CHAPTER

22

Chemical Co-ordination and Integration

PRACTICE QUESTIONS

Endocrine Glands and Hormones

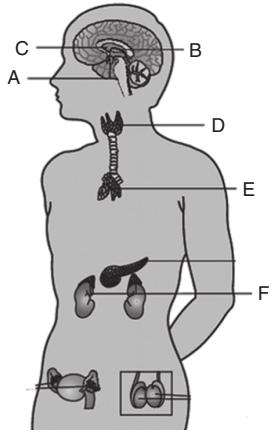
1. Select the incorrect statement from the following:
(a) Neural system provides point to point rapid coordination among organs.
(b) Neural coordination is fast.
(c) Neural coordination is short-lived.
(d) Nerve fibres innervates all the cells of body so cellular function be continuously regulated.

2. Which system jointly coordinates and regulates the physiological functions in the body?
(a) Nervous system
(b) Endocrine system
(c) Both (a) and (b)
(d) Excretory system

3. Hormonal system is very important because
(a) Neural coordination is fast
(b) Nerve fibres do not innervate all the cells of body.
(c) Neural system provides point to point coordination among organs.
(d) Neural coordination is short-lived.

4. Endocrine glands
(a) Are ductless
(b) Secrete hormones
(c) Pour their secretion in blood
(d) All of these

5. Identify A to F in the given figure.



(a) A–Hypothalamus, B–Pineal, C–Thymus, D–Adrenal, E–Pituitary, F–Thyroid and parathyroid
(b) A–Pituitary, B–Pineal, C–Hypothalamus, D–Thyroid and parathyroid, E–Thymus, F–Adrenal
(c) A–Thymus, B–Pituitary, C–Thyroid and parathyroid, D–Pineal, E–Hypothalamus, F–Adrenal
(d) A–Pineal, B–Thyroid and parathyroid, C–Pituitary, D–Hypothalamus, E–Adrenal, F–Pineal

6. Hormones are
(a) Non-nutrient chemicals (b) Intercellular messengers
(c) Produced in traces (d) All of these

7. Select from the following the total number of endocrine glands:
Pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, thymus, gonads
(a) 7 (b) 8 (c) 6 (d) 5

8. The following organs produce hormones except
(a) GIT (b) Liver and kidney
(c) Heart (d) Urinary bladder

9. Hypothalamus contains several groups of neurosecretory cells called _____ which produce hormones.
(a) Ganglion (b) Plexus
(c) Nuclei (d) Astrocytes

10. Hypothalamus is a part of
(a) Forebrain (b) Mid-brain
(c) Hindbrain (d) None of these

11. Hypothalamus is
(a) Roof of diencephalon (b) Basal part of diencephalon
(c) Lateral wall of diencephalon (d) All of these

12. Hypothalamus directly regulates the _____ endocrine gland.
(a) Pituitary (b) Thyroid (c) Thymus (d) Pancreas

13. Releasing hormones and inhibiting hormones are produced by
(a) Pituitary (b) Thyroid (c) Thymus (d) Hypothalamus

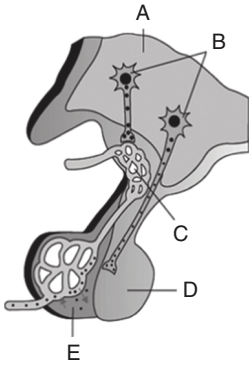
14. *Pars distalis* produces how many trophic hormones?
(a) 4 (b) 5 (c) 6 (d) 8

15. The following hormones are released by hypothalamus except
(a) GnRH (b) Somatostatin
(c) TSH–RH (d) PRL

16. Select the incorrect statement from following:
(a) Invertebrates possess very simple endocrine system.
(b) Anterior pituitary is under control of hypothalamus by portal system.
(c) Posterior pituitary is under direct neural regulation of hypothalamus.
(d) Hypothalamus secretes tropic hormones.

17. Which of the following is incorrect about pituitary?
(a) Located in bony cavity called sella turcica.
(b) Attached to hypothalamus by stalk.
(c) Divided anatomically into adenohypophysis and neurohypophysis.
(d) Secretes released and inhibitory hormones.

18. Identify A to E in the given figure.



(a) A–Hypothalamus, B–Hypothalamic neurons, C–Portal circulation, D–Posterior pituitary, E–Anterior pituitary
(b) Posterior pituitary, B–Hypothalamic neurons, C–Hypothalamus, D–Anterior pituitary, E–Posterior pituitary
(c) A–Anterior pituitary, B–Portal circulation, C–Hypothalamus, D–Posterior pituitary, E–Hypothalamic neurons
(d) A–Hypothalamic neurons, B–Posterior pituitary, C–Anterior pituitary, D–Portal circulation, E–Hypothalamus

19. Adenohypophsyis consists of
(a) *Pars distalis* (b) *Pars intermedia*
(c) *Pars nervosa* (d) Both (a) and (b)

20. Neurohypophysis consist of
(a) *Pars distalis* (b) *Pars intermedia* (c) *Pars nervosa* (d) All of these

21. Which is commonly called anterior pituitary?
(a) *Pars distalis* (b) *Pars intermedia* (c) *Pars nervosa* (d) All of these

22. Which is commonly called posterior pituitary?
(a) *Pars distalis* (b) *Pars intermedia* (c) *Pars nervosa* (d) All of these

23. Which of the following hormones are secreted by pars distalis (find out total numbers)?
GH, PRL, MSH, FSH, LH, TSH, ACTH, ADH
(a) 4 (b) 5 (c) 6 (d) 8

24. Pars intermedia secretes
(a) Follicle stimulating hormone (b) Melanocyte stimulating hormone
(c) Melatonin (d) Prolactin

25. Posterior pituitary stores and release two hormones
(a) Oxytocin (b) Vasopressin (ADH)
(c) Growth hormone (d) Both (a) and (b)

26. Where is oxytocin and ADH synthesized?
(a) Ant pituitary (b) Post pituitary (c) Hypothalamus (d) Thalamus

27. Which of the following hormones regulate the growth of the mammary glands and formation of milk?
(a) GH (b) TSH
(c) Prolactin (PRL) (d) ACTH

28. Which of the hormone stimulates the synthesis and secretion of thyroid hormone?
(a) GH (Growth Hormone) (b) TSH (Thyroid Stimulating Hormone)
(c) PRL (Prolactin) (d) ACTH (Adrenocorticotropic Hormone)

29. Which of the following hormone stimulates the synthesis and secretion of steroid hormones called glucocorticoids from the adrenal cortex?
(a) TSH (b) ACTH (c) LH (d) FSH

30. _____ stimulates the synthesis and secretion of hormone called androgens from testis.
(a) FSH (b) ACTH (c) LH = ICSH (d) GH

31. _____ induces ovulation of fully mature follicle (Graffian follicles) and maintains the corpus luteum, formed from the remnants of the Graffian follicles after ovulation.
(a) FSH (b) ACTH (c) LH (d) GH

32. _____ stimulate growth and development of ovarian follicles in females.
(a) FSH (b) LH (c) PRL (d) TSH

33. Which of the following hormones of anterior pituitary together called gonadotropins?
(a) LH and ACTH (b) FSH and LH (c) TSH and PRL (d) MSH and LH

34. Over-secretion of GH (growth hormone) in child leads to
(a) Dwarfism (b) Cretinism
(c) Gigantism (d) Tetany

35. Low secretion of GH in child leads to
(a) Pituitary dwarfism (b) Gigantism
(c) Cretinism (d) Tetany

36. _____ acts on the smooth muscles of our body and stimulate their contraction.
(a) LH (b) FSH (c) Oxytocin (d) GH

37. In females _____ stimulates a vigorous contraction of uterus at the time of child birth.
(a) LH (b) FSH (c) Oxytocin (d) Relaxin

38. From which part of nephron ADH stimulates reabsorption of water and electrolyte?
(a) PCT (b) HL
(c) Distal tubules (d) Bowman capsule

39. Whoch of the following hormone is known as antidiuretic hormone?
(a) Oxytocin (b) Prolactin
(c) Luteinizing Hormone (d) Vasopressin

40. Diuresis is reduced by
(a) Oxytocin (b) Prolactin
(c) Luteinizing hormone (d) Vasopressin

41. _____ acts on melanocyte (melanin contains cells) and regulates pigmentation of skin.
(a) LH (b) Melatonin (c) FSH (d) TSH

42. Pineal gland is located on
(a) Dorsal side of mid-brain (b) Dorsal side of hindbrain
(c) Dorsal side of forebrain (d) Vertical side of forebrain

43. Pineal gland secretes _____ hormone.
(a) MSH (b) Melatonin (c) FSJ (d) Insulin

44. Melatonin influences
(a) Metabolism, pigmentation (b) Menstrual cycle
(c) Defence capability (d) All of these

45. 24 hour diurnal rhythms of our body is maintained by
(a) Melatonin (b) Glucagon (c) Thymosin (d) Oxytocin

46. Menstruation cycle is affected by the following hormones except
(a) Thyroid (b) Melatonin (c) Oestrogen (d) Oxytocin

47. Thin flap of connective tissue which connects two lobes of thyroid is known as
(a) Lobes (b) Ileum (c) Isthmus (d) Ampulla

48. Which of the following is incorrect about thyroid gland?
(a) It is composed of follicles and stromal tissues.
(b) It secretes tetraiodothyronine or thyroxine (T_4) and triiodothyronine (T_3), TCT.
(c) It consists of 4 lobes.
(d) It is stimulated by the hormone TSH.

49. Enlargement of thyroid gland is called
(a) Hypothyroidism (b) Hyperthyroidism
(c) Goitre (d) Isthmusa

50. The features of cretinism includes
(a) Stunted growth (b) Mental retardation and low IQ
(c) Abnormal skin and deaf mutism (d) All of these

51. Hypothyroidism during pregnancy causes defective development and maturation of growing baby leading to
(a) Addison's disease (b) Cretinism
(c) Creatinine (d) Tetany

52. Hypothyroidism is caused by
(a) Cancer of thyroid gland (b) Development of nodule of thyroid gland
(c) Iodine deficiency (d) Both (a) and (b)

53. Hypothyroidism causes
(a) Irregular menstrual cycle (b) Reduced BMR
(c) Reduced production of RBC (d) All of these

54. Thyroid gland secretes
(a) T_3 (b) T_4 (c) TCT (d) All of these

55. Thyroid controls the metabolism of
(a) Carbohydrates (b) Proteins (c) Lipids (fat) (d) All of these

56. A. Melatonin influences menstrual cycle and our defence capability.
B. In adult women, hypothyroidism may cause menstrual cycle to become irregular.
C. Protein hormone secreted by thyroid, TCT (Thyrocalcitonin) regulates the blood calcium level.
D. Maintenance of water and electrolytes balance is also influenced by thyroid hormone.
E. Oxytocin causes milk ejection from mammary gland.

Select the correct statement:
(a) A, B and C only (b) A, B, C and E only
(c) All except D (d) All statements are correct

57. Which of the following hormones affect Ca^{2+} ion metabolism?
(a) TCT (Thyrocalcitonin) (b) Parathyroid hormone (PTH)
(c) Both (a) and (b) (d) Cortisol

58. The full form of PTH is
(a) Parathyroid hormone (b) Prethyroid hormone
(c) Prothyroid hormone (d) Pretectile hormone

59. PTH is
(a) Protein hormone (b) Peptide hormone
(c) Biogenic amines (d) Steroid

60. The process by which PTH increases blood Ca^{2+} level except
(a) Acts on bones and stimulates the process of bone reabsorption/dissolution/demineralization.
(b) Reabsorption of Ca^{2+} by the renal tubules.
(c) Increases Ca^{2+} absorption from the digested food.
(d) Increases osteoblastic activity.

61. Which of the following is correct about thymus?
(a) Globular structure located on the dorsal side of the heart and aorta.
(b) It plays minor role in the development of the immune system.
(c) The thymus size increases with age.
(d) Thymus doesn't affect the production of antibodies.

62. Thymosin is
(a) Peptide hormone (b) Secreted by pituitary
(c) Helps in RBC production (d) Decreases WBC production

63. Which gland plays major role in the differentiation of T-lymphocyte?
(a) Thyroid (b) Thymus (c) Adrenal (d) Gonads

64. Immune response of old persons are weak because
(a) Thymus is degenerated in old individual (b) Thymus production decreases
(c) Both (a) and (b) (d) None of these

65. The position of adrenal gland is
(a) Anterior part of each kidney (b) Posterior part of each kidney
(c) Ventral part of each kidney (d) Dorsal part of each kidney

66. The term 'Cortex' is used in
(a) Brain (b) Kidney (c) Adrenal gland (d) All of these

67. The adrenal medulla secretes two hormones called adrenaline or epinephrine and nor-adrenaline or nor-epinephrine. These are commonly known as
(a) Steroids (b) Terpenes
(c) Catecholamine (d) Cytokinin

68. Emergency hormone and hormones of fight are
(a) Adrenalin (b) Noradrenaline
(c) Cortisol (d) Both (a) and (b)

69. A. Increase alertness
B. Pupilary constriction
C. Piloerection
D. Increase heart rate
E. Increase respiratory rate
F. Sweating
Which of the above are effects of adrenaline/Noradrenaline?
(a) All except C (b) All except B and F
(c) All except B (d) All except B,E and F

70. Catecholamine causes
(a) Glycogenolysis (b) Proteolysis (c) Lipolysis (d) All of these

71. Glucocorticoid causes all except
(a) Proteolysis (b) Lipolysis
(c) Glycogenolysis (d) Gluconeogenesis

72. Histological adrenal cortex is divided into how many layers?
(a) 1 (b) 2 (c) 3 (d) 4

73. Which of the following layers are present in the adrenal cortex from inner to outer?
(a) Zona reticularis, zona fasciculata, zona glomerulosa
(b) Zona fasciculata, zona glomerulosis, zona reticularis
(c) Zona glomerulosa, zona reticularis, zona fasciculata
(d) Zona glomerulosa, zona fasciculata, zona reticularis

74. The adrenal cortex secretes many hormones commonly called
(a) Catecholamine (b) Peptide
(c) Corticoids (d) All of these

75. In our body the main glucocorticoid is
(a) Adrenaline (b) Aldosterone (c) ADH (d) Cortisol

76. In our body the main mineral corticoid is
(a) Adrenaline (b) Aldosterone (c) ADH (d) Cortisol

77. Which of the following is incorrect about glucocorticoid?
(a) Inhibits cellular uptake and utilization of amino acids.
(b) Maintains cardio vascular system as well as kidney function.
(c) Anti-inflammatory and suppresses the immune response.
(d) Glucocorticoid stimulates gluconeogenesis, lipogenesis and proteolysis.

78. Which of the following are effects of cortisol?
(a) Anti-inflammatory (b) Immunosuppressant
(c) Increases RBC production (d) All of these

79. Aldosterone causes all except
(a) Reabsorption of electrolyte and water from renal tubule
(b) Excretion of K^+
(c) Excretion of PO^{3-}_4 ion
(d) Absorption of K^+

80. Aldosterone helps in the maintenance of
(a) Electrolyte and body fluid volume (b) Osmotic pressure
(c) Blood pressure (d) All of these

81. Androgenic steroids are also secreted by adrenal cortex which causes
(a) Growth of axial hair (b) Growth of pubic hair
(c) Growth of facial hair (d) All of these

82. Adrenal cortex secretes all except
(a) Cortisol (b) Aldosterone
(c) Androgenic steroid (d) Relaxin

83. 1 to 2 million Islets of Langerhans in a human pancreas represents _____ per cent of the pancreatic tissue.
(a) 2–3 (b) 4–6 (c) 10 (d) 1–2

84. Islet of langerhans consists of
(a) ∝–cells (b) β cells (c) δ–cells (d) All of these

85. The following are petide hormones except
(a) Insulin (b) PTH (c) Thymosin (d) T_4

86. A. Acts mainly on liver cells
B. Stimulate glycogenolysis
C. Stimulate gluconeogenesis
D. Reduces glucose uptake and utilization
Which of the following is correct about the action of glucagon from the above statements?
(a) A and B only (b) B and C only (c) A, B and C only (d) All of these

87. Select the incorrect statement:
(a) Insulin and glucagon are peptide hormones.
(b) Insulin acts mainly on hepatocyte and adipocytes and enhance glucose uptake and utilization.
(c) Insulin stimulates glycogenesis.
(d) Glucagon inhibits the process of gluconeogenesis.

88. Following are the functions of insulin except
(a) Glycogenesis
(b) ↑ Glucose utilization by hepatocyte
(c) ↑ Glucose utilization by adipocyte
(d) Gluconeogenesis

89. Diabetes mellitus is characterized by
(a) Ketonuria (b) Glycosuria
(c) Prolonged hyperglycemia (d) All of these

90. Select the correct matching.
(a) Insulin — ↓es the uptake of glucose utilization by hepatocyte and adipocytes
(b) Cortisol — ↓es RBC production, causes inflammation
(c) Thymosin — Promotes the production of antibodies to provide humoral immunity also
(d) Thyroxine — No role in water and electrolyte balance

91. Select the incorrect matching.
(a) Zona fasciculata — Glucocorticoids (b) ∝–cell — Glucagon
(c) β–cell — Insulin (d) Follicular cells of thyroid — TCT

92. Testis act as the
(a) Primary sex organ (b) Endocrine gland
(c) Both (a) and (b) (d) None of these

93. Leydig cells or interstitial cells secretes
(a) Oestrogens (b) Progesterone (c) Testosterone (d) Relaxin

94. Androgens from the following are
(a) Oestrogens (b) Progesterone
(c) Testosterone (d) Relaxin

95. A. Anabolic effect on protein and carbohydrate metabolism.
B. Influences male sexual behaviour (libido).
C. Stimulates spermatogenesis.
D. Muscular growth, aggressiveness, low pitch voice.
Above are the functions of which of the following hormones?
(a) Oestrogens (b) Progesterone (c) Testosterone (d) Relaxin

96. Select the total number of male accessory sex organs from the following:
*Epididymis, Vas deferens, Seminal vesicle, Prostate, Urethra***.**
(a) 2 (b) 3 (c) 4 (d) 5

97. Androgen regulates the _____ of male accessory sex organ.
(a) Development (b) Maturation (c) Function (d) All of these

98. Testis is composed of
(a) Uriniferous tubules (b) Seminiferous tubules
(c) Nephron (d) Neuron

99. Select the correct matching:
(a) Interstitial cells–Testosterone (b) β-cells–Glucagon
(c) ∝-cells–Insulin (d) Follicular cells–TCT

100. Which one is correct about testis in human?
(a) Situated in scrotal sacs (outside the abdomen)
(b) Consists of seminiferous tubule and Leydig cells
(c) Secretion effect of male sexual behaviour (libido)
(d) All of these

Hormones of Heart, Kidney

101. ANF leads to
(a) Dilation of blood vessels
(b) ↓es blood pressure
(c) Both (a) and (b)
(d) ↑es blood pressure

102. Match the column:

Column I (Production Site)		**Column II (Hormones)**
A. Atrial wall	–	1. ANF
B. Thyroid gland	–	2. PTH
C. Parathyroid	–	3. T_3,T_4, TCT
D. GIT	–	4. CCK, GIP, gastrin and secretin

(a) A–2, B–4, C–1, D–3
(b) A–1, B–3, C–2, D–4
(c) A–4, B–2, C–3, D–1
(d) A–4, B–3, C–2, D–1

103. Match the Column:

Hormone		**Function**
A. Gastrin	–	1. Act on exocrine pancreas and stimulates the secretion of water and bicarbonate ion
B. Secretin	–	2. Action both pancrease and gall bladder and stimulates secretion of pancreatic enzyme and bile juice respectively.
C. CCK (Cholesystokinin)	–	3. Acts on gastric gland and stimulates the secretion of HCl and pepsinogen.
D. GIP (Gastric Inhibitory Peptide)	–	4. Inhibits gastric secretion and motility.

(a) A–3, B–1, C–2, D–4
(b) A–1, B–3, C–4, D–2
(c) A–1, B–2, C–3, D–4
(d) A–4, B–3, C–1, D–2

104. The _____ of kidney produces peptide hormone called _____ which stimulate erythropoiesis.
(a) Podocyte, Erythropoietin
(b) JG cells, Erythropoietin
(c) JG cells, Rennin
(d) JG cells, Renin

105. Select the incorrect statement:
(a) GIT secretes four major peptide hormones.
(b) Several other non-endocrine tissues secrete hormones called growth factors.
(c) Hormone receptors are located in target tissues only.
(d) Hormone receptors are non-specific in nature.

106. By which organ the hormones are secreted which are non endocrine gland?
(a) Heart
(b) Kidney
(c) GIT
(d) All of these

107. Select the incorrect matching:

Hormone target organ

(a) Secretin pancreas
(b) CCK pancreas and Gallbladder
(c) ANF atrial wall
(d) Gastrin gastric glands

108. Match the source gland with its respective hormone as well as the function.

Source gland	Hormone	Function
(a) Posterior pituitary	Vasopressin	Stimulates reabsorption of water in the distal tubules in the nephron
(b) Corpus luteum	Oestrogen	Supports pregnancy
(c) Thyroid	Thyroxine	Regulated blood calcium level
(d) Anterior	Oxytocin	Contraction of uterus muscles during child birth

109. Select the total number of peptide hormones from the following:

Erythropoietin, Gastrin, Secretin, GIP, CCK, Insulin, Glucagon, Thymosin, PTH, ANF

(a) 8 (b) 7 (c) 9 (d) 10

110. Match the Column I with Column II:

Column I		**Column II**
A. Peptide, polypeptide protein hormones	–	1. Epinephrine
B. Steroid	–	2. T_3 and T_4 (thyroid hormones)
C. Iodothyronines	–	3. Cortisol, testosterone, estradiol, progesterone, aldosterone
D. Amino acid derivatives	–	4. Pituitary hormones, pancreatic hormones, hypothalamic hormone

(a) A–1, B–2, C–3, D–4
(b) A–4, B–3, C–2, D–1
(c) A–4, B–3, C–1, D–2
(d) A–1, B–4, C–3, D–2

111. A steroid hormone typically alters the activity of its target cells by

(a) Changing membrane permeability of cells
(b) Entering the cell and altering gene expression
(c) Activation of IP_3
(d) Conversion of ATP to cAMP

112. Hormone receptors are located in target tissue only. Their position is

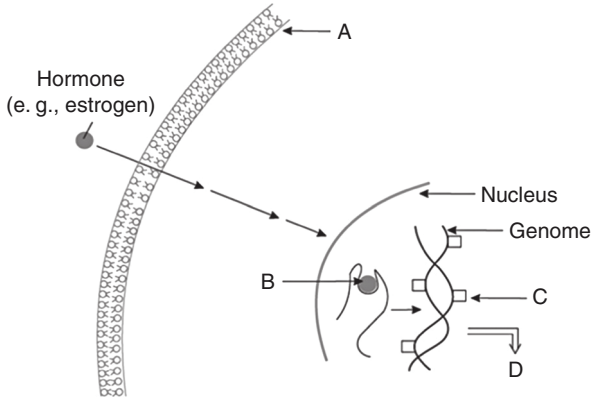
(a) In plasma membrane
(b) In cytoplasm
(c) In nucleus
(d) Any of the above depending on type of hormone

113. Find out the correct statement from the following:

1) Hormones interact with membrane bound receptors normally do not enter the target cells.
2) Iodothyronines have membrane bound receptors.
3) Hormones which interact with intracellular receptors mostly regulate gene expression.
4) Steroid hormones generate second messengers.

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 2 and 4 only

114. Identify A, B, C and D in the given figure.



(a) A–Physiological response, B–Proteins, C–Receptor-hormone complex, D–Uterine cell membrane
(b) A–Receptor-hormone complex, B–Proteins, C–Uterine cell membrane, D–Physiological response
(c) A–Uterine cell membrane, B–Receptor-hormone complex, C–Proteins, D–Physiological response
(d) A–Proteins, B–Uterine cell membrane, C–Physiological response, D–Receptor-hormone complex

115. Find the total no. of hormones from the following which binds to intracellular receptors.
Cortisol, Testosterone, T3, Glucagon, Oxytocin, FSH, Progesterone, ICSH, Oestrogen, GH
(a) 4 (b) 5 (c) 6 (d) 7

116. Which of the following act as secondary messenger?
(a) Ca^{2+} (b) IP_3 (c) cAMP (d) All 2Ca 3IP

117. Following hormones are iodothyronines
(a) T3 (b) T4 (c) TCT (d) Both (a) and (b)

118. Which is steroid hormone?
(a) GH (b) Insulin
(c) Aldosterone (d) Epinephrine

119. Which of the following hormones do not act by a second messenger system?
(a) GH (b) Epinephrine
(c) ICSH (d) Oestrogen

120. Chemically epinephrine is
(a) Amino acid derivative (b) Peptide hormone
(c) Steroid hormone (d) Iodothyronines

121. Which hormone receptors are present in cytoplasm of target cell?
(a) Thyroxin (b) Oestrogen (c) Insulin (d) All

122. Arrange in sequence, working of 'FSH'?
(1) Binding to membrane receptor
(2) Biochemical response
(3) Generation of second messenger
(4) Physiological response (ev. Ovarian growth)
(a) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$ (b) $1 \rightarrow 3 \rightarrow 2 \rightarrow 4$
(c) $4 \rightarrow 3 \rightarrow 2 \rightarrow 1$ (d) $3 \rightarrow 1 \rightarrow 4 \rightarrow 2$

123. Which hormone directly affect transcription by acting on gene?
(a) FSH (b) GH (c) Oestrogen (d) CCK

124. Following hormones responsible for maintenance of blood pressure.
(a) Aldosterone (b) Renin (c) ANF (d) All

ASSERTION AND REASON QUESTIONS

*Read the **assertion** and **reason** carefully to mark the correct option out of the options given below:*

(a) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(b) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(c) If the assertion is true but the reason is false.
(d) If both the assertion and reason are false.

125. **Assertion:** Aldosterone increases the volume of blood and other extracellular fluids.
Reason: The secretion of aldosterone is stimulated by a fall in the circulating volume of blood.

126. **Assertion:** FSH is also known as interstitial cell stimulating hormone.
Reason: It is because of the fact that FSH stimulates the interstitial cells of testis.

127. **Assertion:** Oxytocin is also known as Antidiuretic Hormone (ADH).
Reason: Oxytocin can cause an increase in the renal reabsorption of water.

128. **Assertion:** Failure of secretion of thyroid gland hormones from childhood causes cretinism disease.
Reason: Thyrotropin hormone maintains BMR and promotes the growth of body tissues.

129. **Assertion:** Hormones are similar to enzymes in their action and chemical nature.
Reason: Hormones and enzymes are proteinaceous in nature and acts as informational molecules.

130. **Assertion:** Glucagon is said to lower down the blood sugar level.
Reason: Glucagon increases the utilization of glucose in the tissue and the synthesis of liver glycogen.

131. **Assertion:** Prolactin is also called the 'Milk ejection hormone'.
Reason: Prolactin stimulates the smooth muscle contractions of the mammary glands.

132. **Assertion:** A tumor of adrenal cortex may cause addison's disease.
Reason: This happens due to over secretion of cortisol by the tumour.

133. **Assertion:** Neurohypophysis(Pars nervosa) is also known as posterior pitutary.
Reason: Posterior pitutary stores and releases two hormones called oxytocin and vasopressin.

134. **Assertion:** Vasopressin is also known as antidiueretic hormone.
Reason: Vasopressin stimulates the reabsorption of water and electrolyte by distal tubules and there by reduces diuresis.

135. **Assertion:** Enlargement of thyroid gland is known as goitre.
Reason: Goitre occurs due to the deficiency of iodine only.

136. **Assertion:** Immune response of old person becomes weak.
Reason: Thymus is degenerated in old individuals.

137. **Assertion:** Adrenal cortex can be removed without causing death.
Reason: Adrenal cortex is not vital for survival.

138. **Assertion:** Failure of secretion of somatotropin from an early age causes dwarfism in the patient.
Reason: Somatotropin hormone stimulates the body growth and elongation of long bones.

139. **Assertion:** Thyroxine is lipid soluble hormone.
Reason: Receptor for thyroxine is situated in cytoplasm.

140. **Assertion:** Hormones are nutrient substances which act as intercellular messengers.
Reason: Hormones are produced in large amount.

141. **Assertion:** The posterior pituitary is under the direct neural regulation of the hypothalamus.
Reason: Hypothalamic Neuron via axon sent their secretion to posterior pituitary for release.

142. **Assertion:** Over secretion of GH leads to gigantism.
Reason: It leads to abnormal growing body.

143. **Assertion:** Thyroid gland use to regulate blood calcium level.
Reason: Thyroid gland use to secret protein hormone called thyrocalcitonin which affects blood calcium level.

144. **Assertion:** MSH regulates pigmentation of skin.
Reason: MSH acts on melanin containing cells.

145. **Assertion:** Oxytocin is called 'birth hormone'.
Reason: In female it stimulates a vigorous contraction of smooth muscle of uterus at the time of child birth.

146. **Assertion:** Polycythemia is common in hyperthyroidism
Reason: Thyroid hormone accelerate the process of red blood cell formation

147. **Assertion:** PTH increases the Ca^{2+} level in blood
Reason: PTH stimulates the process of bone resorption.

148. **Assertion:** PTH and thyrocalcitonin have antagonistic effect
Reason: PTH increases where as thyrocalcitonin decreases blood

149. **Assertion:** Catecholamine increases the concentration of glucose in blood
Reason: Catecholamine stimulates glycogenolysis

150. **Assertion:** Cortisol is useful in organ transplantation
Reason: Cortisol suppresses immune response

151. **Assertion:** Glucagon is a hypoglycaemic hormone
Reason: Glucagon stimulates glycogenesis

152. **Assertion:** Androgen affects male sexual behaviour (Libido)
Reason: Oestrogen regulates female sexual behaviour

153. **Assertion:** Secretin act on endocrine part of pancreas.
Reason: Secretin stimulates secretion of insulin.

154. **Assertion:** CCK stimulates secretion of bile juice.
Reason: CCK act on liver.

PREVIOUS YEAR QUESTIONS

1. Select the correct matching of a hormone, its source and function.

[AIPMT MAINS 2010]

Hormone	Source	Source
(a) Vasopressin	Posterior pituitary	Increases loss of water through urine
(b) Norepinephrine	Adrenal medulla	Increases heartbeat, rate of respiration and alterness
(c) Glucagon	Beta-cells of islets of Langerhans	Stimulates glycogenolysis
(d) Prolactin	Posterior pituitary	Regulates growth of mammary glands and milk formation in females

2. Injury to adrenal cortex is not likely to affect the secretion of which one of the following?

[AIPMT PRE 2010]

(a) Aldosterone
(b) Both androstenedione and dehydroepiandrosterone
(c) Adrenaline
(d) Cortisol

3. Low Ca^{2+} in the body fluid may be the cause of

[AIPMT PRE 2010]

(a) Tetany (b) Anaemia
(c) Angina pectoris (d) Gout

4. Which one of the following pairs is incorrectly matched?

[AIPMT PRE 2010]

(a) Glucagon – Beta cells (source)
(a) Somatostatin – Delta cells (source)
(b) Corpus luteum – Relaxin (secretion)
(c) Insulin – Diabetes mellitus (disease)

5. The toxic agents present in food which interfere with thyroxin synthesis lead to the development of

[AIPMT PRE 2010]

(a) Toxic goitre
(b) Cretinism
(c) Simple goitre
(d) Thyrotoxicosis

6. Match the source gland with its respective hormone as well as the function.

[AIPMT PRE 2011]

Source gland	Hormone	Function
(a) Posterior pituitary	Vasopressin	Stimulates reabsorption of water in the distal tubules in the nephron
(b) Corpus luteum	Oestrogen	Supports pregnancy
(c) Thyroid	Thyroxine	Regulated blood calcium level
(d) Anterior	Oxytocin	Contraction of uterus muscles during child birth

7. Given ahead is an incomplete table about certain hormones, their source glands and one major effect of each in the human body. Identify the correct option for the three blanks A, B and C.

Gland	Secretion	Effect on body
A	Oestrogen	Maintenance of secondary sexual characters
Alpha cells of islets of Langerhans	B	Raises blood sugar level
Anterior pituitary	C	Over secretion leads to gigantism

[AIPMT PRE 2011]

Options:
(a) A: Placenta, B: Insulin, C: Vasopressin
(b) A: Ovary, B: Insulin, C: Calcitonin
(c) A: Placenta, B: Glucagon, C: Calcitonin
(d) A: Ovary, B: Glucagon, C: Growth hormone

8. The 24 hours (diurnal) rhythm of our body such as the sleep-wake cycle is regulated by the hormone

[AIPMT MAINS 2011]

(a) Calcitonin
(b) Prolactin
(c) Adrenaline
(d) Melatonin

9. The Leydig cells which are found in the human body are the secretory source of
[AIPMT PRE 2012]

(a) Progesterone
(b) Intestinal mucus
(c) Glucagon
(d) Androgens

10. Which one of the following pairs of hormones are the examples of those that can easily pass through cell membrane and the target cell and binds to a receptor inside it (mostly in the nucleus)?
[AIPMT PRE 2012]

(a) Insulin, glucagon
(b) Thyroxin, insulin
(c) Somatostatin, oxytocin
(d) Cortisol, testosterone

11. What is correct to say about the hormone action in humans?
[AIPMT PRE 2012]

(a) Glucagon is secreted by β-cells of islets of Langerhans and stimulates glycogenolysis.
(b) Secretion of thymosins is stimulated with aging.
(c) In females, FSH first binds with specific receptors on ovarian cell membrane.
(d) FHS stimulates the secretion of oestrogen and progesterone.

12. Which of the following statements is correct in relation to the endocrine system?
[AIPMT 2013]

(a) Adenopophysis is under direct neural regulation of the hypothalamus.
(b) Organs in the body like gastrointestinal tract, heart, kidney and liver do not produce any hormones.
(c) Non-nutrient chemicals produced by the body in trace amount that act as intercellular messenger are known as hormones.
(d) Releasing and inhibitory hormones are produced by the pituitary gland

13. A pregnant female delivers a baby who suffers from stunted growth, mental retardation, low intelligence quotient and abnormal skin.
[AIPMT 2013]

(a) Deficiency of iodine in diet
(b) Low secretion of growth hormone
(c) Cancer of the thyroid gland
(d) Over secretion of pars distalis

14. Select the answer which correctly matches the endocrine gland with the hormone it secretes and its function/deficiency symptom. (A: Endocrine gland, B: Hormone, C: Function/deficiency symptoms)
[AIPMT 2013]

A	**B**	**C**
(a) Anterior pituitary	Oxytocin	Stimulates uterus contraction during child birth
(b) Posterior pituitary	Growth hormone (GH)	Over secretion stimulates abnormal growth
(c) Thyroid	Thyroxin	Lack of iodine in diet results in goitre
(d) Corpus luteum	Testosterone	Stimulates spermatogenesis

15. Identify the hormone with its correct matching of source and function:
[AIPMT 2014]
(a) Oxytocin – Posterior pituitary, growth and maintenance of mammary glands
(b) Melatonin – Pineal gland, regulates the normal rhythm of sleepwake cycle
(c) Progesterone – Corpus luteum, stimulation of growth and activities of female secondary sex organs
(d) Atrial natriuretic factor – Ventricular wall increases the blood pressure.

16. Fight-or-flight reactions can cause the activation of
[AIPMT 2014, RE-AIPMT 2015]
(a) The parathyroid glands, leading to increased metabolic rate.
(b) The kidney, leading to suppression of rennin-angiotensin-aldosterone pathway.
(c) The adrenal medulla, leading to increased secretion of epinephrine and norepinephrine.
(d) The pancreas leading to a reduction in the blood sugar levels.

17. Which one of the following hormones is not involved in sugar metabolism?
[AIPMT 2015, RE-AIPMT 2015]
(a) Aldosterone (b) Insulin
(c) Glucagon (d) Cortisone

18. A chemical signal that has both endocrine and neural roles is
[AIPMT 2015]
(a) Melatonin (b) Calcitonin
(c) Epinephrine (d) Cortisol

19. Which one of the following hormones though synthesized elsewhere, is stored and released by the master gland?
[RE-AIPMT 2015]
(a) Luteinizing hormone (b) Prolactin
(c) Melanocyte stimulating hormone (d) Antidiuretic hormone

20. Which of the following pairs of hormones are not antagonistic (having opposite effects) to each other? [NEET - I, 2016]
(a) Parathormone–Calcitonin (b) Insulin–Glucagon
(c) Aldosterone–Atrial Natriuretic Factor (d) Relaxin–Inhibin

21. Changes in GnRH pulse frequency in females is controlled by circulating levels of:
[NEET - I, 2016]
(a) Estrogen and progesterone (b) Estrogen and inhibin
(c) Progesterone only (d) Progesterone and inhibin

22. Identify the correct statement on 'inhibin': [NEET - I, 2016]
(a) Inhibits the secretion of LH, FSH and Prolactin
(b) Is produced by granulose cells in ovary and inhibits the secretion of FSH
(c) Is produced by granulose cells in ovary and inhibits the secretion of LH
(d) Is produced by nurse cells in testes and inhibits the secretion of LH

23. Graves' disease is caused due to [NEET - II, 2016]
(a) Hypersecretion of thyroid gland (b) Hyporsecretion of adrenal gland
(c) Hypersecretion of adrenal gland (d) Hyporsecretion of thyroid gland

24. Name a peptide hormone which acts mainly on hepatocytes, adipocytes and enhances cellular glucose uptake and utilization. [NEET - II, 2016]
(a) Glucagon (b) Secretion
(c) Gastrin (d) Insulin

25. Osteoporosis, an age-related disease of skeletal system, may occur due to [NEET - II, 2016]
(a) High concentration of Ca++ and Na+
(b) Decreased level of estrogen
(c) Accumulation of uric acid leading to inflammation of joints
(d) Immune disorder affecting neuromuscular junction leading to fatigue

26. The posterior pituitary gland is not a 'true' endocrine gland because [NEET - II, 2016]
(a) It only stores and releases hormones
(b) It is under the regulation of hypothalamus
(c) It secretes enzymes
(d) It is provided with a duct

NCERT EXEMPLAR QUESTIONS

1. Select the right match of endocrine gland and their hormones among the options given below:

A. Pineal	i. Epinephrine
B. Thyroid	ii. Melatonin
C. Ovary	iii. Oestrogen
D. Adrenal medulla	iv. Tetraiodothyronine

(a) A – iv, B – ii, C – iii, D – i
(b) A – ii, B – iv, C – i, D – iii
(c) A – iv, B – ii, C – i, D – iii
(d) A – ii, B – iv, C – iii, D – i

2. Listed below are the hormones of anterior pituitary origin. Tick the wrong entry
(a) Growth hormone (b) Follicle stimulating hormone
(c) Oxytocin (d) Adrenocorticotropic hormone

3. Mary is about to face an interview. But during the first five minutes before the interview she experiences sweating, increased rate of heart beat, respiration, etc. Which hormone is responsible for her restlessness?
(a) Oestrogen and progesterone (b) Oxytocin and vasopressin
(c) Adrenaline and noradrenaline (d) Insulin and glucagon

4. The steroid responsible for the balance of water and electrolytes in our body is
(a) Insulin (b) Melatonin
(c) Testosterone (d) Aldosterone

5. Thymosin is responsible for
(a) Raising the blood sugar level (b) Raising blood calcium level
(c) Increased production of T-Iymphocytes (d) Decrease in blood RBC

6. In the mechanism of action of a protein hormone, one of the second messengers is
(a) Cyclic AMP (b) Insulin
(c) T_3 (d) Gastrin

7. Leydig cells produce a group of hormones called
(a) Androgens (b) Oestrogens
(c) Aldosterone (d) Gonadotropins

8. Corpus luteum secretes a hormone called
(a) Prolactin (b) Progesterone
(c) Aldosterone (d) Testosterone

9. Cortisol is secreted from
(a) Pancreas (b) Thyroid
(c) Adrenal (d) Thymus

10. A hormone responsible for normal sleep-wake cycle is
(a) Epinephrine (b) Gastrin
(c) Melatonin (d) Insulin

11. Hormones are called chemical signals that stimulate specific target tissues. Their specificity is due to the presence of signal receiving 'receptors' only in the respective target tissues. Where are these receptors present in case of hormones of protein nature?
(a) Extracellular matrix (b) Blood
(c) Plasma membrane (d) Nucleus

12. Choose the correct answer among the following options:

(A) Epinephrine	(i) Increase in muscle growth
(B) Testosterone	(ii) Decrease in blood pressure
(C) Glucagon	(iii) Decrease in liver glycogen content
(D) Atrial natriuretic factor	(iv) Increased heart beat

(a) A – ii, B – i, C – iii, D – iv
(b) A – iv, B – i, C – iii, D – ii
(c) A – i, B – ii, C – iii, D – iv
(d) A – i, B – iv, C – ii, D – iii.

13. Blood calcium level is a resultant of how much dietary calcium is absorbed, how much calcium is lost in the urine, how much bone dissolves releasing calcium into the blood and how much calcium from blood enters tissues. A number of factors play an important role in these processes. Mark the one which has no role
(a) Vitamin D (b) Parathyroid hormone
(c) Thyrocalcitonin (d) Thymosin

14. All the following tissues in mammals except one consist of a central 'medullary' region surrounded by a cortical region. Mark the wrong entry.
(a) Ovary (b) Adrenal
(c) Liver (d) Kidney

15. Which one of the following conditions is not linked to deficiency of thyroid hormones?
(a) Cretinism (b) Goitre
(c) Myxedema (d) Exophthalmia

Answer Keys

Practice Questions

1. (d)	2. (c)	3. (b)	4. (d)	5. (b)	6. (d)	7. (b)	8. (d)	9. (c)	10. (a)
11. (b)	12. (a)	13. (d)	14. (c)	15. (d)	16. (d)	17. (d)	18. (a)	19. (d)	20. (c)
21. (a)	22. (c)	23. (c)	24. (b)	25. (d)	26. (c)	27. (c)	28. (b)	29. (b)	30. (c)
31. (c)	32. (a)	33. (b)	34. (c)	35. (a)	36. (c)	37. (c)	38. (c)	39. (d)	40. (d)
41. (c)	42. (c)	43. (b)	44. (d)	45. (a)	46. (d)	47. (c)	48. (c)	49. (c)	50. (d)
51. (b)	52. (d)	53. (d)	54. (d)	55. (d)	56. (d)	57. (c)	58. (a)	59. (b)	60. (d)
61. (a)	62. (a)	63. (b)	64. (c)	65. (a)	66. (d)	67. (c)	68. (d)	69. (c)	70. (d)
71. (c)	72. (c)	73. (a)	74. (c)	75. (d)	76. (b)	77. (d)	78. (d)	79. (d)	80. (d)
81. (d)	82. (d)	83. (d)	84. (d)	85. (d)	86. (d)	87. (d)	88. (d)	89. (d)	90. (c)
91. (d)	92. (c)	93. (c)	94. (c)	95. (c)	96. (d)	97. (d)	98. (b)	99. (a)	100. (d)
101. (c)	102. (b)	103. (a)	104. (b)	105. (d)	106. (d)	107. (c)	108. (a)	109. (d)	110. (b)
111. (b)	112. (d)	113. (c)	114. (c)	115. (b)	116. (d)	117. (d)	118. (c)	119. (d)	120. (a)
121. (a)	122. (b)	123. (c)	124. (d)						

Assertion and Reason Questions

125. (b)	126. (d)	127. (d)	128. (c)	129. (d)	130. (d)				
131. (d)	132. (d)	133. (b)	134. (a)	135. (c)	136. (a)	137. (d)	138. (a)	139. (c)	140. (d)
141. (a)	142. (a)	143. (a)	144. (a)	145. (a)	146. (a)	147. (a)	148. (a)	149. (a)	150. (a)
151. (d)	152. (b)	153. (d)	154. (c)						

Previous Year Questions

1. (b)	2. (c)	3. (a)	4. (a)	5. (c)	6. (a)	7. (d)	8. (d)	9. (d)	10. (d)
11. (c)	12. (c)	13. (a)	14. (c)	15. (b)	16. (c)	17. (a)	18. (c)	19. (d)	20. (d)
21. (b)	22. (d)	23. (a)	24. (d)	25. (b)	25. (a)				

NCERT Exemplar Questions

1. (d)	2. (c)	3. (c)	4. (d)	5. (c)	6. (a)	7. (a)	8. (b)	9. (c)	10. (c)
11. (c)	12. (b)	13. (d)	14. (c)	15. (d)					