

BIOLOGY



Important Questions

➤ Multiple Choice Questions:

Question 1. Blood pressure is under the control of

- (a) Pituitary
- (b) Adrenal
- (c) Thyroid
- (d) Thymus

Question 2. Master endocrine gland is

- (a) Pituitary
- (b) Parathyroid
- (c) Thyroid
- (d) Pineal

Question 3. Largest completely endocrine gland is

- (a) Adrenal
- (b) Thyroid
- (c) Pituitary
- (d) Parathyroid

Question 4. Implantation of embryo and production of placenta is controlled

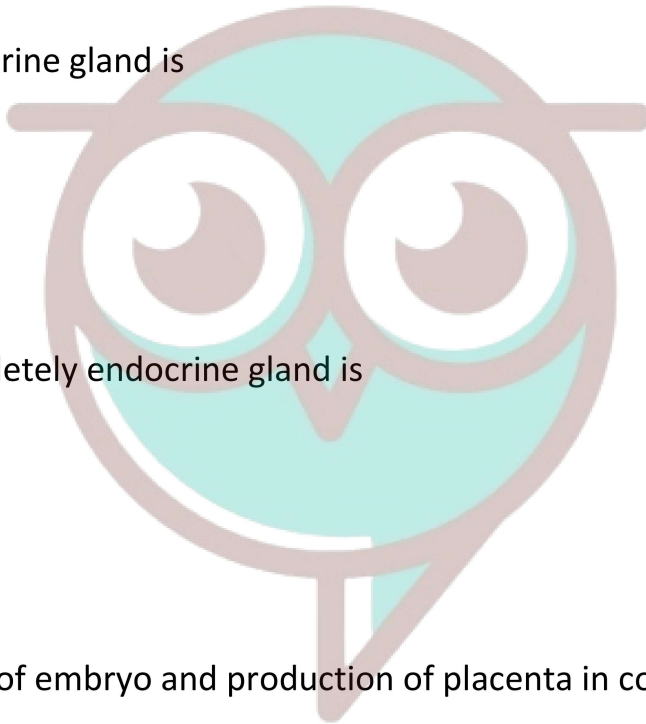
- (a) FSH
- (b) Oestrogen
- (c) Progesterone
- (d) Estradiol

Question 5. Insulin is secreted by pancreas in

- (a) Acinus
- (b) α cells
- (c) β cells
- (d) δ cells

Question 6. Hormone is

- (a) Nerve impulse
- (b) Chemical messenger



Swotters

- (c) Excretory product
- (d) Enzymatic product

Question 7. The hormone that causes change in appearance of males during puberty is

- (a) Thyroxine
- (b) Progesterone
- (c) Testosterone
- (d) Oestrogen

Question 8. Diabetes insipides is caused by reduced activity in

- (a) Thyroid
- (b) Anterior lobe of pituitary
- (c) Intermediate pituitary lobe
- (d) Posterior lobe of pituitary

Question 9. The hormone converts glucose to glycogen inside liver, is produced in

- (a) Thymus
- (b) Pancreas
- (c) Parathyroid
- (d) Adrenal

Question 10. Iodine of iodised salt is stored in

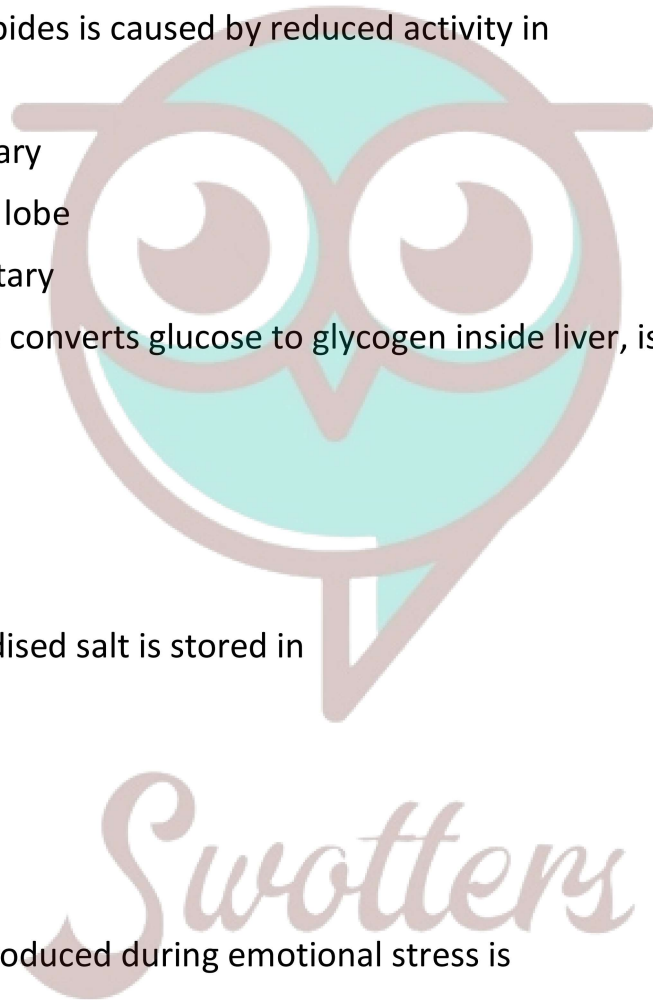
- (a) Pituitary
- (b) Thyroid
- (c) Liver
- (d) Parathyroid

Question 11. Hormone produced during emotional stress is

- (a) Adrenaline
- (b) Melatoijiri
- (c) Calcitonin
- (d) Norepinephrine

Question 12. Which of the following is a hormonal disease

- (a) Scurvy
- (b) Malaria
- (c) Prolactin



(d) Insulin

Question 13. Adrenaline is secreted by

(a) Adrenal medulla

(b) Thymus

(c) Pineal

(d) Adrenal cortex

Question 14. Control of body temperature depends on the

(a) Pancreas

(b) Medulla

(c) Pituitary

(d) Hypothalamus

Question 15. Which of the following is not an endocrine gland:

(a) Thyroid

(b) Pancreas

(c) Pituitary

(d) Sebaceous

➤ **Fill In the Blanks:**

1. Endocrine glands lack ducts and are hence, called
2. The endocrine glands and hormone producing diffuse located in different parts of our body constitute the
3. Hypothalamus is the basal part of, and it regulates a wide spectrum of body functions.
4. The is under the direct neural regulation of the hypothalamus.
5. Pituitary gland is divided into and
6. stimulates synthesis and secretion of thyroid hormones from the thyroid gland.

➤ **True or False:**

1. Glucagon is a hyperglycemic hormone.
2. Pupillary dilation, piloerection, sweating the hormones increase the heart beat, the strength of heart contraction and the rate of respiration.
3. Ovary is composed of ovarian follicles and stromal tissues.
4. The atrial wall of our heart secretes a very important peptide hormone called atrial

natriuretic factor

5. Secretion acts on the exocrine pancreas and stimulates secretion of water and bicarbonate ions.
6. CCK inhibits gastric secretion and motility

➤ **Very Short Question:**

1. What is an endocrine gland?
2. What are hormones?
3. Expand the term BMR.
4. Which hormone is responsible for the metamorphosis of tadpoles into adult frogs?
5. What is castration?
6. What is adrenal virilism?
7. What condition is caused due to failure of production of [testosterone?]
8. What function do glucagons have?
9. Name the gland which functions as both the endocrine and exocrine?
10. Name the hormone which is antidiuretic in its effect.

➤ **Short Questions:**

1. Work out the contrast between diabetes Mellitus and diabetes insipidus.
2. Name and state briefly the functions of the hormones secreted by the adrenal cortex.
3. Describe different disorders caused by thyroid hormone imbalance.
4. State different functions of thyroid hormones.
5. State chief characteristics of the hormones.
6. Describe in brief different disorders caused by the adrenal cortex.
7. Why do you suppose the brain goes to the trouble of synthesizing releasing hormones, rather than simply directing the production of the pituitary hormones immediately?
8. Which endocrine gland is controlled by the secretion of other endocrine glands?

➤ **Long Questions:**

1. What are thyroids? Describe the disorders of thyroids hormones.
2. Give an account of the primary male sex organ in man and mention briefly the functions of the hormone testosterone.

Assertion Reason Question-

1. In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.
- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - (c) If Assertion is true but Reason is false.
 - (d) If both Assertion and Reason are false.

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.

2. In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.
- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - (c) If Assertion is true but Reason is false.
 - (d) If both Assertion and Reason are false.

Assertion: Neurohypophysis is under the direct regulation of the hypothalamus.

Reason: Neurohypophysis stores and releases two hormones called oxytocin and vasopressin which are actually synthesized by the hypothalamus.

✓ **Answer Key-**

➤ **Multiple Choice Answers:**

- 1. (b) Adrenal
- 2. (a) Pituitary
- 3. (b) Thyroid
- 4. (c) Progesterone
- 5. (c) P-cells
- 6. (b) Chemical messenger
- 7. (c) Testosterone.
- 8. (d) Posterior lobe of pituitary
- 9. (b) Pancreas
- 10. (b) Thyroid
- 11. (a) Adrenaline
- 12. (d) Insulin

13. (a) Adrenal medulla
14. (b) Medulla
15. (d) Sebaceous

➤ **Fill In the Blanks:**

1. ductless glands
2. tissues/cells, endocrine system
3. diencephalon, forebrain
4. posterior pituitary
5. adenohypophysis, a neurohypophysis
6. TSH

➤ **True or False:**

1. True
2. True
3. True
4. True
5. True
6. False

➤ **Very Short Answers:**

1. Answer: The gland without duct, which secretes hormones, is called the endocrine gland.
2. Answer: The endocrine glands secrete chemical substances which affect various body activities in target organs, by reaching there through blood.
3. Answer: Basal Metabolic Rate.
4. Answer: The hormone thyroxine secreted by the thyroid gland is responsible for the metamorphosis of tadpoles into adult frogs.
5. Answer: The surgical removal of the testis is called castration.
6. Answer: The hypersecretion of sex corticoids causes the development of external male characters in females, called adrenal virilism.
7. Answer: Eunuchoidism.
8. Answer: It causes the formation of glucose from the breakdown of glycogen and from amino acids.
9. Answer: Pancreas.

10. Answer: Vasopressin (ADH) secreted by the posterior pituitary.

➤ **Short Answer:**

1. Answer: Diabetes Mellitus: It is the disorder in which blood sugar is present well beyond the renal threshold, consequently glucose is present in urine. It is caused due to deficiency of insulin hormone.

Diabetes insipidus: It is the disorder in which hypotonic urine is excessively excreted. It is caused by the deficiency of the secretion of the ADH hormone.

2. Answer: Mainly the hormones secreted by the adrenal cortex are:

1. Glucocorticoids: These regulate the metabolism of carbohydrates, fats, and proteins.

2. Mineralocorticoids: These maintain the sodium, potassium level in the blood.

3. Sex corticoids: These stimulate the development of external sex characters like male patterns of body hair distribution. Androstenedione and dehydroepiandrosterone are sex corticoids.

3. Answer: Other than simple goiter, the main thyroid hormone imbalances are:

- Cretinism: Hypoactivity of thyroxine in children causes poor physical and mental development, low metabolism. The affected individual is potbellied and pigeon-chested.
- Myxedema: Hypoactivity of thyroxine in adults causes poor physical and mental development, low metabolism, puffy appearance, and reproductive failure.
- Grave's disease: (exophthalmic goiter) Hyperactivity of thyronine causes increased metabolism, bulging of eyeballs, emaciation, and restlessness.

4. Answer:

i. These affect the metabolism.

ii. These maintain BMR (Basal Metabolic Rate).

iii. These affect physical growth.

iv. These affect the development of mental faculties.

v. These affect the process of differentiation.

vi. Affect metamorphosis in tadpoles.

5. Answer:

i. The effect produced is marked even in minute concentrations.

ii. Directly sent to target organs through blood circulations.

iii. Storage is not possible.

iv. The target organ is distantly placed from the organ in which these are produced.

- v. These are secreted as a response to some sort of stimulus.
- vi. Chemicals are biological in origin, i.e., biogenic, e.g., amine, peptides, steroids, etc.
6. Answer: Different disorders related to the adrenal cortex are:
- Addison's disease: Atrophy or destruction of adrenal cortex causes failure of secretion of minerals corticoids and glucocorticoids leads to low blood Na^+ , high plasma K^+ and urinary Na^+ , bronze skin pigmentation.
 - Cushing's syndrome: Increased production of cortical causes low' plasma K^+ , high plasma Na^+ , rise in blood pressure and volume.
 - Aldosteronism: Hyperactivity of aldosterone cause Na^+ and K^+ conditions like Cushing's syndrome, muscular weakness.
 - Adrenal virilism: Hypersecretion of sex corticoids causes the development of male-type external features in female-like beard and mustache, low pitch male voice, and mensural cessation.
7. Answer: Hormones secreted by the posterior lobe of the pituitary gland are actually synthesized by the neurons in the hypothalamus and stored in their axon ends in the posterior lobe for release, when required.

The pituitary was called the Master endocrine gland, because of the number of hormones it produces and the control it exercises over other endocrine glands. However, it itself is under control of the releasing hormones secreted by the hypothalamus of the brain. Thus there is a chain of disorders, the hypothalamus directs the pituitary output, which controls the secretion of hormones by other endocrine glands.

8. Answer: The thyroid gland is the only endocrine gland that is controlled by the secretion of another endocrine gland. It stores its secretory product in large quantity.

Hypothalamus, in response to some external stimulus, produces a thyrotropin-releasing hormone (TRH) for the secretion of the thyrotrophic hormone. The thyrotropin-releasing hormone stimulates the anterior pituitary lobe to secrete thyrotrophic hormone. The latter, in turn, stimulates the thyroid gland to produce thyroxine, thereby restoring the normal blood- thyroxine level.

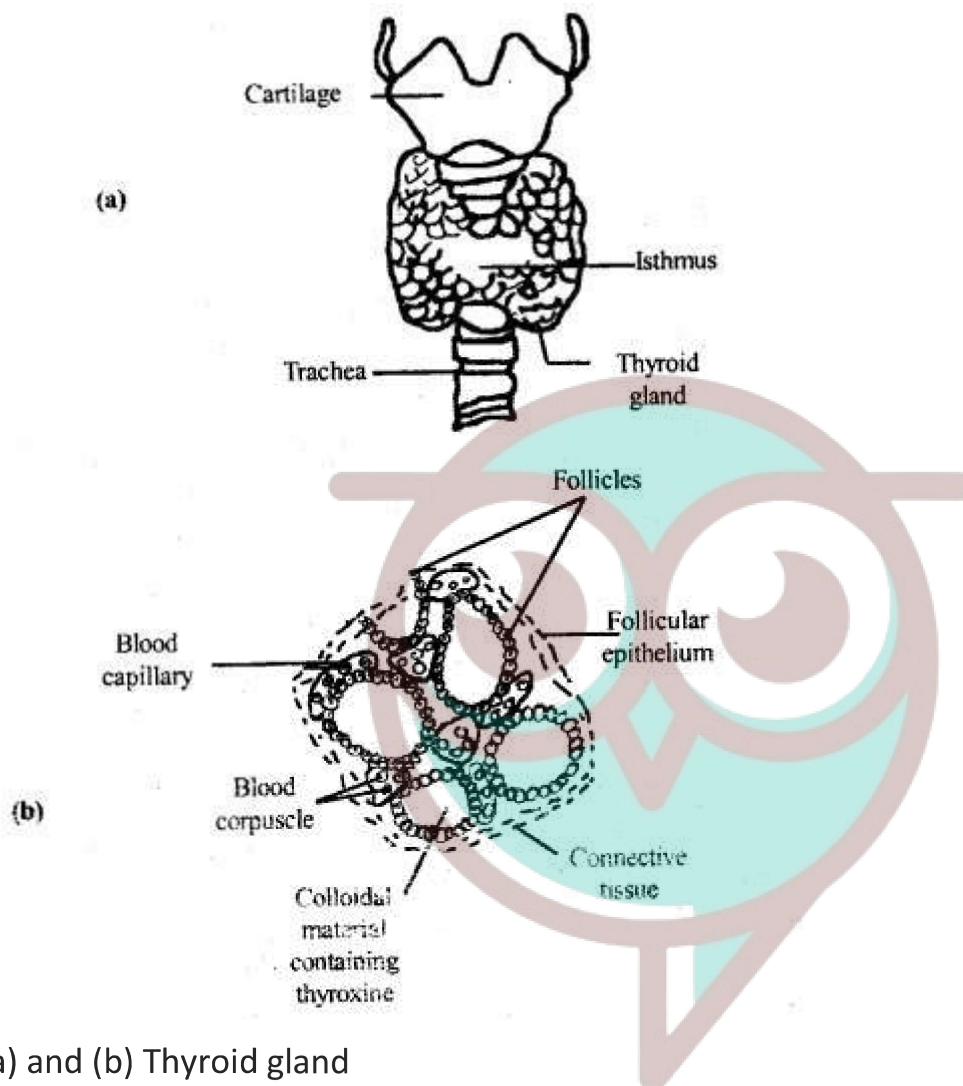
➤ Long Answer:

1. Answer:

The thyroid gland is situated in the neck close to the trachea in human beings. It consists of two elongated oval lobes joined together by a narrow band called ISTHMUS. It highly vascular organ and contains many- spherical or oval sac-like follicles.

Cells of the follicle secrete jelly-like semi-fluid called Colloid of Thyroid stored in the lumen of the follicle. This contains iodinated forms of an amino acid called THYRONINE. When required, two thyroid hormones, THYROXINE, and TRIIODOTHYRONINE are released from the colloid to the

blood.



(a) and (b) Thyroid gland

Disorders:

- i. Failure of the thyroid from infancy or childhood causes a disease called cretinism. In it, there is slow body growth and mental development. There is also a low metabolic rate.
- ii. The deficiency of thyroid hormones in adults produces Myxedema. The patient shows a puffy appearance and lacks intelligence, lateness, and initiative. There is also a low metabolic rate.
- iii. The deficiency of iodine produces enlargement of thyroids causing Iodine Deficiency to Goitre.
- iv. Some thyroid enlargement is accompanied by a bulging of the eyeball.

The disease is called Grave's Disease or Exophthalmic Goitre. The excessive amount of thyroid hormone is secreted.

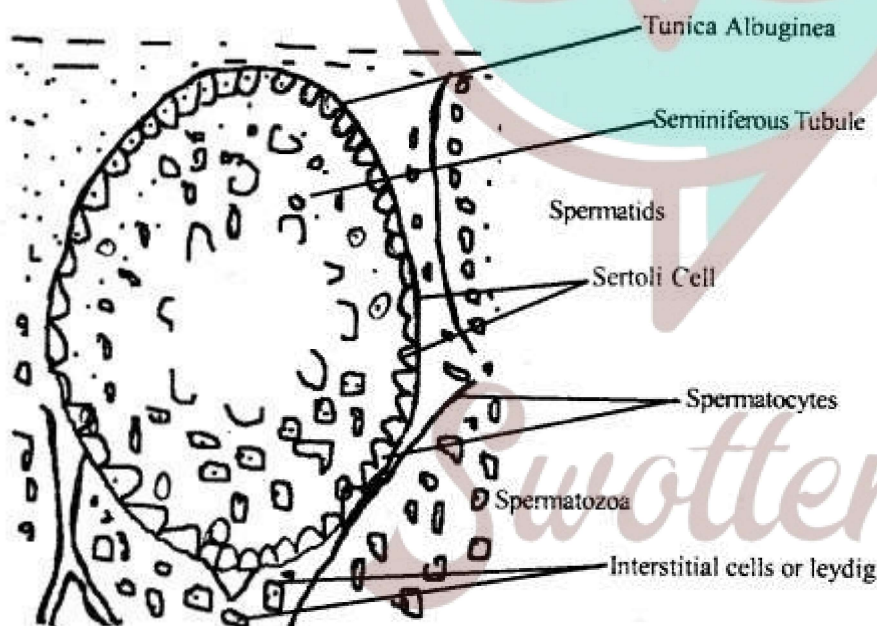
2. Answer: The testis is the primary sex organ. There are pair of testes. Each testis is covered by a thick connective tissue sheath, Tunica Albuginea. Both testes normally remain suspended in a pouch called Scrotum outside the abdominal cavity. Each testis consists of many small and highly convoluted tubules, called seminiferous tubules, constituting its spermatogenic tissue.

Cells lining the tubules give rise to spermatozoa, which are released into the lumen of the tubules. These are present groups of polyhedral cells.

Interstitial cells of Leydig in the connective tissue around the seminiferous tubules. This constitutes the endocrine tissue of the testis. These cells secrete Testosterone into the blood. Seminiferous tubules unite to form a large number of straight tubules, which open into irregular cavities in the posterior part of the testis. The vasa efferentia arise from these cavities and conduct spermatozoa out from the testis.

Functions of Testosterone:

- i. It stimulates the growth and development of male secondary sex organs (prostate, seminal vesicles, and penis).
- ii. It stimulates and maintains the normal function of secondary sex organs in reproduction.
- iii. It also stimulates and maintains the development of external male characters such as beards, mustaches, and low-pitch male voices in males and combs and wattles in cock.
- iv. It also stimulates the formation of sperms in the testes.
- v. It promotes the growth of many body tissues including bones and muscles.



T.S. of testis of an adult man

Assertion Reason Answer-

1. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

Explanation: The somatotropin (STH), also called growth hormone (GH) is secreted by the anterior lobe of pituitary gland. Somatotropin stimulates body growth by stimulating retention of proteins and calcium in the body, synthesis and deposition of proteins in tissues, growth and elongation of long bones, and proportionate growth of muscles and visceral organs. The failure

secretion of growth hormone from an early age stops the growth of long bones and of the body prematurely; this makes the patient dwarf and the condition is called dwarfism.

2. (c) If Assertion is true but Reason is false.

Explanation: Neurohypophysis also known as posterior pituitary stores and releases two hormones called oxytocin and vasopressin which are actually synthesized by the hypothalamus and are transported axonally to neurohypophysis. Therefore, the posterior pituitary is under the direct neural regulation of the hypothalamus.



Swotters