

Advanced Veterinary Science and Animal Biology

Veterinary Science · Answer Key · 18 Questions

1. Which specialized structure in the avian respiratory system facilitates unidirectional airflow, ensuring a continuous supply of oxygenated air during both inhalation and exhalation?

- A) The syrinx
- B) The parabronchi
- C) The air sacs**
- D) The tracheal bifurcation

2. In ruminant physiology, which compartment of the stomach is primarily responsible for the absorption of volatile fatty acids (VFAs) and water?

- A) Rumen
- B) Reticulum
- C) Omasum**
- D) Abomasum

3. What is the primary function of the tapetum lucidum in many nocturnal mammalian species?

- A) To regulate intraocular pressure
- B) To increase light sensitivity by reflecting light back through the retina**
- C) To filter ultraviolet radiation from sunlight
- D) To provide color differentiation in low-light environments

4. Which electrolyte imbalance is a classic clinical manifestation of Addison's disease (hypoadrenocorticism) in canine patients?

- A) Hyperkalemia and hyponatremia**
- B) Hypokalemia and hypernatremia
- C) Hypercalcemia and hypomagnesemia
- D) Hypocalcemia and hyperphosphatemia

5. Which mineral deficiency in grazing livestock is most strongly associated with 'white muscle disease' due to its role in glutathione peroxidase activity?

- A) Copper
- B) Selenium**
- C) Zinc
- D) Manganese

6. In the context of feline nutrition, which amino acid is essential because cats lack the enzyme activity (dioxxygenase) required for its synthesis from cysteine?

- A) Arginine
- B) Taurine**
- C) Methionine
- D) Tryptophan

7. The 'Bohr effect' describes the shift in the oxygen-hemoglobin dissociation curve in response to which environmental or physiological change?

- A) Increased atmospheric pressure
- B) Decreased carbon dioxide partial pressure
- C) Increased hydrogen ion concentration (lower pH)**
- D) Decreased core body temperature

8. Which zoonotic pathogen is characterized by its resilience in the environment and is typically transmitted to veterinary staff through contact with the urine of infected wildlife, such as rodents or raccoons?

- A) Leptospira interrogans**
- B) Borrelia burgdorferi
- C) Coxiella burnetii
- D) Bartonella henselae

9. In veterinary anatomy, which cranial nerve is responsible for both sensory innervation of the pharyngeal mucosa and motor control of the muscles involved in swallowing?

- A) Trigeminal nerve
- B) Facial nerve
- C) Glossopharyngeal nerve**
- D) Hypoglossal nerve

10. Which immunoglobulin is the first to be produced by a neonate's immune system upon exposure to a pathogen, and is also the primary isotype found in bovine colostrum?

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

11. What is the primary mechanism of action of non-steroidal anti-inflammatory drugs (NSAIDs) in veterinary medicine?

- A) Inhibition of lipoxygenase
- B) Inhibition of cyclooxygenase (COX) enzymes**
- C) Antagonism of opioid receptors
- D) Suppression of glucocorticoid receptors

12. Which vertebrate class typically possesses a three-chambered heart consisting of two atria and one partially divided ventricle, allowing for shunting of blood away from the lungs during diving?

- A) Aves
- B) Mammalia
- C) Reptilia**
- D) Chondrichthyes

13. The condition known as 'Hardware Disease' in bovines is medically referred to as:

- A) Traumatic reticulopericarditis**
- B) Abomasal displacement
- C) Rumen acidosis
- D) Omasal impaction

14. What is the significance of the 'pampiniform plexus' in the spermatic cord of male mammals?

- A) It produces testosterone
- B) It acts as a thermoregulatory heat exchanger for arterial blood**
- C) It facilitates the storage of mature spermatozoa
- D) It secretes alkaline fluid for semen buffering

15. Which metabolic pathway is utilized by the liver to convert ammonia into a less toxic substance for excretion in mammals?

- A) The Cori cycle
- B) The Krebs cycle
- C) The Urea cycle**
- D) The Glyoxylate cycle

16. In equines, what is the primary clinical significance of the 'caudal cecal band' during surgical exploration of the abdomen?

- A) It serves as a landmark for the ileocecal fold**
- B) It anchors the cecum to the dorsal body wall
- C) It contains the major blood supply to the large colon
- D) It prevents cecal volvulus

17. Which avian organ is specifically adapted for the mechanical breakdown of food, often containing ingested grit to assist in the grinding process?

- A) Crop
- B) Proventriculus
- C) Gizzard (ventriculus)**
- D) Cloaca

18. What is the primary role of the 'salt gland' found in many marine bird species?

- A) Regulation of calcium homeostasis
- B) Excretion of excess salt to maintain osmotic balance**
- C) Synthesis of lipids for waterproofing feathers
- D) Storage of nitrogenous waste in arid environments