**

- A. Is synthesized organic compounds
- B. Energy is temporarily stored in an usable form
- C. Metabolites are transported
- D. Alleles are assorted

**38. Autotrophs are:**

- A. Organisms that are able to synthesize organic compounds with the aid solar energy
- B. Heterozygous individuals
- C. Organisms that synthesize organic compounds with the aid energy, obtained from catabolic processes
- D. Organisms that live and grow in the absence of molecular oxygen

**39. An allele is:**

- A. A phenotype
- B. A homozygous genotype
- C. A heterozygous genotype
- D. One of several possible forms of a gene

**40. Mitosis consists of the following phases in a specific order:**

- A. Interphase, prophase, metaphase, anaphase
- B. Interphase, prophase, metaphase, telophase
- C. Prophase I, prophase II, metaphase, anaphase
- D. Prophase, metaphase, anaphase, telophase

**Part B: Short Answer Questions**

❖ Write your answers in the space provided for each question!

1. What are the two properties of nerve tissue?
  
  
  
  
  
  
  
  
  
  
2. How are the organs that secrete hormones called?
  
  
  
  
  
  
  
  
  
  
3. Name the molecules that build the organelles participating in protein synthesis and are not proteins.
  
  
  
  
  
  
  
  
  
  
4. What is the name of the metabolic pathway of digestion of glucose in the cell?
  
  
  
  
  
  
  
  
  
  
5. Round seeds are dominant to wrinkled seeds. What is the phenotype for a heterozygous offspring?