

QB365

Important Questions - Chemical Coordination and Integration

11th Standard CBSE

Biology

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 50

Section-A

- 1) Define the terms erythropoiesis. Also name the hormone that stimulates it. 1
- 2) Mention the role of second messenger in the mechanism of protein hormone action. 1
- 3) Which of the two adrenocortical layers, zona glomerulosa and zona reticularis lies outside enveloping the other? 1
- 4) Locate the hormone that controls Na^+ and K^+ metabolism in the body. 1
- 5) Name the hormone which can suppress immune response? What is its chemical nature? 1
- 6) Mention the name of the hormone that is responsible for urge of sex in males 1
- 7) Name the hormone and its source, which produces change in secondary sex organs in human female to prepare for anticipated pregnancy? 1
- 8) The outermost layer of adrenal cortex is responsible for secretion of which hormone? 1
- 9) State the reason for the occurrence of diabetes insipidus in an individual. 1
- 10) There are many endocrine glands in human body. Name the gland, which is absent in male and the one absent in female. 1

Section-B

- 11) What is the role of second messenger in protein hormone action? 2
- 12) Explain amplification of a signal in hormone action? What is its role? 2
- 13) What is meant by 'synergistic effect'? Explain with an example 2
- 14) How are the hypothalamic hormones transported to target organs? 2
- 15) Briefly mention the mechanism of action of FSH 2
- 16) Which hormone is responsible for maintenance of diurnal rhythm of our body? Mention its source. 2
- 17) Give the name of the endocrine gland that produces calcitonin and also mention the role played by this hormone 2
- 18) Describe the endocrine function of thymus (Any four) 2
- 19) Distinguish between endocrine and exocrine glands. 2
- 20) Differentiate between the hyperglycaemia and hypoglycaemia. 2

Section-C

- 21) old people have a weak immune system. What could be the reason? 5
- 22) When does the secretion of Adrenocorticotropin take place in the body? what is the purpose of its secretion? 5
- 23) What is meant by 'antagonistic effect'? Illustrate your answer with an example 5

24) Calcium plays a very important role in the formation of bones. Write about the role of endocrine glands and hormones responsible for maintaining calcium homeostasis. 5

Section-A

- 1) 1
Erythropoiesis is the process of formation of RBCs. The juxtaglomerular cells of kidney produce a peptide hormone called erythropoietin which stimulates it.
- 2) Second messenger regulates the metabolism of a cell, which results in many physiological effects. 1
- 3) Zona glomerulosa (outer layer) envelops zona reticularis (inner layers) from the outside 1
- 4) Aldosterone is responsible for controlling Na⁺ and K⁺ metabolism in the body. 1
- 5) Cortisol is responsible for the suppression of immune response. Chemically it is a steroid. 1
- 6) Testosterone hormone is responsible for urge of sex in males 1
- 7) Oestrogen secreted by granulosa cells of developing ovarian follicle. 1
- 8) Mineralocorticoids 1
- 9) Deficiency in the secretion of vasopressin (ADH) leads to the disorder known as diabetes insipidus. 1
- 10) The glands, which are absent in male are ovaries and which are absent in female are testes 1

Section-B

- 11) 2
Hormones which do not enter the target cells, interact with specific receptors located on the surface of the target cell membranes and generate second messengers (e.g., cAMP) on the inner side of the plasma membrane. The second messenger, in turn, carries out all the hormonal functions.
- 12) 2
Although hormones are present in very small amounts, they effectively regulate many physiological processes. This is the result of signal amplification, an increase in signal strength. For example, a single hormone receptor complex can stimulate the production of many cAMP molecules. In turn, each cAMP can activate a protein kinase that phosphorylates many protein molecules. In this way, a single hormone molecule can activate many proteins.
- 13) 2
It is a type of hormones complement each other's actions and both are needed for full expression of the hormone effects. e.g., the production, secretion and ejection of milk by mammary glands require the synergistic effects of oestrogens, progesterone, prolactin and oxytocin.
- 14) 2
The hypothalamic secreted by the neurosecretory cells called nuclei, transport through their axons and released from their nerve endings and mixed with blood of hypophyseal portal vein. These are then transported to anterior pituitary.
The posterior pituitary hormones pass through the axons that reach the posterior pituitary and remain stored in the axon terminals, till they are stimulated for release.

15) 2

In males, Fsh and androgens regulate spermatogenesis. In females, Fsh stimulates growth and development of the ovarian follicles. It stimulates the secretion of oestrogen in ovaries.

16) 2

The hormone responsible for diurnal rhythm of our body is melatonin. The source of its secretion is pineal gland

17) 2

Calcitonin (Ct) or thyrocalcitonin hormone is produced by thyroid glands.
It is hypocalcaemic and hypophosphatemic peptide hormone, which checks excess plasma Ca^{2+} and phosphate by decrease mobilisation from bones.

18) 2

Functions of thymus are as follows(i) It secretes thymosin, a peptide hormone that plays an important role in differentiation of T-lymphocytes.

(ii) Release of thymosin provides cell-mediated immunity.

(iii) It is also responsible for creating antibodies for the immune system during childhood.

(iv) It gets degenerated with age due to which production of thymosin gets decreased.

19) 2

Endocrine Glands	Exocrine Glands.
They do not have ducts	They have ducts
They secrete hormones directly into blood	They secrete their secretions into the ducts
e.g., thyroid, hypothalamus pituitary, etc	e.g., sweat and oil glands (of skin) liver and salivary glands.

20) 2

Differentiate between the hyperglycaemia and hypoglycaemia.are

hyperglycaemia	hypoglycaemia
It results from hyposecretion of insulin	It result from hypersecretion of insulin
Its symptoms include high blood glucose level, breakdown of muscles tissues, loss of weight and tierdness.	Its symptoms include high blood glucose level, hunger, sweating, irritability, double vision.

Section-C

21) 5

Thymus is degenerated in old individuals resulting in a decreased production of thymosins. Due to which the immune responses of old persons become weak.

22) 5

Adrenocorticotropin is secreted when adrenocorticotropin Releasing Hormone (ACRH) stimulates the corticotroph cells of the anterior lobe of pituitary gland.

It is released because its stimulation is responsible for the synthesis and secretion of glucocorticoid steroid hormone from the adrenal cortex od adrenal gland

23)

5

It refers to the effect of a hormone that are countered by an antagonistic (opposing) signal, often another hormone. For example, the sympathetic and parasympathetic nervous system achieve antagonistic effect on heartbeat.

This mechanism involves the use of more than one second messenger. In heart cells cyclic form of adenosine monophosphate (cAMP) serves as a second messenger, showing muscle contraction in response to acetylcholine.

24)

5

The secretion of parathyroid Hormone (PTH) regulates the concentration of calcium ions.

Parathyroid hormone increases the calcium levels in the blood, It acts on bones and stimulates the process of bone resorption. It also stimulates resorption of the digested food.