Advanced Human Body Systems

Human Body Basics · Answer Key · 20 Questions

1. Which component of the innate immune system is responsible for phagocytosing (engulfing and digesting) pathogens and cellular debris, acting as the first line of cellular defense?

A) Plasma cells
B) Mast cells
C) Neutrophils
D) B lymphocytes

2. The process of reabsorption in the nephron, critical for conserving water and essential solutes, primarily occurs in which segment?

A) Glomerulus
B) Bowman's capsule
C) Distal convoluted tubule
D) Loop of Henle and Proximal convoluted tubule

3. What is the primary function of the epididymis in the male reproductive system?

A) To produce testosterone
B) To store and mature sperm
C) To transport sperm to the vas deferens
D) To synthesize seminal fluid

4. Which type of glial cell in the central nervous system produces myelin, a fatty sheath that insulates axons and speeds up nerve impulse transmission?

A) Astrocytes
B) Microglia
C) Oligodendrocytes
D) Ependymal cells

5. The 'fight-or-flight' response, mediated by the sympathetic nervous system, leads to the release of adrenaline (epinephrine) and noradrenaline (norepinephrine) from which endocrine gland?

A) Thyroid gland
B) Pituitary gland
C) Adrenal glands
D) Pancreas

6. Which hormone, secreted by the thyroid gland, plays a crucial role in regulating metabolism by increasing oxygen consumption and heat production in most tissues?

A) Calcitonin
B) Parathyroid hormone
C) Thyroxine (T4)
D) Insulin

7. The process by which mature red blood cells are produced is called erythropoiesis, and it is stimulated by the hormone erythropoietin (EPO), which is primarily synthesized by which organ?

A) Liver
B) Spleen
C) Bone marrow
D) Kidneys

8. What is the primary site of nutrient absorption in the digestive system, characterized by its extensive surface area due to villi and microvilli?

A) Stomach
B) Large intestine
C) Duodenum
D) Small intestine

9. Which neurotransmitter is primarily involved in muscle contraction at the neuromuscular junction, and also plays a role in learning and memory in the central nervous system?

A) Dopamine
B) Serotonin
C) Acetylcholine
D) GABA

10. The body's ability to maintain a stable internal environment, despite external changes, is known as homeostasis. Which system is particularly crucial for regulating blood glucose levels through the action of insulin and glucagon?

A) Respiratory system
B) Endocrine system
C) Nervous system
D) Circulatory system

11. Which of the following is the correct order of layers found in the wall of the digestive tract, from lumen outward?

A) Muscularis externa, submucosa, mucosa, serosa
B) Mucosa, submucosa, muscularis externa, serosa
C) Serosa, muscularis externa, submucosa, mucosa
D) Submucosa, mucosa, serosa, muscularis externa

12. The primary function of the alveoli in the lungs is gas exchange. What is the approximate surface area of the alveoli in an adult human, facilitating this vital process?

A) 1 square meter
B) 10 square meters
C) 70 square meters
D) 150 square meters

13. Which protein is the primary structural component of connective tissues like tendons and ligaments, providing tensile strength?

A) Actin
B) Myosin
C) Collagen
D) Elastin

14. The semicircular canals and the vestibule within the inner ear are primarily responsible for detecting which type of sensation?

A) Hearing
B) Smell
C) Balance and spatial orientation
D) Taste

15. What is the name of the serous membrane that lines the abdominal cavity and also covers the abdominal organs?

A) Pleura
B) Pericardium
C) Peritoneum
D) Synovium

16. Which specific type of white blood cell is responsible for producing antibodies, playing a critical role in the adaptive immune response?

A) Neutrophils
B) Eosinophils
C) Basophils
D) B lymphocytes (Plasma cells)

17. The process of cellular respiration, which generates ATP, occurs predominantly within which organelle?

A) Nucleus
B) Ribosome
C) Endoplasmic reticulum
D) Mitochondrion

18. Which structure within the brainstem is crucial for regulating breathing rate and depth?

A) Cerebellum
B) Thalamus
C) Pons and Medulla Oblongata
D) Hypothalamus

19. What is the primary role of the spleen in the human body?

A) Producing digestive enzymes
B) Filtering blood, removing old red blood cells, and storing white blood cells
C) Regulating blood pressure
D) Producing hormones for growth

20. The process by which unabsorbed water and electrolytes are removed from the chyme, forming feces, primarily occurs in which part of the digestive system?

A) Small intestine
B) Stomach
C) Large intestine
D) Esophagus