

Class 10

Subject – science

Portfolio

A. Multiple Choice Questions (8 MCQs)

- 1.** Which gland is known as the master gland?
a) Thyroid
b) Pituitary
c) Adrenal
d) Pancreas

- 2.** Which hormone regulates blood sugar levels?
a) Thyroxine
b) Insulin
c) Testosterone
d) Melatonin

- 3.** Goitre is caused due to the deficiency of:
a) Calcium
b) Iodine
c) Iron
d) Vitamin D

- 4.** Adrenaline is secreted during:
a) Sleep
b) Fear and stress
c) Digestion
d) Growth

- 5.** Which gland controls the sleep–wake cycle?
a) Pituitary
b) Pineal
c) Adrenal
d) Thymus

- 6.** The endocrine system releases hormones directly into the:
a) Nephrons
b) Blood
c) Lymph nodes
d) Ducts

◆ **B. Assertion–Reason (2 Questions)**

7. Assertion (A): Adrenaline prepares the body for emergency situations.

Reason (R): It increases heart rate and blood flow to muscles.

a) Both A and R are true, and R is the correct explanation of A.

b) Both A and R are true, but R is not the correct explanation of A.

c) A is true, but R is false.

d) A is false, but R is true.

8. Assertion (A): Insulin deficiency leads to diabetes.

Reason (R): Insulin controls the amount of glucose in the blood.

a) Both A and R are true, and R is the correct explanation of A.

b) Both A and R are true, but R is not the correct explanation.

c) A is true, but R is false.

d) A is false, but R is true.

◆ C. Very Short Answer Questions (2 marks each)

9. What are hormones? Name any two glands which behave as endocrine as well as exocrine and mention their functions.

10. What is goitre? Why does it occur?

◆ D. Short Answer Questions (3 marks each)

11. Explain how insulin and glucagon maintain blood sugar levels in humans.

12. Write any three differences between the endocrine system and the nervous system.

13. Describe the function of the adrenal glands and explain why adrenaline is called the “emergency hormone.”

◆ E. Case-Based Question (1 case; 4 questions × 1 mark each)

Read the following case and answer the questions:

A 12-year-old girl complains of tiredness, weight gain, and swelling in the neck region. Tests show low levels of thyroxine and high TSH levels. Doctors suggest she has a thyroid disorder.

14.1 Which gland is affected?

14.2 Name the hormone that is low in her body.

14.3 What is the term for swelling of the neck?

14.4 Name one nutrient whose deficiency may cause this condition.

◆ F. Long Answer Question (1 question; 5 subparts × 5 marks each)

15. Answer the following:

- a) Define endocrine glands and name any five endocrine glands in the human body.
- b) Explain the functions of the pituitary gland in detail.
- c) Describe the role of the thyroid gland and effects of low and high thyroxine levels.

A. Multiple Choice Questions

- 1. **b) Pituitary**
- 2. **b) Insulin**
- 3. **b) Iodine**

4. b) Fear and stress
5. b) Pineal
6. b) Blood

B. Assertion–Reason

7. a) Both A and R are true, and R is the correct explanation of A.
8. a) Both A and R are true, and R is the correct explanation of A.

C. Very Short Answer Questions

9. **Hormones** are chemical messengers secreted by endocrine glands directly into the bloodstream to regulate body functions.

Two glands behaving as both endocrine and exocrine:

- **Pancreas:**
 - Endocrine: Secretes insulin and glucagon (controls blood sugar)
 - Exocrine: Secretes digestive enzymes
- **Gonads (Testes/Ovaries):**
 - Endocrine: Secretes sex hormones
 - Exocrine: Produce gametes (sperms/ova)

10. **Goitre** is the abnormal enlargement of the thyroid gland.
It occurs due to **iodine deficiency**, leading to reduced thyroxine production.

D. Short Answer Questions

11. **Insulin** lowers blood glucose by helping cells absorb glucose and converting excess glucose into glycogen.
Glucagon raises blood glucose by converting stored glycogen into glucose.
Together, they maintain normal blood sugar levels.

12. **Differences between Endocrine and Nervous System (any three):**
 - Endocrine uses hormones; nervous system uses nerve impulses
 - Endocrine action is slow but long-lasting; nervous action is fast and short-lived
 - Hormones act through blood; nerve impulses travel through neurons

13. **Adrenal glands** secrete hormones like adrenaline.
Adrenaline increases heart rate, blood pressure, breathing rate, and blood flow to muscles.

It is called the “**emergency hormone**” because it prepares the body for fight-or-flight situations.

E. Case-Based Question

- 14.1 **Thyroid gland**
- 14.2 **Thyroxine**
- 14.3 **Goitre**
- 14.4 **Iodine**

F. Long Answer Question

15.

a) Endocrine glands are ductless glands that secrete hormones directly into the bloodstream.

Five endocrine glands: Pituitary, Thyroid, Adrenal, Pancreas, Pineal

b) Functions of the pituitary gland:

- Controls growth and development
- Regulates other endocrine glands (master gland)
- Controls reproduction, lactation, and water balance
- Secretes growth hormone, TSH, FSH, LH, etc.

c) Role of the thyroid gland:

- Regulates metabolism, growth, and energy balance through thyroxine
- **Low thyroxine:** Hypothyroidism, goitre, weight gain, tiredness
- **High thyroxine:** Hyperthyroidism, weight loss, nervousness, rapid heartbeat