

## I PU – Biology – Chemical Coordination

### Questions carrying 1 Mark each.

1. Define hormone.
2. Mention the name of the neurosecretory cells, which secrete the hormone in the hypothalamus.
3. Which of the endocrine gland is regulated by hormones from hypothalamus?
4. Mention two types of hormones secreted by hypothalamus regulating the secretion of pituitary based on their mode of action.
5. Which hormone inhibits the release of growth hormone from pituitary?
6. Where is hypothalamus located?
7. Why vasopressin is called antidiuretic hormone?
8. Which of the hormone regulates the *24hour* diurnal rhythm?
9. What is isthmus?
10. Mention one function of thyrocalcitonin.
11. Mention the location of thymus gland.
12. Name the endocrine gland functional till adolescence and degenerates in adult.
13. Where in the body adrenal glands are located?
14. Mention the types of cells in the testis which produce testosterone.
15. Name the hormone secreted from the atrial wall of heart.
16. Mention the hormone secreted from corpus luteum.
17. What is the function of secretin?
18. Which hormone stimulates the secretion of bile juice from gall bladder?
19. To which chemical group do testosterone and estrogens belong?
20. Mention the function of erythropoietin.

### Questions carrying 2 Mark each.

21. Distinguish between endocrine and exocrine gland.
22. With reference to GnRH, mention the following:
  - a. Site of synthesis.
  - b. Target gland.
23. Write a note on how the function of anterior pituitary is regulated by a hormone.
24. Mention the two regions of pituitary based on the anatomy

25. Name the two portions of adenohypophysis.
26. Mention two neurohypophysial hormones.
27. What is the function of neurohypophysis hormones?
28. Mention the four regulations by melatonin.
29. What are the symptoms seen in the growing baby of hypothyroidism pregnant woman?
30. List the functions of thyroid hormone.
31. Parathyroid hormone is called hypercalcemic hormone. Justify.
32. Write a short note on functions of thymosin.
33. Name two types of tissues in adrenal gland.
34. Mention two hormones secreted from adrenalmedulla
35. Write a note on functions of aldosterone
36. Mention the hormones secreted from :  
     $\alpha$  cells and  $\beta$  cells of islets of Langerhans
37. Which hormonal deficiency is responsible for the following:
  - a. Goitre
  - b. cretinism
38. Write the difference between insulin and glucagon.
39. Distinguish between hypoglycaemia and hyper glycaemia.

**Questions carrying 4 Mark each.**

40. Name eight endocrine bodies present in humans.
41. What is adenohypophysis? List any six hormones secreted from it.
42. Adrenalin and Noradrenalin are called as fight flight hormones .Justify.
43. Mention the type of gland and celltype from which insulin is secreted add a note on its action.
44. Explain the mechanism of protein hormone action with a diagrammatic representation.
45. Explain the mechanism of steroid hormone action with a diagrammatic representation.

# Answers

## Questions carrying 1 Mark each.

1. Chemical produced by endocrine glands and released into the blood and transported to a distantly located target organ.

**OR**

Hormones are non nutrient chemicals which act as inter cellular messengers and are produced in trace amounts.

2. Nuclei.
3. Pituitary gland.
4. The two types are:
  - a) Hormones which stimulate the secretion of pituitary.
  - b) Hormones which inhibit the secretion of pituitary.
5. Somatostatin.
6. Hypothalamus is the basal part of diencephalon part of fore brain.
7. Vasopressin acts at the kidney, stimulates reabsorption of water and electrolytes by the distal tubules and thereby reduces the loss of water through urine hence it is called as anti-diuretic hormone.
8. Melatonin.
9. A thin flap of connective tissue inter connecting the two lobes of thyroid is called isthmus.
10. Thyrocalcitonin regulates the blood calcium level.
11. The thymus gland is a lobular structure located on the dorsal side of the heart and the aorta.
12. Thymus.
13. One at the anterior part of each kidney.
14. Leydig cells or interstitial cells.
15. Atrial natriuretic factor.
16. Progesterone
17. Secretin acts on the exocrine pancreas and stimulates secretion of water and bicarbonate ions
18. Cholecystokinin.
19. Steroids.
20. Erythropoiesis.

### Questions carrying 2 Mark each.

21. As below :

Endocrine gland	Exocrine gland
These glands lack ducts and their secretion is transported through blood	Secretion of these glands are carried through ducts

22. a –Hypothalamus, b - Pituitarygland
23. GnRH and somatostatin originating in the hypothalamic neurons pass through axons and are released from their nerve endings. These hormones reach the pituitary gland through a portal circulatory system and regulate the functions of the anterior pituitary .
24. a - adenohypophysis  
b – neurohypophysis
25. The two portions of adenohypophysis are:
- pars distalis
  - pars intermedia
26. The two neurohypophysial hormones are:
- oxytocin
  - vasopressin
27. Neurohypophysis stores and releases oxytocin and vasopressin
28. The four regulations by melatonin are:
- Normal rhythm of sleep awake cycle
  - Body temperature
  - Metabolism
  - Pigmentation and menstrual cycle
  - Our defense capability
29. The symptoms seen in the growing baby of hypothyroidism pregnant woman are:
- Defective development and maturation leading to cretinism
  - Mental retardation
  - Low IQ
  - Abnormal skin
  - Deaf mutism
30. The functions of thyroid hormone are:
- Important role in regulation of basal metabolic rate
  - Supports the process of red blood cell formation
  - Controls the metabolism of carbohydrates, proteins and fats

31. Parathyroid hormone increases calcium ions' level in the blood.
- PTH acts on bones and stimulates the process of demineralisation
  - PTH stimulates reabsorption of calcium ions by the renal tubules and increases calcium ion reabsorption from the digested food.
32. Functions of thymosin are:
- Thymosin plays a major role in the differentiation of T - lymphocytes
  - Thymosin promotes production of antibodies to provide humoral immunity.
33. Two parts of adrenal gland are adrenal medulla and adrenal cortex.
34. Adrenalin and noradrenalin.
35. Functions of aldosterone are:
- Aldosterone helps in maintenance of electrolytes, body fluid volume, osmotic pressure and blood pressure
  - Aldosterone acts at the renal tubules and stimulates the reabsorption of sodium ions and water and excretion of potassium and phosphate ions.
36.  $\alpha$  cells secrete glucagon,  $\beta$  cells secrete insulin
37. Goitre is caused by hypothyroidism or less secretion of thyroxin from the normal level in the adult.
- Hypothyroidism during pregnancy leads to cretinism .

38.

Insulin	Glucagon
<ul style="list-style-type: none"> <li>Secreted by <math>\beta</math> cells of islets of Langerhans.</li> <li>Hypoglycaemic in function</li> </ul>	Secreted by $\alpha$ cells of islets of Langerhans Hyperglycaemic in function

39.

Hypoglycaemia	Hyperglycaemia
Decreased level of glucose in the blood	Increased level of glucose in the blood

### Questions carrying 4 Mark each.

40. The endocrine glands in the human body are:
- Pituitary gland
  - Pineal gland
  - Thyroid gland
  - adrenal gland
  - Endocrine pancreas gland

- Parathyroid gland
- Thymus gland
- Gonads

41. Anterior pituitary which is anatomically different from posterior pituitary is called adenohypophysis.

- Growth hormone(GH)
- Prolactin hormone(PRL)
- Thyroid stimulating hormone(TSH)
- Adrenocortico trophic hormone(ACTH)
- Luteinizing hormone(LH)
- Follicle stimulating hormone(FSH)

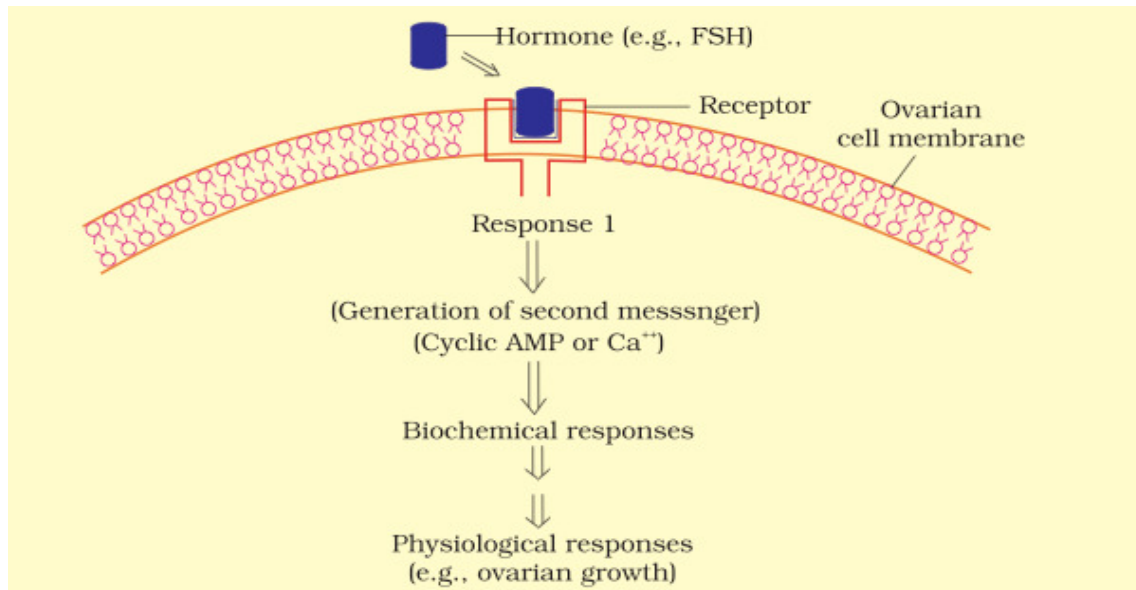
42. Adrenalin and noradrenalin increase alertness by :

- Pupillary dilation
- Pilo erection
- Sweating
- Increase in heart beat
- Increase in rate of respiration
- Increase in the blood glucose level by breakdown of glycogen
- Breakdown of lipid and protein

43.  $\beta$  cells of islets of Langerhans of endocrine pancreas.

- Insulin acts on hepatocytes and adipocytes .
- Enhances cellular glucose uptake and utilization
- As a result. There is, a rapid movement of glucose from blood to hepatocytes and adipocytes resulting in decreased blood glucose level.
- Insulin stimulates conversion of glucose to glycogen

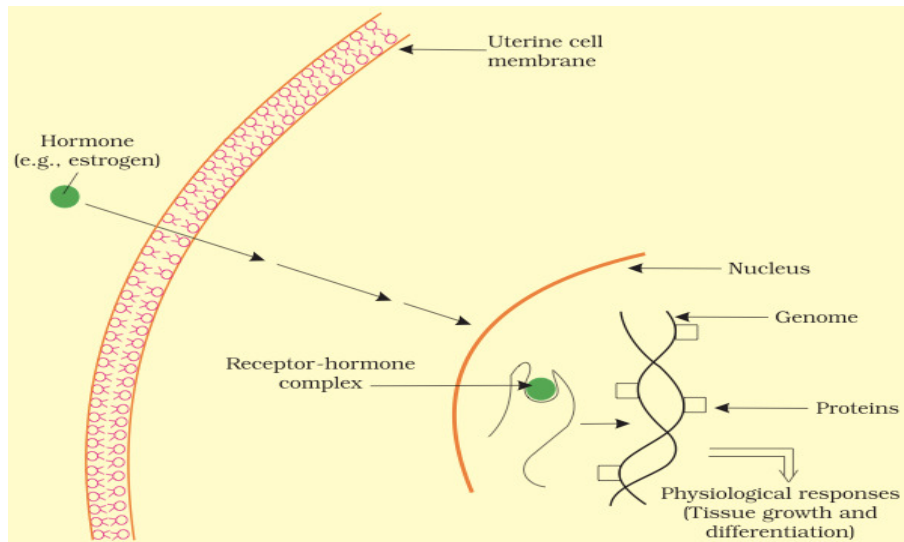
44. As below :



Diagrammatic representation of the mechanism of protein hormone action

Protein hormones interact with membrane bound receptors. They do not enter the target cell. With their response, second messengers like : cyclic AMP, Calcium ions regulate cellular metabolism.

45. As below :



Diagrammatic representation of the mechanism of steroid hormone action

Steroid hormones interact with intra-cellular receptors. They mostly regulate gene expression or chromosome function by the interaction of hormone-receptor complex with the genome. Cumulative bio-chemical actions result in physiological and developmental responses.