

Advanced Human Biology Assessment

Human Biology · Answer Key · 20 Questions

1. Which specific immunoglobulin class is the first to be secreted in a primary immune response and functions as an effective agglutinating agent?

- A) IgG
- B) IgM**
- C) IgA
- D) IgE

2. During the cardiac cycle, which physiological event directly precedes the closure of the atrioventricular valves?

- A) Ventricular systole**
- B) Atrial diastole
- C) Ventricular diastole
- D) Isovolumetric relaxation

3. In the context of the nephron, where does the majority of obligatory water reabsorption occur?

- A) Distal convoluted tubule
- B) Loop of Henle
- C) Proximal convoluted tubule**
- D) Collecting duct

4. Which hormone acts primarily on the distal convoluted tubules and collecting ducts to increase sodium reabsorption?

- A) Aldosterone**
- B) Cortisol
- C) Antidiuretic hormone
- D) Angiotensinogen

5. What is the primary function of the enzyme aminopeptidase located on the brush border of the small intestine?

- A) Hydrolyzing lipids into fatty acids
- B) Cleaving terminal amino acids from peptides**
- C) Catalyzing starch into maltose
- D) Breaking down nucleic acids

6. Which process describes the movement of air into the lungs resulting from a decrease in intrapleural pressure?

- A) Passive expiration
- B) Forced inspiration
- C) Quiet inspiration**
- D) Forced expiration

7. In the sliding filament model of muscle contraction, which band of the sarcomere remains constant in length during contraction?

- A) I-band
- B) H-zone
- C) A-band**
- D) Z-line

8. Which type of glial cell is responsible for the myelination of axons within the peripheral nervous system?

- A) Astrocytes
- B) Oligodendrocytes
- C) Microglia
- D) Schwann cells**

9. During the follicular phase of the ovarian cycle, which hormone is primarily responsible for the rapid growth of the endometrium?

- A) Progesterone
- B) Estrogen**
- C) LH
- D) FSH

10. What is the role of the acrosome in the process of human fertilization?

- A) Providing motility to the sperm
- B) Housing the paternal mitochondria
- C) Releasing hydrolytic enzymes to penetrate the zona pellucida**
- D) Encoding genetic information for the zygote

11. Which part of the brain is the primary integration center for the autonomic nervous system and thermoregulation?

- A) Thalamus
- B) Hypothalamus**
- C) Cerebellum
- D) Medulla oblongata

12. In the ABO blood group system, which genotype represents a person with type O blood?

- A) I^Ai
- B) ii**
- C) I^AI^B
- D) I^Bi

13. Which biochemical pathway occurs in the cytosol and results in the net production of two ATP and two NADH molecules?

- A) Krebs cycle
- B) Electron transport chain
- C) Glycolysis**
- D) Beta-oxidation

14. What is the effect of parathyroid hormone (PTH) on blood calcium levels?

- A) Decreases serum calcium by promoting bone deposition
- B) Increases serum calcium by stimulating osteoclast activity**
- C) Inhibits calcium reabsorption in the kidneys
- D) Promotes calcitonin secretion

15. Which connective tissue structure connects muscle to bone?

- A) Ligament
- B) Tendinopathy
- C) Tendon**
- D) Fascia

16. During DNA replication, which enzyme is responsible for synthesizing the RNA primer required for DNA polymerase?

- A) DNA ligase
- B) Helicase
- C) Primase**
- D) Topoisomerase

17. Which chemical messenger is responsible for inhibiting the release of growth hormone from the anterior pituitary?

- A) Somatostatin**
- B) Dopamine
- C) Prolactin
- D) Thyrotropin-releasing hormone

18. What is the primary site of hematopoiesis in a healthy adult?

- A) Liver
- B) Spleen
- C) Yellow bone marrow
- D) Red bone marrow**

19. In the respiratory system, which structure prevents the collapse of the trachea during inhalation?

- A) Hyaline cartilage rings**
- B) Smooth muscle layers
- C) Elastic connective tissue
- D) Ciliated epithelium

20. Which vitamin is required as a coenzyme for the synthesis of clotting factors II, VII, IX, and X?

- A) Vitamin A
- B) Vitamin D
- C) Vitamin K**
- D) Vitamin C