

# **Anatomy & Physiology of Domesticated Animals — Exam 4**

---

## **Section I – True/False (Explain if False)**

1. \_\_\_\_\_ The medulla of the kidney contains the nephrons.
2. \_\_\_\_\_ The glomerulus filters small solutes from the blood.
3. \_\_\_\_\_ Basophils are the main phagocytic cells of the immune system.
4. \_\_\_\_\_ Transitional epithelium lines the urinary tract.
5. \_\_\_\_\_ The ureters store urine until it is released.
6. \_\_\_\_\_ Cytokines are signaling proteins that help recruit more immune cells.
7. \_\_\_\_\_ Ruminants perform microbial fermentation in the abomasum.
8. \_\_\_\_\_ The pancreas produces digestive enzymes that break down carbohydrates, proteins, and lipids.
9. \_\_\_\_\_ Oxytocin causes smooth muscle contraction.
10. \_\_\_\_\_ All hormones can pass directly through the cell membrane.
11. \_\_\_\_\_ Adaptive immune responses are immediate and inherited.
12. \_\_\_\_\_ Urine normally contains red blood cells.
13. \_\_\_\_\_ Ghrelin stimulates hunger.
14. \_\_\_\_\_ The omasum receives food directly from the abomasum.
15. \_\_\_\_\_ Antigens are substances capable of initiating an immune response.

## **Section II – Multiple Choice (Choose the best answer)**

1. Which cells participate in memory and long-term adaptive immunity?

- a) Neutrophils
- b) B cells and T cells
- c) Basophils
- d) Macrophages

2. Which structure houses the nephron?

- a) Medulla
- b) Hilus
- c) Cortex
- d) Renal pelvis

3. What type of epithelial tissue lines the urinary bladder?

- a) Simple squamous
- b) Transitional epithelium
- c) Stratified columnar
- d) Simple cuboidal

4. Which antibody type is associated with allergies?

- a) IgA
- b) IgG
- c) IgM
- d) IgE

5. What hormone stimulates milk let-down and smooth muscle contraction?

- a) Cortisol
- b) Oxytocin
- c) Insulin
- d) Aldosterone

6. What process occurs in the glomerulus?

- a) Hormone secretion
- b) Filtration of small solutes from blood
- c) Water absorption
- d) Enzymatic digestion

7. Which immune cells are responsible for phagocytosis in the innate immune system?

- a) Basophils and eosinophils
- b) T cells and NK cells
- c) Neutrophils and macrophages
- d) Lymphocytes

8. The ruminant compartment responsible for waste removal and regurgitation is:

- a) Omasum
- b) Abomasum
- c) Rumen
- d) Reticulum

9. Which hormone lowers blood glucose after a meal?

- a) Glucagon
- b) Epinephrine
- c) Insulin
- d) Melatonin

10. Which class of hormones requires a second messenger?

- a) Steroid hormones
- b) Peptide hormones
- c) Amine hormones
- d) All hormones

11. What is the primary function of the endocrine system?

- a) Blood filtration
- b) Breakdown of nutrients
- c) Regulation of growth, metabolism, and homeostasis
- d) Oxygen transport

12. Which hormone is released by the adrenal gland during stress?

- a) Melatonin
- b) Cortisol
- c) Insulin
- d) Calcitonin

13. Which digestive enzyme is responsible for breaking down lipids?

- a) Amylase
- b) Lipase
- c) Pepsin
- d) Protease

14. What structure is responsible for suspending the female reproductive tract from the dorsal body wall?

- a) Cervix
- b) Oviduct
- c) Broad ligament
- d) Urethra

15. Which ruminant stomach compartment is primarily responsible for water absorption?

- a) Rumen
- b) Reticulum
- c) Omasum
- d) Abomasum

16. Which structure forms a protective seal between the uterus and vagina?

- a) Vulva
- b) Cervix
- c) Urethra
- d) Infundibulum

17. What type of feedback loop is involved when T3/T4 inhibits TRH and TSH release?

- a) Positive feedback
- b) Paracrine signaling
- c) Negative feedback
- d) Somatic response

18. Which nutrient class is considered the most essential for life?

- a) Proteins
- b) Lipids
- c) Water
- d) Vitamins

19. What hormone increases hunger and stimulates ingestion?

- a) Ghrelin
- b) Glucagon
- c) Progesterone
- d) Epinephrine

20. Where does enzymatic digestion occur in ruminants?

- a) Rumen
- b) Omasum
- c) Reticulum
- d) Abomasum

21. Which hormone is involved in stress and secreted by the adrenal cortex?

- a) Aldosterone
- b) Cortisol
- c) Epinephrine
- d) Insulin

22. What cell type presents antigens via MHC II?

- a) B cells
- b) Neutrophils
- c) Parietal cells
- d) Leydig cells

23. The corpus luteum produces which hormone?

- a) Estrogen
- b) Progesterone
- c) LH
- d) GnRH

### Section III – Matching

Match each item to its correct definition or function.

- A. Neutrophil
- B. Basophil
- C. Eosinophil
- D. Macrophage
- E. Antigen
- F. Cytokines
- G. Transitional Epithelium
- H. Cortex
- I. Medulla
- J. Reticulum

- \_\_\_\_\_ Signaling proteins that recruit additional immune cells
- \_\_\_\_\_ Inner portion of the kidney, darker in appearance
- \_\_\_\_\_ The ruminant stomach compartment responsible for initiating regurgitation
- \_\_\_\_\_ Tissue that stretches to line the urinary bladder and urinary tract
- \_\_\_\_\_ A large phagocytic cell that originates from a monocyte
- \_\_\_\_\_ The outer kidney region where nephrons are housed
- \_\_\_\_\_ Immune cell active during parasitic infections and allergic reactions
- \_\_\_\_\_ A foreign molecule capable of triggering an immune response
- \_\_\_\_\_ Immune cell that releases histamine during allergic responses
- \_\_\_\_\_ Fast-acting phagocyte involved in innate immunity
- \_\_\_\_\_ Stretchable epithelial tissue that prevents urine diffusion
- \_\_\_\_\_ Immune cell active in parasitic defense and hypersensitivity reactions
- \_\_\_\_\_ Chemical messengers used for cell-to-cell immune communication
- \_\_\_\_\_ Structure involved in trapping foreign material that stimulates rumination
- \_\_\_\_\_ First line phagocyte that rapidly responds to bacterial infection
- \_\_\_\_\_ Kidney layer containing renal corpuscles and the majority of nephrons
- \_\_\_\_\_ Foreign substance recognized by the immune system
- \_\_\_\_\_ Phagocytic cell that engulfs pathogens and presents antigens

\_\_\_\_\_ Cell type that participates in allergic reactions by releasing histamine

\_\_\_\_\_ Kidney region responsible for collecting ducts and concentration of urine

#### **Section IV – Short Answer**

1. Define innate vs. adaptive immunity.

2. What is the function of the renal system?

3. Describe the three modes of hormone transmission.

4. What is microbial fermentation and where does it occur?

5. List the digestive enzymes and their functions.

6. What is Digestion?

7. Explain the process of Urine Formation?

8. What is the difference between Pathogen and Antigen?

9. Control of water retention is controlled by \_\_\_\_\_, which is secreted by the \_\_\_\_\_.

10. What is the broad ligament ?

11. What are the 6 essential nutrients?

**Section V – Extended Response**

1. Describe the structure and function of the nephron.

2. Explain the inflammatory response.

3. Describe the digestive process from start to finish.

4. Discuss ways the body regulates temperature control of the testes.

5. What is the pathway of the Male Gamete out of the body?

6. What are the Gonadotrophins in both Males and Females