

Class 10 Biology – Chapter 4

Kerala SCERT | Hormones and Life Processes | Combined MCQ Question Bank

Combined study resource based on the textbook pages shared in this conversation. Each question has four options and the correct answer.

1. Hormones and target cells

1. What are target cells?

- A) Cells on which a particular hormone acts
- B) Cells that produce all hormones
- C) Cells that transport oxygen
- D) Cells that produce antibodies

Answer: A) Cells on which a particular hormone acts

2. What enables a target cell to respond to a hormone?

- A) Ribosome
- B) Receptor
- C) Cell wall
- D) Chloroplast

Answer: B) Receptor

3. Where can hormone receptors be found?

- A) Only in the nucleus
- B) Only in the cell wall
- C) In the cell membrane and within cells
- D) Only in plant roots

Answer: C) In the cell membrane and within cells

4. What forms when a hormone binds to its receptor?

- A) Hormone-receptor complex
- B) Cell-wall complex
- C) Antibody complex
- D) Glucose complex

Answer: A) Hormone-receptor complex

5. How are animal hormones generally transported to target cells?

- A) Through xylem
- B) Through phloem
- C) Through blood
- D) Through the digestive tract

Answer: C) Through blood

6. How can plant hormones be transported?

- A) Only through blood
- B) Cell-to-cell, xylem or phloem
- C) Only through roots

D) Only through leaves

Answer: B) Cell-to-cell, xylem or phloem

7. Which is an animal hormone?

- A) Auxin
- B) Gibberellin
- C) Insulin
- D) Cytokinin

Answer: C) Insulin

8. Which is a plant hormone?

- A) Thyroxine
- B) Vasopressin
- C) Glucagon
- D) Auxin

Answer: D) Auxin

9. Why do hormones act only on particular target cells?

- A) All cells have identical receptors
- B) Target cells have suitable receptors
- C) Hormones need no receptors
- D) Hormones act only outside cells

Answer: B) Target cells have suitable receptors

10. What is a major role of hormones?

- A) Coordinating body functions
- B) Transporting oxygen only
- C) Digesting food directly
- D) Forming cell walls

Answer: A) Coordinating body functions

2. Plant hormones and synthetic hormones

11. Which plant hormone is associated with stem elongation and tropic movements?

- A) Auxin
- B) Insulin
- C) Calcitonin
- D) Prolactin

Answer: A) Auxin

12. Which hormone helps break seed dormancy?

- A) Ethylene
- B) Gibberellin
- C) Absciscic acid
- D) Insulin

Answer: B) Gibberellin

13. Which hormone stimulates cell division and delays leaf ageing?

- A) Ethylene

- B) Cytokinin
- C) ADH
- D) Glucagon

Answer: B) Cytokinin

14. Which hormone is associated with fruit ripening?

- A) Auxin
- B) Ethylene
- C) Calcitonin
- D) Thyroxine

Answer: B) Ethylene

15. Which plant hormone inhibits growth and helps plants respond to unfavourable conditions?

- A) Gibberellin
- B) Auxin
- C) Abscissic acid
- D) Cytokinin

Answer: C) Abscissic acid

16. Which hormone is used to induce root formation in stem cuttings?

- A) Synthetic auxin
- B) Synthetic insulin
- C) ADH
- D) Calcitonin

Answer: A) Synthetic auxin

17. Which synthetic auxin is used as a weedicide?

- A) 2,4-D
- B) TSH
- C) ADH
- D) ABA

Answer: A) 2,4-D

18. Synthetic gibberellins can increase fruit size in which crop?

- A) Grapevines
- B) Mosses only
- C) Algae only
- D) Ferns only

Answer: A) Grapevines

19. Synthetic gibberellins promote stem elongation in which crop?

- A) Sugarcane
- B) Tea only
- C) Coffee only
- D) Coconut only

Answer: A) Sugarcane

20. Which hormone is used to help ripen bananas and tomatoes uniformly?

- A) Ethylene
- B) Insulin

- C) Calcitonin
- D) ADH

Answer: A) Ethylene

21. Which hormone promotes the transport of nutrients to growing regions?

- A) Cytokinin
- B) Glucagon
- C) Prolactin
- D) Calcitonin

Answer: A) Cytokinin

22. Which hormone promotes abscission of mature leaves and fruits?

- A) Absciscic acid
- B) Insulin
- C) Oxytocin
- D) Thyroxine

Answer: A) Absciscic acid

23. What is phototropism?

- A) Growth response to light
- B) Growth response to gravity
- C) Response to water only
- D) Response to sound

Answer: A) Growth response to light

24. When light falls from one direction, auxin accumulates mainly on which side of a shoot?

- A) Shaded side
- B) Illuminated side only
- C) Root side only
- D) Flower side only

Answer: A) Shaded side

25. Why does a shoot bend towards light?

- A) Shaded-side cells elongate more
- B) Illuminated-side cells always elongate more
- C) Auxin destroys all cells
- D) Roots pull the shoot

Answer: A) Shaded-side cells elongate more

26. What is one environmental concern about synthetic plant hormones?

- A) They may enter soil and water
- B) They always purify water
- C) They cannot affect ecosystems
- D) They remove all pollutants

Answer: A) They may enter soil and water

3. Pituitary gland and growth

27. Which gland is often called the master gland?

- A) Pituitary
- B) Thyroid
- C) Pancreas
- D) Parathyroid

Answer: A) Pituitary

28. Which brain region regulates the anterior pituitary through releasing and inhibitory hormones?

- A) Hypothalamus
- B) Cerebellum
- C) Spinal cord
- D) Medulla only

Answer: A) Hypothalamus

29. What is the main role of the posterior pituitary?

- A) Store and release hormones produced by the hypothalamus
- B) Produce insulin
- C) Produce thyroxine
- D) Produce auxin

Answer: A) Store and release hormones produced by the hypothalamus

30. Which hormone promotes body growth?

- A) Somatotropin
- B) Prolactin
- C) Oxytocin
- D) Calcitonin

Answer: A) Somatotropin

31. Somatotropin is also called:

- A) Growth hormone
- B) Antidiuretic hormone
- C) Thyroid-stimulating hormone
- D) Adrenaline

Answer: A) Growth hormone

32. Which hormone stimulates milk production?

- A) Prolactin
- B) Oxytocin
- C) Glucagon
- D) Thyroxine

Answer: A) Prolactin

33. Which pituitary hormone stimulates the thyroid gland?

- A) TSH
- B) ACTH
- C) ADH
- D) GTH

Answer: A) TSH

34. Which hormone stimulates the adrenal cortex?

- A) ACTH

- B) TSH
- C) Prolactin
- D) Somatotropin

Answer: A) ACTH

35. Which hormones stimulate the ovaries and testes?

- A) Gonadotropic hormones
- B) Thyroid hormones
- C) Plant hormones
- D) Digestive enzymes

Answer: A) Gonadotropic hormones

36. Which hormone helps uterine contractions during childbirth?

- A) Oxytocin
- B) Insulin
- C) Thyroxine
- D) Calcitonin

Answer: A) Oxytocin

37. Which hormone increases water reabsorption in the kidneys?

- A) ADH
- B) TSH
- C) ACTH
- D) GTH

Answer: A) ADH

38. What causes dwarfism as described in the textbook?

- A) Reduced growth hormone during the growth phase
- B) Excess growth hormone during childhood
- C) Excess insulin
- D) Excess calcitonin

Answer: A) Reduced growth hormone during the growth phase

39. Excess growth hormone during the growth phase may cause:

- A) Gigantism
- B) Dwarfism
- C) Goitre
- D) Diabetes

Answer: A) Gigantism

40. Excess growth hormone after the growth phase may cause:

- A) Acromegaly
- B) Dwarfism
- C) Hypothyroidism
- D) Goitre

Answer: A) Acromegaly

41. Which process increases cell number during growth?

- A) Mitosis
- B) Osmosis only

- C) Diffusion only
- D) Excretion

Answer: A) Mitosis

4. Thyroid, calcium and water balance

42. Where is the thyroid gland located?

- A) Below the larynx in the upper part of the trachea
- B) Behind the stomach
- C) Inside the kidney
- D) At the base of the spinal cord

Answer: A) Below the larynx in the upper part of the trachea

43. Which two cell types are found in the thyroid gland?

- A) Follicular and parafollicular cells
- B) Alpha and beta cells
- C) Red and white cells
- D) Neurons and glial cells

Answer: A) Follicular and parafollicular cells

44. Which hormones are produced by the thyroid gland?

- A) Thyroxine and calcitonin
- B) Insulin and glucagon
- C) Oxytocin and prolactin
- D) Oestrogen and progesterone

Answer: A) Thyroxine and calcitonin

45. Which hormone regulates metabolism and body temperature?

- A) Thyroxine
- B) Calcitonin
- C) Insulin
- D) Prolactin

Answer: A) Thyroxine

46. Which hormone lowers blood calcium?

- A) Calcitonin
- B) Parathormone
- C) Glucagon
- D) ADH

Answer: A) Calcitonin

47. Which hormone raises blood calcium?

- A) Parathormone
- B) Calcitonin
- C) Insulin
- D) Prolactin

Answer: A) Parathormone

48. Which pair acts antagonistically in blood calcium regulation?

- A) Calcitonin and parathormone
- B) Insulin and ADH
- C) Auxin and ethylene
- D) Prolactin and oxytocin

Answer: A) Calcitonin and parathormone

49. What is the normal blood calcium level stated in the supplied textbook page?

- A) 9–11 mg/dL
- B) 1–3 mg/dL
- C) 3–5 mg/dL
- D) 20–25 mg/dL

Answer: A) 9–11 mg/dL

50. What is goitre?

- A) Swelling in the neck due to thyroid enlargement
- B) Enlargement of the pancreas
- C) Reduced bone growth
- D) A kidney disorder only

Answer: A) Swelling in the neck due to thyroid enlargement

51. Deficiency of which nutrient is associated with goitre?

- A) Iodine
- B) Iron
- C) Vitamin C
- D) Sodium

Answer: A) Iodine

52. What is hypothyroidism?

- A) Reduced secretion of thyroxine
- B) Excessive secretion of thyroxine
- C) Reduced insulin secretion
- D) Excess auxin production

Answer: A) Reduced secretion of thyroxine

53. Which symptom is associated with hypothyroidism?

- A) Fatigue and intolerance to cold
- B) Increased metabolic rate in all cases
- C) Excessive sweating only
- D) Increased heart rate only

Answer: A) Fatigue and intolerance to cold

54. What is hyperthyroidism?

- A) Excessive secretion of thyroxine
- B) Reduced secretion of thyroxine
- C) Reduced secretion of ADH
- D) Excessive insulin production

Answer: A) Excessive secretion of thyroxine

55. Which hormone maintains water balance through kidney action?

- A) ADH (vasopressin)

- B) TSH
- C) ACTH
- D) Calcitonin

Answer: A) ADH (vasopressin)

56. When body water decreases, ADH secretion generally:

- A) Increases
- B) Decreases
- C) Stops permanently
- D) Turns into insulin

Answer: A) Increases

57. What happens to urine output when ADH secretion increases?

- A) It generally decreases
- B) It always increases
- C) It becomes permanently zero
- D) It is unaffected in every case

Answer: A) It generally decreases

5. Pancreas, glucose and diabetes

58. Which organ produces insulin and glucagon?

- A) Pancreas
- B) Thyroid
- C) Pituitary
- D) Parathyroid

Answer: A) Pancreas

59. Which pancreatic cells produce insulin?

- A) Beta cells
- B) Alpha cells
- C) Follicular cells
- D) Parafollicular cells

Answer: A) Beta cells

60. Which pancreatic cells produce glucagon?

- A) Alpha cells
- B) Beta cells
- C) Follicular cells
- D) Red blood cells

Answer: A) Alpha cells

61. What is the main effect of insulin?

- A) Lowers elevated blood glucose
- B) Raises blood calcium
- C) Increases water loss
- D) Ripens fruits

Answer: A) Lowers elevated blood glucose

62. Which hormone promotes conversion of excess glucose into glycogen?

- A) Insulin
- B) Glucagon
- C) ADH
- D) Calcitonin

Answer: A) Insulin

63. What is the storage form of glucose in the liver?

- A) Glycogen
- B) Starch
- C) Cellulose
- D) Protein

Answer: A) Glycogen

64. What is the main effect of glucagon?

- A) Raises blood glucose
- B) Lowers blood glucose
- C) Lowers blood calcium
- D) Increases water reabsorption

Answer: A) Raises blood glucose

65. Which pair regulates blood glucose in opposite directions?

- A) Insulin and glucagon
- B) Thyroxine and calcitonin
- C) Auxin and gibberellin
- D) Oxytocin and prolactin

Answer: A) Insulin and glucagon

66. What fasting blood glucose range is given in the textbook?

- A) 70–100 mg/dL
- B) 20–40 mg/dL
- C) 40–60 mg/dL
- D) 150–200 mg/dL

Answer: A) 70–100 mg/dL

67. What does HbA1c indicate?

- A) Average blood glucose over about three months
- B) Blood calcium over one day
- C) Water content in urine
- D) Thyroxine production in one hour

Answer: A) Average blood glucose over about three months

68. Which HbA1c value is given as the upper boundary of the normal range in the textbook?

- A) Below 5.7%
- B) Below 7.5%
- C) Below 10%
- D) Below 15%

Answer: A) Below 5.7%

69. Type 1 diabetes is commonly associated with:

- A) Destruction of pancreatic beta cells

- B) Iodine deficiency only
- C) Excessive auxin
- D) Enlargement of thyroid only

Answer: A) Destruction of pancreatic beta cells

70. Type 2 diabetes is associated with:

- A) Reduced effectiveness of insulin and variation in insulin production
- B) Only iodine deficiency
- C) Only excess growth hormone
- D) Only reduced ADH

Answer: A) Reduced effectiveness of insulin and variation in insulin production

71. Which are common symptoms of diabetes mellitus?

- A) Increased thirst, hunger and frequent urination
- B) Reduced thirst and no urination
- C) Neck swelling only
- D) Excessive jaw growth only

Answer: A) Increased thirst, hunger and frequent urination

72. Which organ stores glycogen and releases glucose in response to glucagon?

- A) Liver
- B) Thyroid
- C) Pituitary
- D) Parathyroid

Answer: A) Liver

6. Reproductive hormones, hunger and mental health

73. Which gland produces testosterone?

- A) Testes
- B) Ovary
- C) Pituitary
- D) Thyroid

Answer: A) Testes

74. Which hormones are produced by the ovaries?

- A) Oestrogen and progesterone
- B) Insulin and glucagon
- C) ADH and TSH
- D) Auxin and ethylene

Answer: A) Oestrogen and progesterone

75. Which hormone helps maintain the foetus in the uterus?

- A) Progesterone
- B) Insulin
- C) Thyroxine
- D) Calcitonin

Answer: A) Progesterone

76. Which hormone facilitates milk ejection and uterine contractions?

- A) Oxytocin
- B) Prolactin
- C) Glucagon
- D) Ethylene

Answer: A) Oxytocin

77. Which hormone stimulates appetite and is produced in the upper part of the stomach?

- A) Ghrelin
- B) Leptin
- C) Insulin
- D) Calcitonin

Answer: A) Ghrelin

78. Which hormone signals satiety and helps reduce appetite?

- A) Leptin
- B) Ghrelin
- C) Glucagon
- D) ADH

Answer: A) Leptin

79. Which brain region is involved in appetite regulation by ghrelin and leptin?

- A) Hypothalamus
- B) Cerebellum
- C) Spinal cord
- D) Medulla only

Answer: A) Hypothalamus

80. Which of these is a neurotransmitter associated with mental health?

- A) Dopamine
- B) Auxin
- C) Ethylene
- D) Parathormone

Answer: A) Dopamine

81. Which other neurotransmitter is mentioned in the textbook?

- A) Serotonin
- B) Gibberellin
- C) Progesterone
- D) Calcitonin

Answer: A) Serotonin

82. Which substances are associated with neurotransmission and responses to pain and pleasure?

- A) Endorphins
- B) Absciscic acid
- C) Insulin
- D) Parathormone

Answer: A) Endorphins

7. Pheromones, adrenal gland and melatonin

83. What are pheromones?

- A) Chemical substances used for communication within the same species
- B) Hormones that regulate calcium
- C) Digestive enzymes
- D) Photosynthetic pigments

Answer: A) Chemical substances used for communication within the same species

84. Which pheromone helps determine territory?

- A) Territorial pheromone
- B) Alarm pheromone
- C) Sex pheromone
- D) Trail pheromone

Answer: A) Territorial pheromone

85. Which pheromone signals danger?

- A) Alarm pheromone
- B) Trail pheromone
- C) Territorial pheromone
- D) Sex pheromone

Answer: A) Alarm pheromone

86. Which pheromone attracts mates?

- A) Sex pheromone
- B) Alarm pheromone
- C) Trail pheromone
- D) Territorial pheromone

Answer: A) Sex pheromone

87. Which pheromone helps mark a route to food?

- A) Trail pheromone
- B) Alarm pheromone
- C) Sex pheromone
- D) Territorial pheromone

Answer: A) Trail pheromone

88. How do pheromone traps control pests?

- A) They attract insects and trap or destroy them
- B) They increase pest reproduction
- C) They fertilise all crops
- D) They attract only beneficial insects

Answer: A) They attract insects and trap or destroy them

89. Which gland releases hormones involved in emergency responses?

- A) Adrenal gland
- B) Parathyroid
- C) Pineal
- D) Thyroid only

Answer: A) Adrenal gland

90. What is another name for epinephrine?

- A) Adrenaline
- B) Thyroxine
- C) Vasopressin
- D) Somatotropin

Answer: A) Adrenaline

91. What is another name for norepinephrine?

- A) Noradrenaline
- B) Calcitonin
- C) Prolactin
- D) Progesterone

Answer: A) Noradrenaline

92. Which nervous system division is active during the emergency response?

- A) Sympathetic nervous system
- B) Parasympathetic nervous system only
- C) Visual cortex
- D) Spinal sensory system only

Answer: A) Sympathetic nervous system

93. Which hormone from the adrenal cortex helps maintain salt balance?

- A) Aldosterone
- B) Insulin
- C) Oxytocin
- D) Ethylene

Answer: A) Aldosterone

94. Which gland produces melatonin?

- A) Pineal gland
- B) Thyroid
- C) Pancreas
- D) Adrenal cortex

Answer: A) Pineal gland

95. When is melatonin production generally higher?

- A) At night
- B) Only at midday
- C) Only after meals
- D) Only during exercise

Answer: A) At night

96. Bright light at night can inhibit the secretion of:

- A) Melatonin
- B) Insulin
- C) Parathormone
- D) Gibberellin

Answer: A) Melatonin

8. Integrated application and revision

97. A shoot bends towards a window. Which phenomenon explains this?

- A) Phototropism
- B) Hydrotropism
- C) Geotropism
- D) Chemotropism

Answer: A) Phototropism

98. A farmer uses 2,4-D to control weeds. It is a:

- A) Synthetic auxin
- B) Synthetic insulin
- C) Animal growth hormone
- D) Thyroid hormone

Answer: A) Synthetic auxin

99. A plant retains green leaves for longer. Which hormone may be involved?

- A) Cytokinin
- B) Ethylene
- C) Abscissic acid
- D) Glucagon

Answer: A) Cytokinin

100. A child has stunted growth due to low growth hormone during development. Which disorder is indicated?

- A) Dwarfism
- B) Gigantism
- C) Acromegaly
- D) Goitre

Answer: A) Dwarfism

101. An adult develops enlarged hands, feet and jaws due to excess growth hormone after the growth phase. This is:

- A) Acromegaly
- B) Dwarfism
- C) Hypothyroidism
- D) Goitre

Answer: A) Acromegaly

102. Blood calcium rises. Which hormone helps lower it?

- A) Calcitonin
- B) Parathormone
- C) Glucagon
- D) Somatotropin

Answer: A) Calcitonin

103. Blood calcium falls. Which hormone helps raise it?

- A) Parathormone
- B) Calcitonin
- C) Insulin

D) Prolactin

Answer: A) Parathormone

104. A person loses water through sweating. Which response conserves water?

- A) Increased ADH secretion
- B) Reduced ADH secretion
- C) Increased ethylene
- D) Increased calcitonin

Answer: A) Increased ADH secretion

105. Blood glucose rises after a meal. Which hormone helps lower it?

- A) Insulin
- B) Glucagon
- C) ADH
- D) Parathormone

Answer: A) Insulin

106. Blood glucose falls between meals. Which hormone helps raise it?

- A) Glucagon
- B) Insulin
- C) Calcitonin
- D) Prolactin

Answer: A) Glucagon

107. Which pair is correctly matched?

- A) Prolactin—milk production
- B) Oxytocin—fruit ripening
- C) Thyroxine—root formation
- D) Glucagon—water reabsorption

Answer: A) Prolactin—milk production

108. Which pair regulates calcium homeostasis?

- A) Calcitonin and parathormone
- B) Insulin and glucagon
- C) Auxin and ethylene
- D) Prolactin and oxytocin

Answer: A) Calcitonin and parathormone

109. Which pair regulates blood glucose homeostasis?

- A) Insulin and glucagon
- B) Calcitonin and thyroxine
- C) Auxin and cytokinin
- D) Oxytocin and prolactin

Answer: A) Insulin and glucagon

110. Which term means maintaining a relatively stable internal environment?

- A) Homeostasis
- B) Phototropism
- C) Abscission
- D) Dormancy

Answer: A) Homeostasis

111. Which is a major benefit of pheromone traps compared with broad chemical pesticide use?

- A) They can target particular pests and reduce harm to beneficial organisms
- B) They kill all organisms
- C) They increase soil pollution
- D) They have no pest-control role

Answer: A) They can target particular pests and reduce harm to beneficial organisms

Quick Revision: Important Hormone–Function Pairs

- Auxin: Stem elongation and tropic movements
- Gibberellin: Breaking seed dormancy and growth
- Cytokinin: Cell division and delayed leaf ageing
- Ethylene: Fruit ripening
- Absciscic acid: Growth inhibition and stress responses
- Somatotropin: Body growth
- Prolactin: Milk production
- Oxytocin: Uterine contractions and milk ejection
- Thyroxine: Metabolism and body temperature regulation
- Calcitonin: Lowers blood calcium
- Parathormone: Raises blood calcium
- ADH / Vasopressin: Increases water reabsorption in kidneys
- Insulin: Lowers blood glucose
- Glucagon: Raises blood glucose
- Testosterone: Male reproductive functions and secondary sexual characteristics
- Oestrogen: Female reproductive functions and secondary sexual characteristics
- Progesterone: Helps maintain pregnancy
- Ghrelin: Stimulates appetite
- Leptin: Signals satiety
- Melatonin: Sleep–wake cycle
- Adrenaline: Emergency response
- Aldosterone: Salt balance

Study note: Blood-glucose reference ranges and diagnostic interpretation can vary by guideline and clinical context. Use the textbook values for syllabus-based revision and consult a qualified healthcare professional for diagnosis.