

Endocrine System – 35 Very Hard MCQs

1. The relatively slower response of the endocrine system compared with the nervous system is BEST explained by:
 - A. Hormone degradation by plasma enzymes
 - B. Requirement of second messengers in all hormone actions
 - C. Dependence on blood transport and gene activation in many target cells
 - D. Limited receptor distribution on target tissues
2. Down-regulation of hormone receptors most likely occurs when:
 - A. Hormone concentration is chronically low
 - B. Target cells are exposed to prolonged high hormone levels
 - C. Transport proteins are saturated
 - D. Hormone synthesis is inhibited at the gland
3. Which characteristic BEST distinguishes circulating hormones from local hormones?
 - A. Circulating hormones are always lipid-soluble
 - B. Local hormones never bind to receptors
 - C. Circulating hormones enter the bloodstream before acting
 - D. Local hormones are synthesized only in endocrine glands
4. A hormone that acts on the same cell that secreted it is classified as:
 - A. Endocrine
 - B. Paracrine
 - C. Autocrine
 - D. Neurocrine
5. Which hormone listed below is BOTH a hormone and a neurotransmitter according to the lecture?
 - A. Dopamine
 - B. Epinephrine
 - C. Nitric oxide
 - D. Serotonin
6. The high lipid solubility of thyroid hormones is primarily due to:
 - A. Their steroid nucleus
 - B. Presence of iodine alone
 - C. Two benzene rings within their structure
 - D. Binding to thyroxine-binding globulin
7. Which hormone would MOST likely circulate bound to plasma transport proteins?
 - A. Insulin
 - B. Epinephrine
 - C. Cortisol
 - D. Glucagon
8. One major function of hormone transport proteins is to:
 - A. Activate hormones at target cells
 - B. Increase renal filtration of hormones
 - C. Decrease hormone half-life
 - D. Provide a circulating hormone reserve
9. Receptors for peptide and protein hormones are located:
 - A. Inside the nucleus
 - B. In the cytosol

- C. On the plasma membrane
- D. In mitochondria

10. The different responses of liver cells and adipocytes to insulin BEST demonstrate:

- A. Hormone antagonism
- B. Receptor down-regulation
- C. Target-cell specificity
- D. Permissive hormone action

11. When two hormones together produce a greater effect than either alone, the interaction is called:

- A. Antagonistic
- B. Permissive
- C. Additive
- D. Synergistic

12. The hormone that must be present to allow another hormone to exert its full effect is termed:

- A. Primary hormone
- B. Antagonist
- C. Permissive hormone
- D. Autocrine hormone

13. Releasing and inhibiting hormones of the hypothalamus reach the anterior pituitary via:

- A. Inferior hypophyseal arteries
- B. Hypothalamohypophyseal tract
- C. Hypophyseal portal system
- D. Posterior hypophyseal veins

14. Which anterior pituitary cell type is the MOST numerous?

- A. Thyrotrophs
- B. Corticotrophs
- C. Gonadotrophs
- D. Somatotrophs

15. The primary growth-promoting effects of human growth hormone are mediated by:

- A. Direct action on bone cells
- B. Insulin secretion
- C. Insulin-like growth factors (IGFs)
- D. Thyroid hormones

16. IGFs may act as circulating hormones OR locally as:

- A. Neurotransmitters
- B. Autocrines and paracrines
- C. Antagonists
- D. Mineralocorticoids

17. Which condition MOST strongly stimulates secretion of human growth hormone?

- A. REM sleep
- B. Increased blood fatty acids
- C. Deep non-REM sleep
- D. Obesity

18. Growth hormone–inhibiting hormone (GHIH) is also known as:

- A. Dopamine
- B. Somatostatin
- C. Cortisol

D. Thyroxine

19. The posterior pituitary differs from the anterior pituitary in that it:

- A. Synthesizes its own hormones
- B. Stores and releases hypothalamic hormones
- C. Is controlled by portal blood flow
- D. Produces trophic hormones

20. Oxytocin and ADH are synthesized in the:

- A. Posterior pituitary
- B. Anterior pituitary
- C. Hypothalamus
- D. Adrenal medulla

21. The thyroid gland is unique among endocrine glands because it:

- A. Produces steroid hormones
- B. Has no blood supply
- C. Stores large quantities of hormone extracellularly
- D. Secretes water-soluble hormones only

22. The first step in thyroid hormone synthesis is:

- A. Oxidation of iodide
- B. Iodination of tyrosine
- C. Iodide trapping
- D. Coupling of T1 and T2

23. The MOST potent thyroid hormone at the cellular level is:

- A. T4
- B. T3
- C. Reverse T3
- D. Thyroglobulin

24. More than 99% of circulating T3 and T4 are transported bound to:

- A. Albumin only
- B. Thyroxine-binding globulin
- C. Transthyretin only
- D. Lipoproteins

25. Thyroid hormones increase heart rate mainly by:

- A. Direct stimulation of SA node
- B. Increasing calcium absorption
- C. Up-regulating beta-adrenergic receptors
- D. Increasing aldosterone secretion

26. Parathyroid hormone raises blood calcium levels primarily by:

- A. Increasing osteoblast activity
- B. Inhibiting kidney calcium reabsorption
- C. Increasing osteoclast activity
- D. Decreasing vitamin D activation

27. A decrease in blood phosphate level during elevated PTH secretion is mainly due to:

- A. Reduced bone resorption
- B. Increased renal phosphate excretion
- C. Increased intestinal absorption
- D. Decreased calcitriol formation

28. The adrenal cortex is essential for life mainly because it secretes:

- A. Catecholamines
- B. Glucocorticoids only
- C. Mineralocorticoids
- D. Androgens

29. Aldosterone directly contributes to prevention of acidosis by:

- A. Retaining bicarbonate ions
- B. Increasing hydrogen ion excretion
- C. Increasing potassium reabsorption
- D. Inhibiting sodium reabsorption

30. Which glucocorticoid effect directly increases blood glucose availability during stress?

- A. Glycogenolysis only
- B. Increased insulin secretion
- C. Gluconeogenesis
- D. Decreased lipolysis

31. The adrenal medulla is functionally equivalent to a:

- A. Parasympathetic ganglion
- B. Modified sympathetic ganglion
- C. Sensory ganglion
- D. Endocrine follicle

32. Approximately what percentage of adrenal medullary secretion is epinephrine?

- A. 20%
- B. 40%
- C. 60%
- D. 80%

33. Which pancreatic islet cell type secretes somatostatin?

- A. Alpha cells
- B. Beta cells
- C. Delta cells
- D. F cells

34. Neurogenic diabetes insipidus results from:

- A. Kidney resistance to ADH
- B. Excess secretion of ADH
- C. Hyposecretion of ADH
- D. Excess aldosterone

35. Ketoacidosis in untreated type 1 diabetes mellitus results primarily from:

- A. Excess glucose oxidation
- B. Increased protein synthesis
- C. Fatty acid breakdown producing ketone bodies
- D. Excess insulin secretion

Answer Key

1. C
2. B
3. C
4. C
5. C
6. C
7. C
8. D
9. C
10. C
11. D
12. C
13. C
14. D
15. C
16. B
17. C
18. B
19. B
20. C
21. C
22. C
23. B
24. B
25. C
26. C
27. B
28. C
29. B
30. C
31. B
32. D
33. C
34. C
35. C