



BIOLOGY

BOOKS - CENGAGE BIOLOGY

CO-ORDINATION THROUGH HORMONES : ENDROCRINCE SYSTEM

Mandatory Exercise

1. What are hormones?



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2. List five functions of hormones.



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3. Differentiate between the following

(a) Exocrine and endocrine gland.



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4. Differentiate between the following

Anterior lobe of pituitary and posterior lobe of pituitary.



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5. Differentiate between the following

Iodine deficiency goitre and exophthalmic goitre



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6. Name the hormone that performs the following function

Used in the metabolism of glucose. _____



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7. Name the hormone that performs the following function

Regulate amount of calcium in blood _____



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8. Name the hormone that performs the following function

Increases metabolic rate, stimulates physical and mental growth.



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9. Name the hormone that performs the following function

Stimulates growth and secretion of the thyroid gland.



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10. Name the hormone that performs the following function

Activates the sympathetic nervous system



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11. What is the anatomical relationship between the hypothalamus and the anterior pituitary?



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12. What hormones are released by the hypothalamus to control the anterior pituitary gland?



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13. In the table given below mention which hormones are released from the posterior pituitary, their place of production, the target

organ and their action.

Hormones released from posterior pituitary	Place of production	Target organ	Action
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14. In the column - A, hormones released by anterior pituitary gland are given, write down their target organs in the column - B.



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15. This question consists of two statements each: assertion (A) and reason (R). To answer this question, mark the correct alternative as directed below.

Assertion: Thymus gland is prominent at birth but gradually atrophies in the adult.

Reason: Thymus hormone named thymosin causes growth in early life by accelerating cell division.

- A. If both A and R are true, R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false

Answer:



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16. Match the column I with column II.

Column I	Column II
(a) Calcitonin	(i) Oxytocin
(b) PTH	(ii) Thyroid
(c) GnRH	(iii) Pituitary
(d) LH	(iv) Pineal gland
(e) Stimulates secretion of milk	(v) Hypothalamus
(f) Source of melatonin	(vi) Parathyroid



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17. A person is having problems with calcium and phosphorus metabolism in his body. Which one of the following glands may not be functioning properly?

A. Thyroid gland.

B. Pineal gland.

C. Parathyroid gland.

D. Pancreas

Answer:



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18. Differentiate between the following:

Adrenal cortex and adrenal medulla.



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19. Differentiate between the following:

Diabetes mellitus and diabetes insipidus.



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20. Describe the relationship between insulin and glucagon. Where are they both produced, how do they act upon your body, and how do they interact with each other?



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21. This question consists of two statements each: assertion (A) and reason (R). To answer this question, mark the correct alternative as directed below.

Assertion: The hormone FSH stimulates RBC formation. Reason: On reaching the red bone marrow, FSH stimulates mitosis to increase RBC formation

A. If both A and R are true, R is the correct explanation of A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer:



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22. Progesterone is secreted by

A. corpus allata.

B. corpus albicans.

C. corpus luteum

D. corpus callosum.

Answer:



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23. Name the hormones produced by (a) testes
and (b) ovaries



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24. Both adrenaline and cortisol are secreted in response to stress. Which of the following statement is also true for both of these hormones?

A. They act to increase blood glucose.

B. They are secreted by the adrenal cortex.

C. Their secretion is stimulated by adrenocorticotropin.

D. They are secreted into the blood within seconds of the onset of stress.

Answer:



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Consolidated Exercise

1. Match with one or more than one correct answer

Column I	Column II
(a) Emergency hormone	(i) Adrenal cortex
(b) ACTH	(ii) Adrenaline
(c) Vasopressin	(iii) Diabetes mellitus
(d) Insulin	(iv) Diabetes insipidus
(e) Luteinizing hormone	(v) Ovulation
	(vi) Glycogenesis
	(vii) Corticoids
	(viii) Adrenal medulla



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2. An example of a positive feedback mechanism is

A. control of blood glucose concentrations

B. control of milk production

C. control of thyroid hormone secretion

D. control of blood calcium level

Answer:



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3. The blood cortisol level controls the secretion of

A. hypothalamic-releasing hormone from the hypothalamus

B. adrenocorticotrophic hormone (ACTH)

from the anterior pituitary

C. cortisol from the adrenal cortex

D. oxytocin

Answer:



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4. The anterior pituitary controls the secretion(s) of both

- A. the adrenal medulla and the adrenal cortex
- B. the thyroid and the adrenal cortex
- C. the ovaries and the testes
- D. Both 2 and 3

Answer:



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5. Which of these is/are a pair of antagonistic hormone?

A. Insulin-glucagon.

B. Epinephrine-Norepinephrine

C. Cortisol-epinephrine

D. Thyroxine-growth hormone

Answer:



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6. Which hormone and condition is/ are Incorrectly matched?

A. Growth hormone-Acromegaly.

B. Thyroxine-Goitre

C. Cortisol-Myxedema.

D. Insulin-Diabetes Mellitus

Answer:



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7. Which of the following is/are not found in females?

A. Estrogen

B. Testosterone

C. Follicle stimulating hormone

D. Glucagon

Answer:



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8. Tropic hormones are hormones that affect other endocrine tissues. Which of the following/s would be considered a tropic hormone?

A. Calcitonin

B. Melatonin

C. Follicle-stimulating hormone

D. Growth hormone

Answer: C



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9. Which of the following statements about the pituitary gland is/are incorrect?

A. The pituitary lies inferior to the hypothalamus

B. Growth hormone and prolactin are secreted by the anterior pituitary

C. The anterior pituitary and posterior pituitary communicate with each other

D. Axons run between the hypothalamus and the posterior pituitary.

Answer: C



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10. The hormone that stimulates the stomach to secrete gastric juice is/are

A. gastrin

B. enterogastrone

C. enterokinase

D. secretin

Answer: A



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11. Which of the following acts as endocrine gland as well as an exocrine gland?

A. Salivary

B. Pancreas

C. Pituitary

D. Parathyroid

Answer: B



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12. Iodine is necessary for the synthesis of which hormone?

A. Adrenaline

B. Auxin

C. Thyroxine

D. Insulin

Answer: C



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13. Which of the following is a mis-matched pair?

A. Adrenaline : Pituitary gland

B. Estrogen : Ovary

C. Pancreas : Insulin

D. Progesterone: Ovary

Answer: A



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14. Which of the following hormone prepares our body for action in emergency situations?

A. Testosterone

B. Growth hormone

C. Adrenaline

D. Insulin

Answer: C



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15. Which of the following endocrine gland does not occur as a pair in the human body?

A. Adrenal

B. Pituitary

C. Testis

D. Ovary

Answer: B



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16. Which of the following does not act as an endocrine gland as well as an exocrine gland?

A. Testis

B. Ovary

C. Pituitary

D. Pancreas

Answer: C



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17. The faulty functioning of an endocrine gland can make a person very short or very tall. This gland is:

A. Thyroid

B. Pineal

C. Adrenal

D. Pituitary

Answer: D



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18. The endocrine gland whose malfunctioning causes diabetes disease is:

A. Pituitary

B. Pineal

C. Parathyroid

D. Pancreas

Answer: D



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19. The use of iodised salt is recommended to prevent:

A. Diabetes

B. Gonorrhoea

C. Dysentery

D. Goitre

Answer: D



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20. Hormones may be

A. Steroid

B. Peptides

C. Amino acid derivatives

D. All of the above

Answer: D



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21. Which gland responsible for calcium metabolism-

A. Thymus

B. Thyroid

C. Parathyroid

D. Adrenal

Answer: C



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22. Glucagon is secreted from which cells of Islet of Langerhans

A. α cells

B. β cells

C. γ - cells

D. Both α and β cells

Answer: A



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23. Hormone which brings about the contraction of gall bladder is

A. Oxytocin

B. Gastrin

C. Cholecystokinin

D. Secretin

Answer: C



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24. Adrenal gland is associated with

A. Pharynx

B. Pancreas

C. Kidney

D. Brain

Answer: C



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25. Male hormone is

A. Estradiol

B. Progesterone

C. Testosterone

D. Adrenaline

Answer: C



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26. Cholesterol is required for the synthesis of

- A. Insulin
- B. Vitamin B
- C. Vitamin E
- D. Estradiol

Answer: D



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27. Estrogens are hormones of

A. Testis

B. Ovary

C. Oviduct

D. Uterus

Answer: B



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28. Endocrine glands are those glands which pour their secretion directly into

A. Ducts

B. Substrate

C. Blood

D. All of the above

Answer: C



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29. Iodine taken in diet is stored in

- A. Liver cells
- B. Thyroid cells
- C. Muscle cells
- D. Brain cells

Answer: B



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30. Under the secretion of thyroxine/hypothyroidism in children causes

A. Cretinism

B. Dwarfism

C. Goitre

D. Acromegaly

Answer: A



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31. The female sex hormone is

A. Estrogen

B. Androgen

C. Insulin

D. Adrenaline

Answer: A



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32. Facial hair occur in some women due to the effect of

A. UV-radiation

B. Temperature

C. Hormones

D. Pollution

Answer: C



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33. Pineal gland produces

A. Glucagon

B. Aldosterone

C. Cortisol

D. Melatonin

Answer: D



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34. Diabetes insipidus is caused by hyposecretion of

- A. Insulin
- B. Vasopressin
- C. Oxytocin
- D. Thymosin

Answer: B



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35. Thymosin hormone is secreted by

A. Thyroid

B. Thymus

C. Parathyroid

D. Hypothalamus

Answer: B



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36. Hormone regulating diurnal rhythm/sleep
wake cycle is

A. Thymosin

B. Glucagon

C. Melatonin

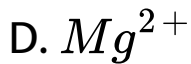
D. Oxytocin

Answer: C



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37. Parafollicular cells of thyroid secrete hormone for controlling level of



Answer: C



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38. Increase in glucose level is called

A. Hypoglycemia

B. Hypoglycemia

C. Hyperglycemia

D. Hyperglycemia

Answer: D



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39. Hyposecretion of growth hormone causes

A. Acromegaly

B. Cretinism

C. Dwarfism

D. Myxoedema

Answer: C



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40. The hormone which controls water and mineral metabolism is

A. Insulin

B. Progesterone

C. Glucagon

D. Deoxycorticosterone

Answer: D



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41. The hormone which possesses anti-insulin effect

A. Cortisol

B. Calcitonin

C. Oxytocin

D. Aldosterone

Answer: A



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42. Impairment of adrenal cortex causes decreased concentration of

A. Ca^{2+}

B. Na^+

C. Ammonium

D. Glucose

Answer: B



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43. Secretion of gastric juice is stopped by

A. Gastrin

B. Secretin

C. Enterogasterone

D. Cholecystokinin

Answer: C



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44. The hormone which help in the production of lymphocytes and antibodies is

A. Thymus

B. Pineal

C. Adrenal

D. Thyroid

Answer: A



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45. Blood pressure is controlled by which gland

A. Adrenal

B. Thyroid

C. Thymus

D. Corpus luteum

Answer: A



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46. Besides testis, androgens are also produced by which gland

A. Thyroid

B. Thymus

C. Adrenal medulla

D. Adrenal cortex

Answer: D



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47. The production of which hormone increases when the frog is at a dark location

A. Insulin

B. Oestrogen

C. MSH

D. None of these

Answer: C



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48. The primary target of the hormones of hypothalamus is

A. Pineal gland

B. Pituitary

C. Thymus

D. Testis

Answer: B



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49. The hormone which produces calorogenic effect in the body is

A. Adrenaline

B. FSH

C. Growth hormone

D. Thyroxine

Answer: D



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50. STH (somatotrophic hormone) is also known as

A. TSH

B. LTH

C. ADH

D. GH

Answer: D



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Olympiad And Ntse Level Exercises

1. Which of the following is LEAST likely to result in the release of epinephrine (adrenaline) from the adrenal glands?

A. Competing in an athletic event

B. First day of college after X

C. Falling asleep during a lecture

D. Taking a test while unprepared

Answer: C



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2. Which one of the following statements is correct?

A. Hormones produced by the ovary affects uterine contractions.

B. Hormones produced by intestine stimulates heartbeat.

C. Hormones produced by kidney regulates general blood pressure.

D. Hormones produced by thyroid

regulates general metabolism.

Answer: D



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3. Failure of production of insulin results in

A. Addison's disease

B. Cushing's disease

C. Diabetes insipidus

D. Diabetes mellitus

Answer: D



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4. Column I lists the endocrine structure and column II the corresponding hormones. Match the two columns. Identify the correct option

Column I

- (i) Hypothalamus
- (ii) Anterior pituitary
- (iii) Testis
- (iv) Ovary

Column II

- (a) relaxin
- (b) estrogen
- (c) FSH and LH
- (d) androgens
- (e) gonadotrophic hormone

A. (i)-e, (ii) , (iii)-d, (iv)-b

B. (i)-e, (ii)-c,(iii)—b, (iv)-d

C. (i)-a, (ii)—b, (iii)-d, (iv)-C

D. (i)-c,(ii) e (iii)-d, (iv)-b

Answer: A



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5. This question consists of two statements:

Assertion (A) and Reason (R).

Assertion (A): Hormones interacting with

membrane bound receptors normally do not enter the target cells.

Reason (R): They generate second messengers like cyclic AMP, $IP_{,3}$ and Ca^{+2} .

To answer this question, mark the correct alternative as per the options given below

A. Both (A) and (R) are true and (R) is the correct explanation of A.

B. Both (A) and (R) are true and (R) is not the correct explanation of A

C. Both (A) is true statement but (R) is false.

D. Both (A) and (R) are false

Answer: A

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6. Which of the hormones is responsible for fear, fight and flight?

A. Insulin

B. Adrenaline

C. Progesterone

D. Thyroxine

Answer: B



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7. Which one of the following statements is correct?

A. Hormones produced by the ovary affects uterine contractions.

B. Hormones produced by intestine stimulates heartbeat

C. Hormones produced by kidney regulates general blood pressure

D. Hormones produced by thyroid regulates general metabolism.

Answer: D



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8. The hormone responsible for inducing spermatogenesis and oogenesis is

A. FSH

B. estrogen

C. LH

D. androgen

Answer: A



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9. In a pregnant woman with prolonged labour pains, childbirth can be hastened by administering a hormone that can

- A. activate the smooth muscles
- B. increase the metabolic rate
- C. release glucose into the blood
- D. stimulate the ovary

Answer: A



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10. Identify the correct statements from the following.

A. Pancreas is purely endocrine gland.

B. Testosterone is female sex hormone.

C. Prolactin is released by posterior
pituitary

D. Thyroxin hormone control basal
metabolic activity.

Answer: D



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Challenging Exercise

1. Raju had a thyroid test. His doctor gave him an injection of TSH and 15 minutes later measured the level of thyroid hormone in his blood. What is TSH? Why do you think Raju's doctor gave him an injection of TSH? How would this affect the level of thyroid hormone in his blood if his thyroid is normal?



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2. Jagan, a five year old boy, has been growing by leaps and bounds. His height is 100% above normal for his age group and recently he has been complaining of headaches and vision problems. A CT scan reveals a large pituitary tumor. What hormone is being secreted in excess? What name is given to the condition that Jagan will exhibit if corrective measures are not taken? and, What is the probable cause of his headaches and visual problems?



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3. A patient has hyperparathyroidism and produces excessive amounts of parathyroid hormone. What effect would this hormone have on bones? Would administration of large doses of vitamin D help the situation? Explain.



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