



Chemical Coordination and Integration Important Questions With Answers

NEET Biology 2023

1. Goitre is a pathological condition associated with
a) glucagon b) progesterone **c) thyroxine** d) testosterone

Solution : -

Goitre is caused due to the deficiency of iodine in the diet. Iodine is needed for the synthesis of thyroxine secreted by thyroid gland. The production of this hormone decreases with poor iodine diet. This causes enlargement of thyroid gland which is called goitre.

2. Secretion of progesterone by corpus luteum is initiated by ICBSE AIM?
a) thyroxine b) tH c) NdSH d) testosterone

Solution : -

LH (Luteinising Hormone), secreted by anterior pituitary, stimulates the corpus luteum to secrete the hormone progesterone.

3. The neurosecretory cells of hypothalamus which produce hormones are called
a) Nephrons b) Nuclei **c) Granular cells** d) Globular cells

4. Which of the following hormones is/are stored in herring bodies?
a) Both (2) & (3) b) Somatocinin c) Vasopressin d) Oxytocin

5. Insulin receptors are
a) extrinsic proteins b) intrinsic proteins c) G-proteins d) trimeric proteins

6. Which of the following is incorrect w.r.t. neurohypophysis?
a) Neurohypophysis is also called pars nervosa b) It synthesises two hormones, oxytocin and vasopressin
c) It receives neurohormones directly from neurosecretory cells
d) It comprises 25% portion 25% portion of pituitary gland

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

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

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.

Solution : -

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

8. Male hypogonadism results in

- a) Deficiency of androgens **b) Hypofunction of sertoli cells** c) Hypofunction of Leydig cells
d) All of these

9. Feeling the tremors of an earthquake a scared resident of seventh floor of a multistored building starts climbing down the stairs rapidly. Which hormone initiated this action?

- a) adrenaline** b) glucagon c) gastrin d) thyroxine

Solution : -

Generally it is known as emergency hormone or 3F hormone (for fear, fight and flight). Its secretion is regulated by SNS, and not by pituitary as in case of adrenal cortex. It stimulates sweating, heart beat and breathing rate.

10. Dwarfism occurs when there is

- (i) Over secretion of growth hormone
(ii) Under secretion of growth hormone
(iii) Over secretion of somatostatin
(iv) Under secretion of somatostatin

- a) (i) and (iii) b) only (ii) **c) (ii) and (iii)** d) (ii) and (iv)

11. Melanin protects us from _____ .

- a) U. V. rays b) visible rays c) infrared rays **d) X-rays**

Solution : -

From the intermediate lobe of pituitary Melanin is secreted. It mainly aims to protect the skin from harmful effects of W-rays. people living in tropics tend to disperse more melanin in their skin an adaptive feature.

12. _____ are responsible for chemical coordination.

- a) Neurons b) Nephrons **c) Hormones** d) Enzymes

13. ADH

- a) increases water absorption** b) decreases water absorption c) synthesises salt
d) controls sugar level of blood.

Solution : -

Antidiuretic hormone (ADH) stimulates reabsorption of water and electrolytes by the distal tubules and thereby reduces loss of water through urine.

14. MSH is secreted by

- a) anterior lobe of pituitary **b) middle lobe of pituitary** c) posterior lobe of pituitary d) endostyle

Solution : -

Middle lobe of pituitary secretes MSH (melanocyte stimulating hormone) that controls the synthesis of melanin granules in the chromatophores.

15. Melatonin is secreted by

- a) pineal body** b) skin c) pituitary gland d) thyroid.

16. The posterior pituitary gland is not a true endocrine gland because:

- a) It is provided with a duct **b) it only stores and releases hormones**
c) It is under the regulation of hypothalamus d) It secretes enzymes

Solution : -

The posterior pituitary or neurohypophysis does not synthesise hormones, it does store and releases two hormones, oxytocin and vasopressin, which are actually synthesised by the hypothalamus.

17. Which of the following hormones is not a polypeptide?

- a) LH b) FSH c) Insulin **d) Thyroxine**

Solution : -

Thyroxine is an iodothyronine.

18. Prolactin activates
a) Growth of breasts and secretion of milk in mammary glands b) Secondary sexual characters in males
c) Melatonin secretion d) Estrogen secretion

19. **Assertion:** Immune response of old persons become weak.

Reason: Thymus degenerates in old individuals.

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.

Solution : -

Thymus plays a major role in the development of the immune system. This gland secretes the peptide hormones called thymosins. Thymosins play a major role in the differentiation of T-lymphocytes, which provide cell-mediated immunity. In addition, thymosins also promote production of antibodies to provide humoral immunity. Thymus is degenerated in old individuals resulting in a decreased production of thymosins. As a result, the immune responses of old persons become weak.

20. ADH or vasopressin is _____ .

a) enzyme that hydrolyses peptides

b) hormone secreted by pituitary that promotes reabsorption of water from glomerular filtrate

c) hormone that promotes glycogenolysis d) energy rich compound connected with muscle contraction

Solution : -

ADH or vasopressin is synthesised in hypothalamus and stored and released by neurohypophysis or posterior lobe of pituitary gland. It controls the permeability of wall of collecting tubules and DCT of renal tubules to water, which stimulates reabsorption of water so, it controls the osmoregulation.

21. Neural coordination is

a) Fast and long lived **b) Fast and short lived** c) Slow and long lived d) Slow and short lived

22. Which one of the following is termed temporary gland?

a) Pineal **b) Thymus** c) Pancreas d) Kidney

Solution : -

Thymus is called temporary gland as it degenerates in old individuals resulting in a decreased production of thymosin.

23. In which of the following hormone works from outside the cell?

a) Estrogen b) Cortisol c) Insulin **d) Thyroxine**

24. Select the correct match.

a) Matthew Meselson and F. Stahl : *pisum sativum* b) Alfred Hershey TMV and Martha Chase

c) Alec Jeffreys : *Streptococcus pneumoniae* **d) Francois Jacob and Jacques Monod : Lac operon.**

Solution : -

Francois Jacob and Jacques Morrod in 1916 discovered lac operon. An operon is a part of genetic material or DNA function as a single regulated unit. It contains one or more structural genes, an Operator Gene, a promoter Gene, a Regulator Gene, a Repressor gene and an inducer or Corepressor. Matthew Meselson and F. Stahl proved semi-conservative mode of DNA replication in *E. Coli*. Alfred Hershey and Martha Chase proved that DNA is Genetic Material by using T2 Bacteriophage and *E. Coli*. Alec Jeffreys (1984) invented the DNA fingerprinting technique.

25. Cortisol is secreted from

a) pancreas b) thyroid **c) adrenal** d) thymus

Solution : -

The cells of zona fasciculata of adrenal cortex secretes mainly glucocorticoids. Glucocorticoids include three main hormones: cortisol, corticosterone and cortisone.

26. **Assertion:** Insulin is an anabolic hormone.

Reason: A fall in blood amino acids also increases insulin secretion.

- 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.

Solution : -

Insulin is an anabolic hormone. It increases the synthesis of fat in the adipose tissue from fatty acids as well as glucose. It promotes protein synthesis in tissues from amino acids. It reduces catabolism of proteins and breakdown and oxidation of fats by decreasing the enzymes which induce gluconeogenesis. Insulin increases the utilisation of glucose in tissues and facilitates the storage of glucose as glycogen. A rise in blood glucose level and blood amino acids stimulates both synthesis and the secretion of insulin.

27. Insulin is a/an

- a) polysaccharide **b) protein** c) amino acid derivative d) lipid

Solution : -

Insulin is a large polypeptide hormone.

28. Melanocyte stimulating hormone in frog is released by

- a) Hypothalamus **b) Hypothalamus** c) Pars distalis d) Pars intermedia

29. Leydig cells produce a group of hormones called

- a) androgens** b) estrogens c) aldosterone d) gonadotropins

Solution : -

The Leydig's cells present in the connective tissue between seminiferous tubules produce a group of hormones called androgens mainly testosterone.

30. Sertoli cells are regulated by the pituitary hormone known as

- a) GH b) Prolactin c) LH **d) FSH**

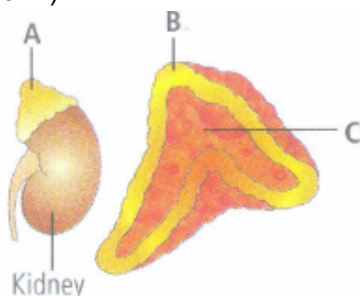
Solution : -

The function of sertoli cells and the spermatogenesis is under the direct influence of follicle stimulating hormone (FSH) secreted by adenohypophysis of pituitary gland.

31. P is a small, round, reddish structure located on the dorsal side of forebrain. It contains a stalk and releases a hormone Q which controls diurnal rhythm of the body. P and Q are:

- a) Hypothalamus, MSH respectively **b) Pineal gland, melatonin respectively**
c) Pineal gland, melatonin respectively d) Pituitary gland, MSH respectively

32. Identify the parts labelled A, B and C in the given figure and select the correct option (second figure is the cross section of A).



a)

A	B	C
Adrenal gland	Cortex	Medulla

b)

A	B	C
JGA	Cortex	Medulla

c)

A	B	C
Adrenal gland	Medulla	Cortex

d)

A	B	C
Adrenal gland	Pars distalis	Pars intermedia

33. Mark antagonistic hormones

- a) Insulin and glucagon b) Adrenaline and nor adrenaline **c) Calcitonin and parathormone**
d) Both (1) & (3)

34. GnRH stimulates _____ to release _____.

- a) Hypothalamas, gonadotropins b) Pituitary gland, gonadotropins **c) Pituitary gland, growth hormone**
d) Hypothalamus, growth hormone

35. The function of oxytocin is to help in

- a) child birth** b) gametogenesis c) growth d) all of these

Solution : -

Oxytocin, secreted by the posterior pituitary gland causes contraction of smooth muscles of the uterus during child birth.

36. The function of pineal body is to

- a) lighten the skin colour b) control sexual behaviour c) regulate the period of puberty **d) all of these.**

Solution : -

Pineal body is a very small, reddish-grey, vascular, conical, solid body located in the brain. It secretes a hormone named melatonin. Melatonin makes the skin colour lighter in certain animals and also regulates the functioning of gonads, thus, controls sexual behaviour and regulates the period of puberty.

37. The source of somatostatin is same as that of

- a) thyroxine and calcitonin **b) insulin and glucagon** c) somatotropin and prolactin
d) vasopressin and adrenaline

Solution : -

Insulin, glucagon and somatostatin are secreted by islets of Langerhans of pancreas. Somatostatin suppresses the release of other hormones from pancreas.

38. Which of the following statements is correct for 'parathormone'?

- a) It increases blood calcium level and decreases calcium store of the bone**
b) It decreases blood calcium level and increases calcium store of the bone
c) It increases blood glucose level and decreases calcium store of the bone
d) It decreases blood glucose level and increases calcium store of the bone.

39. Which of the following endocrine gland stores its secretion in the extracellular space before discharging into the blood _____

- a) Pancreas b) Adrenal c) Testis **d) Thyroid**

Solution : -

Thyroid gland secretes thyroxine. Thyroxine hormones are stored in the lumen of the follicle, the extracellular space.

40. Besides corticotropin releasing hormone (CRH), which other hormone also stimulates the release of adrenocorticotrophic hormone (ACTH)?

- a) Glucagon b) Insulin c) Aldosterone **d) Epinephrine**

Solution : -

Feedback control is a mechanism by which secretion of hormones is under the control of factors or other hormones. When the level of epinephrine decreases in the blood, it stimulates the hypothalamus to secrete more CRH which results in increased production of ACTH from anterior lobe of pituitary which in turn stimulates the increased production of epinephrine from adrenal medulla.

41. The islets of Langerhans are found in

- a) alimentary canal b) liver **c) pancreas** d) stomach

42. GnRH, a hypothalamic hormone, needed in reproduction, acts on _____ .

a) anterior pituitary gland and stimulates secretion of LH and FSH.

b) posterior pituitary gland and stimulates secretion of oxytocin and FSH.

c) posterior pituitary gland and stimulates secretion of LH and relaxin.

d) anterior pituitary gland and stimulates secretion of LH and oxytocin.

Solution : -

GnRH is a hypothalamic hormone. It acts on anterior pituitary gland stimulates the secretion of FSH and LH.

43. Which of the following statement is incorrect?

a) pars intermedia atrophies during foetal development b) Pituitary gland is lodged in sella turcica

c) Neurohypophysis synthesizes two hormones **d) Herring bodies are present in neurohypophysis**

44. Which one of the following pairs of organs includes only the endocrine glands?

a) Parathyroid and Adrenal b) Pancreas and Parathyroid **c) Thymus and Testes** d) Adrenal and Ovary

Solution : -

Parathyroid and adrenal are known as the endocrine glands. Adrenal glands are the pairs of endocrine glands situated just above the kidneys. Thus they are also called suprarenal glands.

45. Which of the following hormones is a steroid?

a) Epinephrine b) Thyroxine **c) Estrogen** d) Gonadotropin

46. The signal transduction of steroid hormone across cell is through

a)

binding of hormone to the cytoplasmic receptor and the complex binds to hormone response element on DNA within promoter DNA

b)

binding of hormone to the transmembrane receptor which initiates the production of second messenger that activates enzymes which further activates transcription factors

c)

binding of hormone to the transmembrane receptor which diffuse inside the cell cytoplasm and then activates the enzyme necessary for the activation of transcription factors

d)

binding of hormone to the cytoplasmic receptor that initiates the production of second messenger which activates enzymes that further activates transcription factors.

Solution : -

Steroid hormones, being hydrophobic molecules, diffuse freely into all cells and act within the cell. Steroid hormones enter the cytoplasm of a target cell and bind with specific receptor proteins (mobile). Hormone-receptor complex then diffuses into nucleus and activates specific genes to form a new protein. This protein carries out the specific response for a particular steroid hormone.

47. The blood calcium level is lowered by the deficiency of
 a) thyroxine b) calcitonin **c) parathormone** d) both (a) and (b).

Solution : -

Parathormone secreted by parathyroid gland regulates the level of calcium in the blood. It stimulates the release of calcium from the bones into the blood, increases calcium absorption from the intestine into the blood and it also increases calcium reabsorption from the nephrons into the blood. Therefore, its deficiency leads to low blood calcium level.

48. Select the correct matching of a hormone, its source and function.

a)

Hormone	Source	Function
Vasopressin	Posterior pituitary	Increases loss of water through urine

b)

Hormone	Source	Function
Norepinephrine	Adrenal medulla	Increases heart beat, rate of respiration and alertness

c)

Hormone	Source	Function
Glucagon	Beta-cells of islets of Langerhans	Stimulates glycogenolysis

d)

Hormone	Source	Function
Prolactin	Posterior pituitary	Regulates growth of mammary glands and milk formation in females

Solution : -

Norepinephrine is secreted by adrenal medulla and it increases heart beat, rate of respiration and alertness. Vasopressin increases reabsorption of water from the nephrons of the kidney, thereby, decreases loss of water through urine. Glucagon is secreted by a-cells of islets of Langerhans. Prolactin is secreted by anterior pituitary.

49. The ductless glands:

- a) Produce non-nutrient intercellular messengers. b) Found only in non chordates.
c) Are absent in human body. d) Are called exocrine glands.

50. Which of the following is not a characteristic of insulin?

- a) It stimulates the process of gluconeogenesis.** b) It binds to glycoprotein receptors on cell membrane
 c) Its deficiency leads to diabetes mellitus d) Its oversecretion leads to insulin shock

Solution : -

Insulin hormone produced by beta cells of pancreas, plays major role in the regulation of glucose homeostasis. It stimulates conversion of glucose to glycogen, i.e., glycogenesis. Gluconeogenesis is stimulated by glucagon.