Short Answer Type Questions-II

Q. 1. Name the parts of the brain that functions as an endocrine gland. Name and describe the role of hormone its secretes, which is involved in influencing the height of a person. (KVS Agra 2017)

Ans. Growth hormone (GH)
This hormone stimulates growth by targeting various body cells which undergo growth. Oversecretion of GH stimulates abnormal growth of the body leading to gigantism and undersecretion results in stunted growth resulting i.e., dwarfism.

Q. 2 Name the hormones of posterior pituitary. Why are these called neurohormones (KVS 2015)

Ans. Oxytocin and vasopressin are two hormones of posterior pituitary. These hormones are called neurohormones because as they are actually synthesised by the hypothalamus and are transported axonally to neurohypophysis.

Q. 3. Give examples of:

(i) Hyperglycemic hormone and hypoglycemic hormone

(ii) Hypercalcemic hormone

(iii) Gonadotrophic hormones

(iv) Progestational hormone

(v) Blood pressure lowering hormone

(vi) Androgens and estrogens.

Ans. (i) Glucagon and Insulin

(ii) Parathyroid hormone (PTH).

(iii) LH and PSH (Luteinzing hormone and Follicle stimulating horome.

(iv) Progesterone

(v) Atrial Natriuretic Factor (ANF)

(vi) Testosterone and estradiol

Q. 4. Name the T_3 and T_4 components of the thyroid hormone. Explain their specific functions.

Ans. T_3- Triodothyronine and T_4- tetraiodothyronine or thyroxine.
Thyroid hormones perform the following functions:

(i) They regulate the metabolic rates of the body and thus maintains basal metabolic rate.

(ii) Thyroid hormones control the metabolism of carbohydrates, proteins and fats.

(iii) They promote growth of the body tissues.

Q. 5. What are the gonadotropins State their functions. [V. Imp.]

Ans. These are the gonad stimulating hormones secreted by the anterior lobe of pituitary. e.g., follicle stimulating hormone (FSH), luteinizing hormone (LH).

Functions :

(i) FSH stimulates the gonads to produce sperms and ova; stimulates the ovaries to secrete female sex hormone estrogens.

(ii) LH stimulates the maturation of Leydig's cell of testes for secretion of testosterone; stimulates the secretion of estrogens and progesterone in the ovary.

Q. 6. Name the source gland of leutinizing hormone (LH). Mention the other hormone along with which it acts on its target cells/ organ. Give their two functions.

Ans. LH is secreted by adenohypophysis or anterior pituitary gland. FSH is the other hormone (gonadotropin) along with which its target cell.

Functions of LH:

(i) In males, it stimulates spermatogenesis.

(ii) In females, it stimulates ovulation and formation of the corpus luteum.

Functions of FSH : In females, it stimulates the growth of ovarian follicles.

Q. 7. What hormones are secreted by the posterior pituitary gland ? What function does each serve? Where are these hormones actually produced ? How are these hormones transported to the region from which they are released ?

Ans. (i) Oxytocin : It is released into the blood when hypothalamic neurons are stimulated by the widening of uterus at the time of delivery or by the sucking of breasts by an infant. It induces contraction of smooth muscles of the uterus during the birth of a young one and myoepithelial cells of mammary glands to cause release of milk during sucking by an infant. Therefore, it is also known as ‘birth hormones’ and or ‘milk-ejecting hormones’.

(ii) Vasopressin : It is also called antidiuretic hormone (ADH). It decreases the loss of water in urine by increasing reabsorption of water in distal convoluted tubules, collecting tubules and collecting ducts of kidneys. It is transported as neurophysin - proteins bound secretory granules down the nerve fibre.

Q. 8. Distinguish between : Endocrine and Exocrine glands. [V. Imp.]

Ans.

S. No.	Endocrine glands	Exocrine glands
(i)	They do not have ducts.	They possess ducts.
(ii)	They secrete hormones directly into the blood.	They secrete their secretions into ducts.
(iii)	Thyroid, Hypothalamus, Pituitary etc.	Sweat and oil glands (of skin), Liver and salivary glands.

Q. 9. Give the difference between Exocrine, Endocrine and Heterocrine Glands.

Ans.

S. No.	Exocrine gland	Endocrine gland	Heterocrine gland
(i)	It has a duct.	It is ductless gland.	It is partly endocrine and partly exocrine.
(ii)	Their secretions are carried by the ducts to the internal part or body surface. e.g., Salivary glands in mouth.	Their secretions are carried by the blood to the target organs. e.g., Parathyroid, pituitary and adrenal.	Endocrine part releases hormones into the blood stream while exocrine part into the ducts associated with it. e.g., Pancreas, ovary and testes.

Q. 10. What is the importance of Glucocorticoids in man?

Ans. (i) Glucocorticoids hormones are secreted by the middle region of the adrenal cortex.

(ii) They regulate the metabolism of carbohydrates, proteins and fats. They increase the blood glucose level by converting proteins and fats into carbohydrates which are in turn converted to glucose.

(iii) In case of excessive bleeding, glucocorticoids constrict blood vessels to offset the drop in blood pressure due to blood lose.

(iv) They have anti-inflammatory and anti-allergic effects.

Q. 11. Differentiate between hormones and pheromones.

Ans.

S. No.	Hormones	Pheromones
(i)	They are the products of endocrine glands.	They are the products of exocrine glands.
(ii)	They are released directly into the blood stream.	They are released into the external environment.
(iii)	They are triggered due to biological changes in the body	They are triggered either due to behavioural or developmental process when perceived by other members of the same species

Q.12. A patient was complaining of frequent urination excessive thirst, hunger and tiredness. His fasting blood was found higher than 130 mg/dL on two occasions. (i) Name the disease. (ii) Give the root cause of this disease, (iii) Explain why the blood glucose level is higher than 130 mg/dL.

Ans. (i) The disease is diabetes mellitus.

(ii) The failure of the ß-cells of the islets of Langerhans of pancreas to produce adequate amounts of insulin is the root cause of this disease.

(iii) Undersecretion of insulin impairs of the following functions : Utilisation and uptake of glucose by adipocytes and hepatocytes, conversion of glucose into glycogen by the above target cells.

Q. 13. Explain the hormones of (i) Heart, (ii) Kidney and (iii) GI Tract.

Ans. The hormones of the Heart, Kidney and Gastrointestinal Tract are:

(i) Heart/Atrium : Atrial wall of human heart produces important peptide hormone called atrial natriuretic factor (ANF). ANF reduces blood pressure. When the blood pressure is enhanced, some special c ells secrete ANF, that produces vasodilatory actions on the blood pressure. The blood vessels are dilated and blood pressure declines as a result.

(ii) Kidney : Juxtaglomerular cells of kidney secrete a peptide hormone called erythropoietin. It stimulates erythropoiesis or formation of RBCs of blood.

(iii) GI Tract : The endocrine cells found in various parts of gastro-intestinal tract (GI tract) secrete four peptide hormones gastrin, secretin, cholecystokinin (CCK) as well as gastric inhibitory peptide or GIP.

(a) Gastrin : It acts on gastric glands. It stimulates secretion of hydrochloric acid (HCI) and pepsinogen.

(b) Secretin : It acts on the exocrine pancreas. It stimulates secretion of water and bicarbonate ions.

(c) CCK : It acts on both pancreas and gall bladder. It stimulates the secretion of pancreatic enzymes and bile juice respectively.

(d) GIP: It suppresses gastric secretion and motility.

Q. 14. Distinguish between Hyperglycemia and Hypoglycemia.

Ans.

Hyperglycemia	**Hypoglycemia**
It results from hyposecretion of insulin.	It results from hypersecretion of insulin hormone.
Symptoms	**Symptoms**
(a) Blood glucose level is high.	Hunger.
(b) Breakdown of muscle tissue.	Sweating.
(c) Loss of weight; and	Irritability; and
(d) Tiredness.	Double vision.

Q. 15 What is diabetes ? What is the ultimate hormonal deficiency in these diseases ? How does this affect an individual's ability to use glucose ? What are some possible treatments for adult onset diabetes?

Ans. Diabetes:

(i) Diabetes mellitus is "a diseases in which excessive quantities of sugar is present in the blood and is excreted by the urine." Prolonged hyperglycemia leads to diabetes mellitus

failure of the beta cells of pancreas to produce adequate amount of insulin is the cause of insulin dependent diabetes.

(ii) A patient suffering from diabetes drinks large amount of water as he often feels thirsty.

(iii) Other symptoms are increased urination, excessive loss of body weight and weakness.

(iv) The only treatment of this diseases is taking of insulin regularly in required doses and a proper sugarfree diet.

(v) Diabetes insipidus, on the other hand, is a disease characterized by the excessive elimination of the urine, but the urine in this case does not contain sugar. It is caused by the deficiency of anti-diuretic hormone (ADH).

Q. 16. Where is the parathyroid gland located ? Name its secretion. How is its secretion regulated. Mention one parathyroid disorder.

Ans. (i) The parathyroid glands consist of four separate glands located on the posterior surface of the lobes of the thyroid gland, one pair each in the two lobes.

(ii) The parathyroid glands secrete parathyroid hormone or parathormone, the secretion of which is regulated by the circulating calcium ion.

(iii) Hypoparathyroidism causes the lowering of blood calcium level thereby leading to parathyroid tetany.

Q. 17. How does Parathyroid hormone helps in the feedback control of calcium level in blood ?

Ans. (i) Parathyroid hormones are under the feedback control of blood calcium level.

(ii) A fall in blood calcium level stimulates them to secrete parathormone which restores blood calcium level.

(iii) It increases blood calcium by drawing calcium from the bones into the plasma, by increasing calcium absorption in the digestive tract, and by reducing loss of calcium in the urine.

(iv) It lowers blood phosphate by increasing elimination of phosphate in the urine.

Q. 18. Differentiate between Gigantism, Acromegaly and the Dwarfism.

Ans.

S. No.	Gigantism	Acromegaly	Dwarfism
(i)	Excess of GH.	Hyperactivity of GH after adult during adulthood	Hyperactivity of GH in from early age.
(ii)	Tall stature.	Broad stature.	Fatness in body and short stature.
(iii)	Large feet and hands.	Thick nose.	Skeletal development is delayed.

Q. 19. What are the examples of pairs of antagonistic hormones associated with basal metabolism ? How does each pair function?

Ans. (i) Adrenaline and noradrenaline.

(ii) Insulin and Glucagon.

Adrenaline and noradrenaline: Adrenaline increases the blood sugar and blood lactic acid levels, noradrenaline has very little effect on them.

Insulin : It enables the liver and muscles to store glucose as glycogen (glycogenesis) and enables tissues to take up and use glucose as a source of energy. This lowers the blood glucose level.

Glucagon : It brings about a change of liver glycogen into blood glucose (glycogenolysis). It causes an increase in the blood glucose level. It also forms glucose from amino acids and fats (gluconeogenesis).