

## UNIT-III : HUMAN ANATOMY AND PHYSIOLOGY

# 9. CHEMICAL CO-ORDINATION AND INTEGRATION

1 VSAQ + 1 SAQ [2 M + 4M = 6 M]

### ROOT POINTS

- The chemical coordination system in the body comprises of endocrine glands, their hormones and their modes of action.
- Main contents of this chapter** are i) Endocrine glands and hormones ii) Human Endocrine system iii) Hormones of heart, kidney, Gastrointestinal tract iv) Mechanism of Hormone action
- Endocrine glands** are ductless glands which secrete hormones directly into blood stream. [VSAQ]
- Hormones** are **non-nutritive chemicals** which act as **intercellular messengers** and are produced in trace amounts. [VSAQ]
- Hormones** are **chemical messengers**. They are released directly into blood.
- Hormones** bring both **physiological** and **structural changes** in the body.
- Endocrine glands:** [SAQ]  
I)Hypothalamus II)Pituitary gland III) Pineal gland IV) Thyroid gland V)Para thyroid VI) Thymus gland VII) Adrenal gland VIII) Pancreas IX)Testes X)Ovaries
- Hypothalamus** is present below the thalamus, forming the floor of the diencephalon of fore brain. It connects brain on one side and pituitary gland on the other side. It regulates wide range of body functions. [SAQ]
- Pituitary gland** is located below hypothalamus.It is called **master gland**, as it controls the other endocrine glands. [SAQ]
- Pituitary gland is divided into two main parts** [SAQ]  
I) **Adenohypophysis** (Anterior Pituitary) II) **Neurohypophysis** (Posterior Pituitary).
- Acromegaly** is a hormonal disorder that results when the pituitary gland produces hypersecretion of growth hormone (GH).
- Thyroid stimulating hormone (TSH)** stimulates the synthesis and secretion of thyroid hormones from thyroid gland. [IPE]
- Hypothyroidism** is a condition in which production of thyroid hormones T3 & T4 **decreases**.
- Hyperthyroidism** is a condition in which production of thyroid hormones T3 & T4 **increases** abnormally. [IPE]

15. **Cretinism** leads to **Thyroid** hormone deficiency [VSAQ]
16. **Parathyroid Hormone (PTH)** is Secreted by the **parathyroid glands**. [SAQ]
17. **Thymosin** is Produced by the **thymus gland**. [SAQ]
18. **Aldosterone** is secreted by the **adrenal cortex**. [SAQ]
19. **Epinephrine** and **norepinephrine** are called **fight** and **flight** hormones. [VSAQ]
20. **Addison's disease** is due to hyposecretion of glucocorticoids by **adrenal cortex**. [IPE]
21. **Islets of Langerhan** is endocrine part of pancreas. [VSAQ]
22. **Insulin shock** is a condition that occurs due to hyper secretion of insulin [IPE]
23. **Insulin** is secreted by the beta cells of the **pancreas** (Islets of Langerhans). [SAQ]
24. **Diabetes mellitus** leads to Insulin deficiency [VSAQ]
25. **Androgens** are **male sex hormones**. Ex: Testosterone. [VSAQ]
26. **Vasopressin** is called anti-diuretic hormone. [VSAQ]
27. **Erythropoietin** is a hormone produced by Juxta glomerular cells of **kidney**. [VSAQ]
28. A temporary endocrine gland in the human body is **corpus luteum**. [NEET-2017]
29. Graves disease is caused due to **hypersecretion of thyroid gland** [NEET-2016]
30. A chemical signal that has both endocrine and neural roles is **epinephrine**. [NEET-2015]
31. Fight-or-flight reactions cause activation of the **adrenal medulla**. [NEET-2014]
32. The posterior pituitary gland is not a 'true' endocrine gland because **it only stores and releases hormones**. [NEET-2016]
33. **The Steroid hormone** influence the cellular activities by '**binding to DNA and forming a gene hormone complex**'. [NEET-2019]
34. **Hypo secretion of Insulin** causes **Diabetes mellitus**. [NEET-2019]
35. Presence of **Ketonuria and Glycosuria** in urea are indicatives of **diabetes mellitus**. [NEET-2020]
36. **Glucocorticoids** stimulate gluconeogenesis. [NEET-2020]
37. **Erythropoietin hormone** (RBC formation) is produced by Juxtglomerular cells of the kidney. [NEET-2021]
38. **CCK** hormone is released from **pancreas**; **GIP** is released from **Gastric glands**; ANF is released from **Heart** and **ADH** is released from **kidney**. [NEET-2023]
39. **Adrenal medullary** hormones causes piloerection and it increases strength of heart contraction. [NEET-2025]
40. **Anti -duretic hormone (ADH)** is the hormone that is actually synthesized in hypothalamus but released from the pituitary gland. [NEET-2025]
41. Cardiac activities of the heart are regulated by **Nodal tissue, Adrenal medullary hormones & special neural centre** in the medulla oblongata. [NEET-2025]
42. **Glucagon** is not a steroid hormone. [NEET-2024]
43. **Cretinism** is caused due to **hypo-secretion of thyroid hormone** and causes stunted growth. [NEET-2024]