

MEDICAL UNIVERSITY – PLEVEN, BULGARIA

BIOLOGY EXAM Sample Test – v.2

Part A: Multiple Choice Questions

1. **Connective tissue fibers that have great tensile strength and can be found in ligaments and tendons are:**
 - A. Elastic fibers.
 - B. Collagenous fibers.
 - C. Reticular fibers.
 - D. Yellow fibers.
2. **Neuroglial cells help neurons in each of these ways, with the EXCEPTION of:**
 - A. Supporting and binding nervous tissue.
 - B. Carrying on phagocytosis.
 - C. Playing a role in cell-to-cell communications.
 - D. Transmitting nervous impulses.
3. **Which of the following is not one of the four major types of tissues?**
 - A. Epithelial.
 - B. Connective.
 - C. Nervous.
 - D. Skeletal muscle.
4. **The outer layer of the skin is the:**
 - A. Epiglottis.
 - B. Dermis.
 - C. Epidermis.
5. **Which bone protects the brain?**
 - A. Cranium.
 - B. Cerebrum.
 - C. Cerebellum.
 - D. Calcium.
6. **The spine is build up by vertebrae, grouped in:**
 - A. Cervical, thoracic and lumbar.
 - B. Cervical, thoracic, lumbar and sacral.
 - C. Cervical, thoracic, lumbar, sacral and the coccyx.
7. **The kidney tubules are lined with _____ epithelial cells.**
 - A. Columnar.
 - B. Cuboidal.
 - C. Squamous.
 - D. Ciliated.
8. **A sarcomere:**
 - A. Is a section of a myofibril.
 - B. Gets shorter when it contracts.
 - C. Has striations.
 - D. All of the choices are correct.
9. **A skeletal muscle cell:**
 - A. Has light and dark bands (striations).
 - B. Has only one nucleus.
 - C. Is under involuntary control.
10. **Which muscle tissue is uninucleated and bears striations?**
 - A. Skeletal muscle.
 - B. Smooth muscle.
 - C. Multiunit smooth muscle.
 - D. Cardiac muscle.
11. **Microvilli, that increase surface area, are more likely to be found in _____ epithelium.**
 - A. Simple cuboidal.
 - B. Simple squamous.
 - C. Transitional.
 - D. Simple columnar.
12. **Choose the correct sequence of the pathway through which air travels after entering the body.**
 - A. Larynx, pharynx, trachea bronchioles.
 - B. Pharynx, larynx, trachea, bronchioles.
 - C. Pharynx, larynx, bronchioles, trachea.
 - D. Pharynx, trachea, larynx, bronchioles.
13. **Which process DOES NOT occur in the nasal cavity?**
 - A. Trapping of large foreign bodies.
 - B. Exchange of gases.
 - C. Humidification of inhaled air.

- D. Warming of inhaled air.
- 14. In what solution the concentration of dissolved substances outside the cell is equal to the concentration inside the cell?**
- A. Hypotonic solution
 - B. Isotonic solution
 - C. Hypertonic solution
 - D. Osmotic solution
- 15. What is the central nervous system (CNS)?**
- A. The brain and the heart.
 - B. The brain and the spinal cord.
 - C. The heart and the spinal cord.
 - D. The spinal cord and the lungs.
- 16. Which of the biopolymers have all of the following biological functions: storage of genetic information, transcription of genetic information, formation of inner cell structures, catalytic functions?**
- A. DNA.
 - B. RNA.
 - C. proteins.
 - D. ATP
- 17. In terms of biochemistry, what type of process is the breakdown of glucose to H_2O and CO_2 ?**
- A. Anabolic.
 - B. Aerobic.
 - C. Catabolic
 - D. Autotrophic
- 18. DNA replication results in:**
- A. 1 new RNA and 1 new DNA molecules.
 - B. 2 DNA molecules that each contains a strand of the original one.
 - C. 1 new DNA molecule, 1 conserved old DNA.
 - D. 1 new RNA molecule.
- 19. Cristae are specific formations in the:**
- A. Mitochondria
 - B. Nucleus
 - C. Ribosomes
 - D. Golgi Apparatus
- 20. Ribosomes:**
- A. Are synthesized in the nucleus of prokaryotic cells.
 - B. Are only found in prokaryotic cells.
 - C. Can be free or bonded to the endoplasmic reticulum.
 - D. Are only found in eukaryotic cells.
- 21. Catabolic processes:**
- A. Are reduction processes.
 - B. Cause biosynthesis of macromolecules.
 - C. Are dissimilative processes.
 - D. Consume energy
- 22. Which of the following compounds are end products in the Krebs cycle and the respiratory chain?**
- A. Oxalic acid.
 - B. Citric acid.
 - C. Carbon dioxide, water and ATP.
 - D. Hydrogen, oxygen and NAD
- 23. Coenzyme A is:**
- A. A protein.
 - B. A strong reducer.
 - C. A key intermediate metabolite.
 - D. A compound that participates in the biosynthesis of proteins.
- 24. Carbohydrates are broken down into simple sugars by:**
- A. Polymerases
 - B. Amylases
 - C. Proteases
 - D. Lipases
- 25. Which of the following features do protists, fungi, plant, and animals share but bacteria lack?**
- A. DNA.
 - B. A nucleus.
 - C. Reproduction.
 - D. A cell membrane.
- 26. What three components make up the nucleotide subunits?**
- A. DNA, ribose, and adenine.
 - B. Phosphate, sugar, and nitrogen base.
 - C. Sugar, DNA, and oxygen.
 - D. Phosphate, ribose, and deoxyribose.
- 27. The movement of materials against a concentration gradient is known as:**
- A. Endocytosis.
 - B. Facilitated diffusion.

- C. Active transport.
D. Osmosis.
- 28. Glycolysis takes place in the**
A. Cytosol.
B. Mitochondrial membrane
C. Mitochondrial matrix.
D. Nucleus
- 29. What is the solution if the concentration of dissolved substances is lower in the solution outside the cell than the concentration inside of the cell.**
A. Hypotonic.
B. Hypertonic.
C. Isotonic.
D. Aquatic
- 30. What is the function of mitochondria?**
A. Makes proteins.
B. Transports materials.
C. Breaks down substances and releases energy.
D. Stores food.
- 31. What is the function of Gorgy apparatus?**
A. Breaks down food.
B. Makes proteins.
C. Directs cell activity.
D. Process and bundle macromolecules.
- 32. Ribosomes are found:**
A. On the smooth endoplasmic reticulum.
B. In the nucleus.
C. On the Golgi apparatus.
D. On the rough endoplasmic reticulum.
- 33. This is the gel-like substance found in a cell.**
A. Cytoplasm.
B. Chromosomes.
C. Vacuole.
D. Ribosomes.
- 34. Which of the following organelles may be absent from eukaryotic cells?**
A. Nucleus.
B. Mitochondria.
C. Plasma membrane.
D. Chloroplast.
- 35. Which cell structure stores food, nutrients, and waste in the cell?**
A. Vacuole.
B. Cell membrane.
C. Mitochondria.
D. Nucleus.
- 36. Mendel's law of _____ states that a random assortment of maternally and paternally derived chromosomes in meiosis results in gametes that have different combinations of these genes.**
A. Particulate inheritance .
B. Dominance.
C. Segregation.
D. Independent assortment.
- 37. Consider the cross AaBb x AaBb. If the alleles for both genes exhibit complete dominance, what phenotypic ratio is expected in the resulting offspring?**
A. 1:1:1:1
B. 9:3:3:1
C. 3:6:3:1:2:1
D. 1:2:1:2:4:2:1:2:1
- 38. The function of the endoplasmic reticulum is:**
A. To digest lipids and proteins.
B. To fold and transport various proteins and lipids.
C. To contain important directions for the cell and cellular functions.
D. To provide structure and support for the cell.
- 39. Glycolysis yields a small amount of ATP.**
A. True.
B. False.
- 40. In a cell, water always moves to reach an equal concentration on both sides of the membrane.**
A. True.
B. False.

Part B: Short Answer Questions

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

1. How is called the connective tissue covering the surface of the bones?
2. Where are produced blood cells?
3. What is the name of the process of synthesis of RNA?
4. What types of cells do you know depending of presence or absence of a nucleus and membrane-bound organelles?
5. Round seeds are dominant to wrinkled seeds. What is the phenotype for a homozygous dominant offspring?