

17) Endocrine System

Multiple Choice Questions

1. The endocrine system primarily utilizes which type of molecules to communicate between distant tissues and cells?

- A) Neurotransmitters
- B) Enzymes
- C) Hormones
- D) Electrolytes

2. Which of the following is NOT a primary function of the endocrine system?

- A) Growth and development
- B) Sound perception
- C) Reproduction
- D) Regulation of cellular metabolism

3. Which hormones are primarily derived from the amino acid tyrosine?

- A) Insulin and glucagon
- B) T3 and T4
- C) Aldosterone and cortisol
- D) Oxytocin and vasopressin

4. Most steroid hormones are synthesized from:

- A) Carbohydrates
- B) Proteins
- C) Cholesterol
- D) Nucleic acids

5. The cAMP Second Messenger System is initiated by the activation of which enzyme?

- A) Lipase
- B) Kinase

C) Adenylate cyclase

D) Phospholipase C

6. In the Cell Membrane Phospholipid Second Messenger System, which molecule activates protein kinase C?

A) DAG

B) cAMP

C) IP3

D) Calmodulin

7. Which second messenger system responds to the entry of calcium into cells?

A) cAMP System

B) Phospholipid System

C) Calcium-Calmodulin System

D) DAG System

8. What type of hormone is insulin?

A) Amino-acid based hormone

B) Steroid hormone

C) Protein/Peptide hormone

D) Nucleic acid-based hormone

9. Which gland is primarily responsible for the release of epinephrine?

A) Thyroid

B) Pancreas

C) Adrenal medulla

D) Anterior pituitary

10. Which hormone primarily regulates water balance in the body?

A) Insulin

B) T3

C) Vasopressin (ADH)

D) Prolactin

True or False Questions

11. The endocrine system's effects are typically instant compared to the nervous system. (True / False)
12. Hormones can only be stored in the cell if they are water-soluble. (True / False)
13. All hormones have the same chemical structure. (True / False)
14. The endocrine system's primary role is in immediate reflex actions. (True / False)
15. Signal amplification means a small concentration of hormones can produce significant cellular responses. (True / False)

Fill in the Blank Questions

16. The endocrine system and the _____ system are key in regulating bodily functions.
17. _____ hormones are derived from cholesterol and are lipid-soluble.
18. The second messenger, _____, is formed by the activation of adenylate cyclase.
19. DAG and IP3 are products of the breakdown of _____ in the cell membrane.
20. The binding of a ligand to a receptor can trigger many molecular changes via _____ messenger cascades.

Short Answer Questions

21. Differentiate between the primary functions of the endocrine and nervous systems.
22. Describe the chemical structure of protein/peptide hormones and provide two examples.
23. Explain the role of cholesterol in the synthesis of certain hormones.

24. How does the Calcium-Calmodulin Second Messenger System operate?

25. Describe the significance of the cAMP Second Messenger System in hormonal action.

Match the hormone with its primary function

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| 26. Insulin | A) Stimulates the flight-or-fight response |
| 27. Epinephrine | B) Regulates calcium levels in the blood |
| 28. T3/T4 | C) Regulates metabolic rate and temperature |
| 29. Vasopressin | D) Regulates blood glucose levels |
| 30. Parathyroid hormone | E) Maintains water balance in the body |