

Class: 11
Subject: Biology
Topic: Chemical coordination and Integration
No. of Questions: 25

Q1. What are gonadotrophs?

Sol. FSH and LH are gonadotropins, as they stimulate the growth and maintenance of gonads

Q2. What is juvenile hormone?

Sol. The hormone in insects, which prevents them from maturing, is called juvenile hormone.

Q3. What are the causes for diabetes mellitus and diabetes insipidus?

Sol. Diabetes Mellitus, commonly known as diabetes is a chronic disease that affects the body's ability to use energy from food. It is a life-long condition which is characterized by high levels of sugar or glucose in the blood. The main reason for high blood sugar levels in the body can be due to the body's inability to utilize insulin or due to the defect in production of insulin or a combination of both.

There are three major types of diabetes namely: - type 1 diabetes, type 2 diabetes and gestational diabetes.

Type 1 diabetes: - type 1 diabetes also called as juvenile diabetes or insulin dependent diabetes mellitus is caused due to the inability of the pancreas to secrete insulin. It usually affects only 5% of the total diabetes population that mainly includes the adults and children.

Type 2 diabetes: - type 2 diabetes is one of the most common types of diabetes that accounts to almost 95% of the total population affected by diabetes. Also called as non-insulin – dependent diabetes mellitus, it is caused due to improper utilization of insulin by the body cells.

Gestational diabetes: - Gestational diabetes generally occurs in pregnant woman later in their pregnancy. It is found to affect around 16% of the total pregnant women. This is caused due to the effect pregnancy hormones on insulin production and utilization

Q4. Why is oxytocin called 'birth hormone'?

Sol. Oxytocin causes the contraction of smooth muscles of uterus during child birth. So it is called birth hormone.

Q5. Name the inhibiting hormone released by hypothalamus.

Sol. GHIH - Growth Hormone Inhibiting Hormone.

PIH - Prolactin Inhibiting Hormone.

MIH – Melanocyte Stimulating Hormone Inhibiting Hormone.

Q6. Differentiate between exophthalmic goiter and iodine deficiency goiter.

Sol.

Exophthalmic goiter	Iodine deficiency goiter
(i) It is caused by the hyper secretion of thyroid gland.	(i) This disease is caused due to deficiency of iodine in diet.
(ii) Excess of thyroxine accelerates oxidation.	(ii) Iodine is necessary for thyroxine synthesis.
(iii) This results in quick consumption of food leaving nothing for storage. This disease is called exophthalmic goiter. Heat production, high metabolism, bulging eyes are its symptoms.	(iii) Poor supply of iodine causes enlargement of the gland. This disease is found in hilly regions. It may also lead to cretinism or myxoderma and is also known as Gull's disease.

Q7. Differentiate between hormones and pheromones.

Sol. The difference between the hormone and pheromones are as follows:

Hormones	Pheromones
(i) They are the products of endocrine glands.	(i) They are the products of exocrine glands.
(ii) They are released directly into the blood stream.	(ii) They are released into the external environment.
(iii) They are triggered due to biological changes in the body.	(iii) They are triggered either behavioural or developmental processes when perceived by other

Q8. What is the endocrine control in the 'fight and flight' response? Explain.

Sol. Physiological changes in the human body occur in the response to a perceived threat, including secretion of glucose, endorphins and hormones as well as elevation of heart rate, metabolism, blood pressure, breathing and muscle tension.

There are two adrenals at the top of each kidney. Hormones secreted by adrenal medulla help the body of an individual in handling emergency situations. Adrenaline is known as emergency hormone and is secreted in proportion to the stimulus through the central nervous system. The hormone mobilizes the sources of the body to enable it to cope with emergencies, i.e. the fight and flight response to fear.

Q9. Name the gland that secretes vasopressin. What are its two principal actions?

Sol. It is secreted by posterior part of the pituitary gland (formerly called hypophysis).

Function: Osmoregulation, water reabsorption of blood vessel, rises in blood pressure.

Q10. Name the blood vessels that form the portal system in pituitary. What is its special function?

Sol. Hypothalamo-hypophysial portal vein forms portal system in pituitary. It is also called hypothalamo-pituitary portal vessel. It is important to control the function of anterior pituitary gland (adenohypophysis) through hypothalamic releasing factors (RF). The anterior lobe of pituitary is connected to hypothalamic nuclei by this vessel. Axons of neurons originate in different areas of hypothalamus and they terminate in the median eminence around the origin of portal vessels. Action potential in these neurons releases hormones which are carried by portal vessels to anterior pituitary where they act upon pituitary cells for control of their secretions or hormones.

Q11. What is the function of pineal gland?

Sol. The pineal gland secretes a hormone, melatonin. It reduces the reproductive activity and may also delay the sexual development in an individual.

Q12. What forms the corpus luteum? Name the hormones secreted by it.

Sol. The corpus luteum is formed by the rupturing of mature Graafian follicles. It is a hormone-producing gland in the ovary. It is a yellow body. It secretes progesterone, which helps to maintain pregnancy and to prevent menstruation during this period. Progesterone prevents abortion.

Q13. Describe the endocrine role of Islets of Langerhans.

Sol. Islets of Langerhans is a group of epithelial cells. It forms the endocrine part of the pancreas. It is mainly responsible for the secretion of hormones glucagon and insulin.

Q14. Give one reason why lysozyme is considered an enzyme and not a hormone. How does it defend the body? Name any two secretions in human body, which contain lysozyme.

Sol. Lysozyme is an enzyme in human tears that catalyzes the hydrolytic cleavage of complex polysaccharides in the protective cell walls of some families of bacteria. Lysozyme protects our body by dissolving lysing bacterial cell walls and thus serving as a bacteria agent. Lysozymes present in perspiration and saliva also destroy bacteria and protect our body.

Q15. Which cells of testis secrete the male sex hormones?

Sol. Male sex hormone (testosterone) is secreted from the Leydig cells which are found around the seminiferous tubules of the testes.

Q16. Why is LH known as interstitial cell stimulating hormone?

Sol. LH is called as ICSH because it stimulates the interstitial cells of leydig to secret testosterone. When the level of testosterone rises beyond threshold value, then it exerts feedback inhibitory effect on anterior pituitary to cease ICSH secretion.

Q17. Write the difference between nervous information and hormonal information.

Sol. The difference between the nervous information and hormonal information are given below:

Nervous information	Hormonal information
(i) It is transmitted by nerve fibre.	(i) It is transmitted by blood.
(ii) it is quick acting.	(ii) it is not quick acting.

Q18. What is the role of thymus gland?

Sol. Thymus gland: The thymus gland is present in the upper part of the thorax just above the heart. It is a bilobed gland. It is a temporary gland present only upto 13-15 years of age (before sexual maturity). After this it degeneration due to activities of sex glands. Histologically, it appears to be fat and lymphoid tissue rather than an endocrine organ. However it contains onion shaped Hassal bodies which are secretary in nature. At birth the thymus weight less than half ounce. It secrets thymosine hormone.

Q19. What is osteities fibrosa cystica?

Sol. It is an abnormal condition caused due to the excessive secretion of parathormone hormone. It is characterized by an increase in the level of calcium in blood and urine. The calcium is withdrawn from the bones making them soft.

Q20. Mention the hormonal basis of diabetes mellitus and diabetes insipidus.

Sol. Hormonal basis of diabetes mellitus. It is a disease caused by the deficiency of insulin. Insulin was invented by Benting and Best (1921). Insulin controls glucose level in blood. When the hormone (insulin) is deficient glucose is not absorbed properly with the result unabsorbed sugar accumulates in the blood causing a disease known as diabetes mellitus. In this condition the excess of sugar is passed along with the wine.

Hormonal basis of diabetes insipidus. It is caused by the deficiency of Antidiuretic hormone (ADH) secreted by the posterior pituitary gland. D. insipidus is characterized by the excessive flow of urine but the urine does not contain glucose. It decrease blood pressure by dilating the peripheral blood vessels. D. insipidus quickly results into dangerous degree of dehydration.

Q21. What is the function of Leydig's cells?

Sol. Leydig cells or interstitial cells of testes secrete testosterone hormone. It stimulates the development of external male sex characters such as beard, moustache and low pitch voice in man. It stimulates the formation of sperms in testes.

Q22. Name the disorder caused by the deficiency of thyroxine in adult humans. Give two main symptoms of the disorder.

Sol. Thyroxine is secreted by thyroid gland. Less secretion of thyroxine results in reduced oxidation of food, less tissue metabolism, slow heart beat and puffy appearance. The disease is known as myxedema. The symptoms are dry coarse skin, loss of hair, reduced cerebation, slow pulse rate and lack of alertness.

Q23. What causes myxedema? Mention any two symptoms of these conditions.

Sol. Myxodema: Myxodema is caused by the deficiency of thyroxine hormone secreted by the thyroid gland in adults. It is more common in men than in women.

Symptoms of myxedema: The hypoactivity of thyroid hormone causes poor physical and mental development with low metabolism, puffy appearance and reproduction failure.

Q24. What forms the corpus luteum? Name the hormones secreted by it.

Sol. Corpus luteum: it is formed by the rupturing of mature graiffian follicle. It is a hormone producing gland in the ovary. It is a yellow body.

Hormone secrete by corpus luteum: it secrets progesterone which helps to maintain pregnancy and to prevent menstruation during this period. Progesterone prevents abortion.

Q25. Name two organs, which are made up of mixed tissues.

Sol. The two organs, which are made up of mixed tissues are pancreas and gonads.