

Board – ICSE

Class – 10

Topic – Endocrine System

1. Fill in the Blanks:

- (i) Nervous system and _____ are very closely related.
- (ii) The glands with ducts are called _____
- (iii) A disease caused in children due to under secretion of thyroxin is _____.
- (iv) In adult deficiency in secretion of thyroid produces a disease called _____.

Answers.

- (i) Endocrine system
- (ii) Exocrine/ducted glands.
- (iii) Cretinism
- (iv) Myxedema

2. True & False:

- (i) Adrenal medulla produces adrenaline.
- (ii) The pituitary gland is both exocrine and endocrine in function.
- (iii) Glucagon converts glucose into glycogen.
- (iv) Hormones are produced by endocrine gland.
- (v) Rickets is caused due to deficiency of iodine.

Answers.

- (i) True
- (ii) False, the pancreas gland is both exocrine and endocrine in function.
- (iii) False, Glucagon converts glycogen into glucose.
- (iv) True
- (v) False, Goitre is caused due to deficiency of iodine.

3. Match the Column:

Column A

- (i) Hypothalamus
- (ii) Exophthalmic goitre
- (iii) Parathyroid
- (iv) Addison's disease
- (v) Vasopressin

Column B

- (a) regulates the level of calcium and phosphorus
- (b) regulates the activities of other glands
- (c) regulates the amount of water excreted in urine.
- (d) Over-secretion of thyroxin
- (e) Under-secretion of adrenal cortex

Answers.

- (i) (b), (ii) (d), (iii) (a), (iv) (e), (v) (c)

4. Multiple Choice Questions:

(i) The mammalian thymus is mainly concerned with:

- a) Regulation of body temperature
- b) Regulation of body growth
- c) Secretion of thyrotropins
- d) Immunological functions

(ii) Vasopressin is concerned with:

- a) Quick digestion
- b) Slow heart beat
- c) Concentration of urine
- d) Dilution of urine

(iii) Human chronic Gonadotropin:

- a) Stimulates the growth of placenta
- b) Stimulates the development of new follicles
- c) Inhibits the secretion of milk till child birth
- d) Stimulates the corpus luteum to grow and secrete progesterone.

(iv) Which of the following glands has both endocrine and exocrine functions?

- a) Pituitary gland
- b) Thyroid gland
- c) Pancreas gland
- d) Adrenal gland

(v) The basal metabolic rate in body cells is regulated by:

- a) The parathyroid
- b) The thyroid
- c) The pituitary
- d) The thymus

Answers.

- (i) Immunological functions
- (ii) Dilution of urine
- (iii) Stimulates the corpus luteum to grow and secrete progesterone.
- (iv) Pancreas gland
- (v) The thyroid

5. Give Technical Terms:

- (i) Name the blood vessels which transport hormones from the endocrine glands to the various parts of the body.
- (ii) The structure which controls the master gland.
- (iii) The condition which results in the abnormally long bones, long lower jaw bone due to hyper secretion of pituitary hormone.
- (iv) What are the substances that control the growth and development in animals?
- (v) Name a hormone which controls developments of male secondary sexual characters.

Answers.

- (i) Veins
- (ii) Hypothalamus of the brain
- (iii) Acromegaly
- (iv) Hormones
- (v) Androgens (Testosterone)

6. State the Location:

- (i) Adrenal
- (ii) Prostate gland
- (iii) Thyroid

Answers.

- (i) It consists of a pair of glands situated at the top of each kidney and are enclosed in a connective tissue capsule.
- (ii) At the base of urinary bladder.
- (iii) It consists of two lobes placed on either side of the trachea on the ventral side in the neck region at the level of the base of the larynx.

7. Choose the Odd One Out:

- (i) Thyroid gland, Adrenal gland, Pituitary gland, Prostate gland.
- (ii) Somatotropin, Gonadotropin releasing hormone, Corticotrophin releasing hormone, Oxytocin.
- (iii) FSH, ICSH, Prolactin, LH.
- (iv) Growth hormone, TSH, Vasopressin, LH.

Answers.

- (i) Prostate gland
- (ii) Oxytocin

- (iii) Prolactin
- (iv) Vasopressin

8. Name the Following:

- (i) The master gland of the body, because it controls the activity of other endocrine gland also.**
- (ii) Hormone controls absorption of water from kidney tubules.**
- (iii) Which gland is exocrine as well as endocrine gland?**
- (iv) Disorder caused by excess of thyroid hormone.**
- (v) Which hormone is secreted by the pancreas?**

Answers.

- (i) Pituitary
- (ii) ADH or Vasopressin
- (iii) Pancreas
- (iv) Exophthalmic goitre
- (v) Insulin

9. Write the functional activity of the following structures:

- (i) Testosterone**
- (ii) Progesterone**
- (iii) Estradiol**
- (iv) Oxytocin**

Answers.

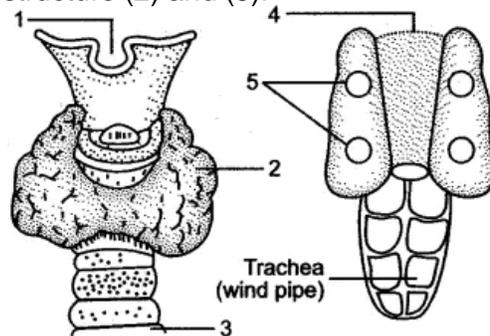
- (i) It is necessary for the development of primary and secondary sexual characters in males.
- (ii) It maintains normal course of pregnancy.
- (iii) It is necessary for the development of primary and secondary sexual characters in females.
- (iv) Ejection of milk from mammary glands.

10. Given alongside are the diagrammatic sketches of some endocrine glands.

Observe the figures and answer the following questions :

- (i) Label the parts numbered 1 to 5.**
- (ii) Name the hormones secreted by (2) and (5).**
- (iii) Which chemicals in our body are greatly affected by hormones?**
- (iv) What is the chemical nature of hormones?**

- (v) Name the elements related with the functioning of hormones secreted by the structure (2) and (5).

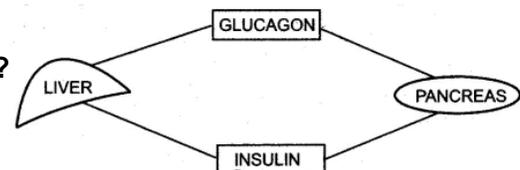


Answers.

- (i) (1) Larynx. (2) Left lobe of thyroid gland. (3) Trachea (windpipe). (4) Oesophagus. (5) Parathyroid glands.
- (ii) Structure (2) secretes thyroxin hormone and structure (5) secretes parathormone.
- (iii) Enzymes; which constitute the enzyme system of the body.
- (iv) Hormones may be proteins, amino acids or steroids.
- (v) Iodine is related with the functioning of gland (2) calcium, phosphorus are related with the functioning of gland (5).

11. Study the diagram given below and then answer the questions that follow :

- (i) Name the cells of the pancreas that produce (1) glucagon, (2) insulin.
- (ii) State the main function of (1) glucagon, (2) insulin.
- (iii) Why is the pancreas referred to as an exo-endocrine gland?
- (iv) Why is insulin not given orally but is injected into the body?
- (v) What is the technical term for the cells of the pancreas that produce endocrine hormones?
- (vi) Where in the body is the pancreas located?



Answers.

- (i) (1) Alpha cells of islet of Langerhans (2) Beta cells of islet of Langerhans.
- (ii) (1) It increases blood sugar level. (2) It decreases blood sugar level.
- (iii) Pancreas produces pancreatic juice which is carried by pancreatic duct into the duodenum. It also produces hormones which are poured into blood. Because of this dual activity, it is called an exo-endocrine gland.

- (iv) If insulin is given orally it will be digested by the protein digesting enzymes in the stomach. Hence it has to be injected.
- (v) Islets of Langerhans.
- (vi) Below the stomach.

12. Differentiate between Nervous control and Hormonal control.

Answers.

Nervous Control	Hormonal Control
(i) The information is sent in the form of electric signals.	The information is sent in the form of chemical signals.
(ii) The signals travel through nerve fibers to specific target cells like muscle fibers and glands.	The signals travel through blood stream to cells in different organs.
(iii) Nervous system causes muscles to contract or relax glands to secrete more or less. But it cannot bring about growth.	Endocrine system brings about changes in metabolic activities of all body tissues. It affects growth.
(iv) Action is immediate (within few milliseconds.)	Action is slow (can take hours or days to produce response).
(v) Effect lasts for a short time.	Effect is more lasting and permanent.

13. Differentiate between. Gigantism and Acromegaly.

Answers.

Gigantism	Acromegaly
Caused by over-secretion of Somatotropin in childhood.	Caused by over-secretion of Somatotropin after adolescence.
Due to abnormal elongation of bones and muscles, person is of abnormally large height.	Abnormal increase of bones of hands and legs, and the lower jaw, person has gorilla like appearance but is not a giant.

14. Pancreas is both an exocrine gland and an endocrine gland. Explain.

Answers. Pancreas is a heterocrine or myxocrine gland, as it contains two types of secretory structures, i.e., (i) Islet of Langerhans which secrete hormones insulin and glucagon, and these are transported by way of blood, and (ii) Acini that secretes pancreatic juice that is transported by way of ducts.

15. Insulin is injected into the body of a highly diabetic patient and not given orally.

Explain.

Answers.

Insulin is a protein hormone and if it is given orally it would be acted upon by the protein digesting enzymes in the alimentary tract. So it is injected into the body of highly diabetic patient and is able to travel in the blood stream to bring about the required specific effect.

16. Adrenaline is also known as emergency hormone.

Answers.

Adrenalin is secreted at the time of emergency (stress or strain) and prepares the body to fight, fright and flight. So, it is also known as emergency hormone.

17. What are the general properties of hormones?

Answer:

General properties of hormones:

- (i) Hormones are secreted by the endocrine glands.
- (ii) Hormones are specific in function.
- (iii) Hormonal actions are long lasting.
- (iv) Hormones are required in very minute quantities.
- (v) They are secreted independent of one another.
- (vi) They act as chemical co-coordinators or chemical messengers.
- (vii) They are proteinaceous or steroid in nature.
- (viii) They are secreted in response to specific stimuli.

18. Name the hormone produced by the following glands giving one function of each.

(i) Thyroid.

(ii) Pancreas

(iii) Adrenal medulla

Answer:

(i) The thyroid secretes thyroxin. It controls basal metabolic rate (BMR), growth and differentiation of the body.

(ii) Pancreas secretes insulin and glucagon. These hormones control blood glucose level. Insulin decreases while glucagon increases blood glucose level.

(iii) Adrenal medulla secretes adrenaline. It controls heart beat and blood pressure and helps in providing glucose to the body in order to overcome emergency situations. It is also called the emergency hormone.

19. Organs like the stomach and intestine are also endocrine glands. Why?

Answers:

The mucous lining of the stomach and intestine produce certain hormones which regulate the secretion and flow of certain digestive juices. So they are endocrine glands.

20. Given below is a table consisting of a set of items belonging to a common category. Complete the table by filling in the category and the odd one in the blanks.

Set	Category	Odd one
Adrenaline, Penicillin, Insulin, Thyroxin		
Vasopressin, growth hormone, TSH, ACTH, FSH		

Answers:

Set	Category	Odd one
Adrenaline, Penicillin, Insulin, Thyroxin	Hormones	Penicillin
Vasopressin, growth hormone, TSH, ACTH, FSH	Hormones from anterior Pituitary	Vasopressin