

Hard MCQs - Endocrine & Diabetes Pathophysiology

1. Which thyroid hormone is considered biologically more potent?
A) T4
B) T3
C) Reverse T3
D) TSH
2. The enzyme responsible for oxidation of iodide to iodine is:
A) Deiodinase
B) Thyroid peroxidase
C) Lipase
D) Tyrosinase
3. Which hormone stimulates release of T3 and T4 from the thyroid gland?
A) TRH
B) ACTH
C) TSH
D) Cortisol
4. TRH is secreted from the:
A) Anterior pituitary
B) Posterior pituitary
C) Hypothalamus
D) Adrenal cortex
5. In hyperthyroidism, serum free T4 and T3 are usually:
A) Decreased
B) Normal
C) Absent
D) Elevated
6. Which carrier protein binds most circulating T4?
A) Albumin
B) Prealbumin
C) TBG
D) Hemoglobin
7. The biologic effects of thyroid hormones depend mainly on:
A) Total T4
B) Protein-bound T3
C) Free hormone concentration
D) TSH
8. A patient with high TSH and low free T4 most likely has:
A) Primary hypothyroidism
B) Secondary hypothyroidism
C) Hyperthyroidism
D) Cushing syndrome
9. The most common cause of primary hypothyroidism is:
A) Pituitary adenoma
B) Hashimoto disease
C) Iodine excess
D) Graves disease

10. Which manifestation is typical of hypothyroidism?

- A) Weight loss
- B) Diarrhea
- C) Cold intolerance
- D) Tremor

11. Graves disease causes hyperthyroidism by:

- A) Destroying β -cells
- B) Blocking TSH receptors
- C) Activating TSH receptors
- D) Reducing T3 synthesis

12. A low serum TSH with elevated free T4 suggests:

- A) Primary hypothyroidism
- B) Hyperthyroidism
- C) Secondary hypothyroidism
- D) Normal thyroid function

13. Which medication may induce both hypo- and hyperthyroidism?

- A) Metformin
- B) Amiodarone
- C) Penicillin
- D) Aspirin

14. High doses of glucocorticoids decrease serum T3 mainly by:

- A) Increasing TBG
- B) Stimulating TRH
- C) Inhibiting peripheral T4 to T3 conversion
- D) Activating thyroid receptors

15. The adrenal medulla primarily secretes:

- A) Cortisol
- B) Aldosterone
- C) Adrenaline
- D) ACTH

16. Aldosterone mainly regulates:

- A) Calcium and phosphate
- B) Sodium and potassium
- C) Magnesium and chloride
- D) Glucose and ketones

17. Excess aldosterone usually causes:

- A) Hyperkalemia
- B) Hyponatremia
- C) Hypokalemia
- D) Metabolic acidosis

18. High ACTH in adrenal insufficiency may lead to:

- A) Vitiligo
- B) Hyperpigmentation
- C) Hypoglycemia only
- D) Goiter

19. Cushing syndrome commonly results in:

- A) Potassium retention
- B) Sodium loss
- C) Glucose intolerance
- D) Weight loss only

20. Diabetes mellitus is characterized primarily by:

- A) Hypocalcemia
- B) Hyperglycemia
- C) Low ketones
- D) Hypernatremia

21. C-peptide levels are useful because they reflect:

- A) Kidney function
- B) β -cell function
- C) TSH secretion
- D) Liver enzymes

22. The major glucose transporter in pancreatic β -cells is:

- A) GLUT-1
- B) GLUT-2
- C) GLUT-4
- D) SGLT

23. Sulfonylureas bind to which β -cell receptor?

- A) GLUT-2
- B) Kir6.2
- C) SUR1
- D) TSH receptor

24. In β -cells, increased ATP causes:

- A) Opening of K^+ channels
- B) Closure of ATP-sensitive K^+ channels
- C) Inhibition of calcium entry
- D) Inhibition of insulin release

25. Membrane depolarization in β -cells directly leads to:

- A) Potassium efflux
- B) Calcium influx
- C) Sodium loss
- D) Protein degradation

26. Insulin promotes all of the following EXCEPT:

- A) Glycogen synthesis
- B) Protein synthesis
- C) Lipolysis
- D) Lipogenesis

27. Type 1 diabetes is characterized by:

- A) Insulin resistance only
- B) Absolute insulin deficiency
- C) Excess insulin secretion
- D) Absence of autoimmunity

28. Type 2 diabetes is primarily associated with:

- A) Absolute insulin absence

- B) Peripheral insulin resistance
- C) Destruction of thyroid tissue
- D) High ACTH

29. The honeymoon phase occurs during:

- A) Type 2 diabetes
- B) Prediabetes
- C) Transient remission in type 1 DM
- D) DKA

30. Which classic triad is associated with diabetes mellitus?

- A) Polyuria, polydipsia, polyphagia
- B) Dyspnea, edema, cyanosis
- C) Bradycardia, fatigue, tremor
- D) Fever, cough, weight gain

31. Polyuria in diabetes results mainly from:

- A) Hypocalcemia
- B) Osmotic diuresis
- C) Excess aldosterone
- D) Decreased GFR

32. Weight loss in uncontrolled type 1 diabetes is due to:

- A) Anabolic excess
- B) Increased glycogen storage
- C) Catabolism of fat and protein
- D) Excess insulin

33. The most important genetic susceptibility locus for type 1 DM is:

- A) Chromosome 21
- B) HLA locus on chromosome 6
- C) SUR1 gene
- D) GLUT-4 gene

34. Diabetic ketoacidosis is most commonly associated with:

- A) Type 2 diabetes only
- B) Hyperthyroidism
- C) Type 1 diabetes
- D) Addison disease

35. In DKA, insulin deficiency with glucagon excess causes:

- A) Reduced gluconeogenesis
- B) Severe hyperglycemia
- C) Hypoglycemia
- D) Reduced lipolysis

36. Ketone bodies are produced mainly in the:

- A) Kidney
- B) Pancreas
- C) Liver mitochondria
- D) Spleen

37. Which ketone body gives fruity breath odor in DKA?

- A) Acetone
- B) Acetoacetate

- C) Lactate
- D) Pyruvate

38. Kussmaul breathing is characterized as:

- A) Slow shallow breathing
- B) Rapid deep breathing
- C) Irregular apnea
- D) Wheezing respiration

39. A precipitating factor for DKA is:

- A) Insulin omission
- B) Hypercalcemia
- C) Excess exercise
- D) Low triglycerides

40. Most patients with type 2 diabetes are:

- A) Underweight
- B) Children only
- C) Overweight
- D) Insulin deficient from birth

41. BMI \geq 25 is considered a risk factor for:

- A) Type 1 DM
- B) Hyperthyroidism
- C) Type 2 DM
- D) Addison disease

42. Impaired fasting glucose refers to fasting glucose levels:

- A) <70 mg/dL
- B) 70–99 mg/dL
- C) 100–125 mg/dL
- D) >200 mg/dL

43. Prediabetes increases the risk of:

- A) Only infections
- B) Cardiovascular disease
- C) Hypothyroidism
- D) Anemia

44. Which thyroid condition is associated with diarrhea and weight loss?

- A) Hypothyroidism
- B) Hyperthyroidism
- C) Hashimoto disease only
- D) Secondary adrenal insufficiency

45. Which hormone is produced in the adrenal cortex?

- A) Adrenaline
- B) Aldosterone
- C) Dopamine
- D) TSH

46. Secondary hypothyroidism is associated with:

- A) High TSH
- B) Low TSH and low free T4
- C) High free T4

D) High ACTH

47. Free fatty acids in DKA are converted in the liver to:

- A) Glycogen
- B) Ketone bodies
- C) Albumin
- D) TSH

48. The most potent thyroid hormone is approximately how many times stronger than T4?

- A) Equal potency
- B) 1–2 times
- C) 3–5 times
- D) 10 times

49. Which condition may cause enlargement of the thyroid gland (goiter)?

- A) Graves disease
- B) DKA
- C) Cushing syndrome
- D) Addison disease

50. Which diabetes type accounts for about 90–95% of diabetic cases?

- A) Type 1 DM
- B) Gestational DM
- C) Type 2 DM
- D) Idiopathic DM

51. The immediate release of insulin from β -cells is stimulated mainly by:

- A) Intracellular calcium increase
- B) Low ATP
- C) Closed calcium channels
- D) Low glucose

Answer Key

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

36	C
37	A
38	B
39	A
40	C
41	C
42	C
43	B
44	B
45	B
46	B
47	B
48	C
49	A
50	C
51	A