



## Section A

1. Which of the following hormones stimulates the breakdown of glycogen in the liver into glucose?

- A. Insulin                      B. Adrenaline                      C. Glucagon                      D. Thyroxine

**Answer:** Glucagon

**Reason** — Glucagon stimulates the breakdown of glycogen in the liver to glucose.

2. Which one of the following hormones converts excess glucose into glycogen

- A. Glucagon                      B. Thyroxine                      C. Insulin                      D. Adrenaline

**Answer:** Insulin

**Reason** — Insulin converts extra glucose to glycogen which is ultimately stored in the liver and muscles.

3. The emergency hormone to face the danger or to fight is secreted by:

- A. Islets of Langerhans                      B. Adrenal cortex  
C. Pituitary                      D. Adrenal medulla

**Answer:** Adrenal medulla

**Reason** — Adrenaline hormone is also called the "fight or flight hormone". It is secreted by the Adrenal medulla.

4. Which one of the following endocrine glands produces its hormone in large quantities as a result of emotional stimulation?

- A. Thyroid                      B. Islets of Langerhans  
C. Adrenal medulla                      D. Adrenal cortex

**Answer:** Adrenal medulla

**Reason** — The adrenal medulla secretes adrenaline (also called epinephrine or emergency hormone). This hormone is secreted when a person is under severe stress (physical or emotional).

5. In humans, increased thyroxine production results in:

- A. Increased metabolism                      B. Decreased metabolism  
C. Dwarfism                      D. Cretinism

**Answer:** Increased metabolism

**Reason** — Over secretion of thyroxine causes an increased metabolic rate.



6. Secretions of exocrine glands are called

- A. Hormones                      B. enzymes                      C. vitamins                      D. proteins

**Answer:** Exocrine glands are the duct-containing glands that secrete enzymes and other substances into the digestive tract.

7. Match the following:

	Column A		Column B
a	Located at the base of the brain	1	Parathyroid
b	Follicle-stimulating hormone	2	Thyroid gland
c	On either side of the windpipe	3	Pancreas
d	Both endocrine and exocrine gland	4	Adrenal glands
e	Located behind the stomach	5	Pancreas
f	Located on each kidney	6	Testis and ovary
g	Embedded in the thyroid gland	7	Pituitary gland

**Answer:**

Column A	Column B
Located at the base of the brain	Pituitary gland
Follicle-stimulating hormone	Testis and ovary
On either side of the windpipe	Thyroid gland
Both endocrine and exocrine gland	Pancreas
Located behind the stomach	Pancreas
Located on each kidney	Adrenal glands
Embedded in the thyroid gland	Parathyroid

8. Match the following:

	Column A		Column B
a	Increase in heartbeat	1	Oestrogen and progesterone
b	Stimulates metabolism of carbohydrates, fats, and protein	2	Testosterone
c	Glucose utilization by body cells to give them energy	3	Cortisone
d	controls the body's metabolic rate	4	Parathyroid hormone
e	Adapt to extreme cold and heat	5	Thyroxine
f	Male sex hormone	6	Insulin
g	Female sex hormones	7	Thyroxine
h	Calcium metabolism	8	Cortisone



**Answer:**

Column A	Column B
Increase in heartbeat	Thyroxine
Stimulates metabolism of carbohydrates, fats, and protein	Cortisone
Glucose utilization by body cells to give them energy	Insulin
controls the body's metabolic rate	Thyroxine
Adapt to extreme cold and heat	Cortisone
Male sex hormone	Testosterone
Female sex hormones	Oestrogen and progesterone
Calcium metabolism	Parathyroid hormone

### 9. Fill in the blanks:

1. The over-secretion of thyroxine in adults leads to \_\_\_\_\_

**Answer:** Myxoedema

2. The \_\_\_\_\_ and \_\_\_\_\_ together maintain blood sugar levels.

**Answer:** Insulin, Glucagon

3. Frequent urination, increased thirst, and increased hunger are symptoms of \_\_\_\_\_.

**Answer:** Diabetes Mellitus.

4. \_\_\_\_\_ and \_\_\_\_\_ are symptoms of Type 2 Diabetes.

**Answer:** Slow healing wounds and blurred vision.

5. Increase in \_\_\_\_\_ and \_\_\_\_\_ is result of Adrenaline hormone.

**Answer:** Heart rate, breathing rate

6. \_\_\_\_\_ growth occurs during infancy and \_\_\_\_\_ growth rate occurs during adolescent age.

**Answer:** Faster, Higher

7. \_\_\_\_\_ is the period of growth when reproductive organs attain maturity. During this period, boys grow at an average rate of \_\_\_\_\_ cm a year while girls grow on average of \_\_\_\_\_ cm a year.

**Answer:** Adolescence, 10cm, 8 cm

8. \_\_\_\_\_ hormones and \_\_\_\_\_ hormones influence adolescent ages in boys and girls.

**Answer:** Sex, Growth

9. Elongation of \_\_\_\_\_ and \_\_\_\_\_ bones results in increased height and weight of the body.



**Answer:** leg, arm

**10.** Between the ages of \_\_\_\_\_ and \_\_\_\_\_, the testes start producing sperms, and the ovaries begin producing eggs.

**Answer:** 11, 14

**11.** \_\_\_\_\_ changes and \_\_\_\_\_ changes in adolescents in adolescent.

**Answer:** Emotional, psychological

**12.** \_\_\_\_\_ is the feeling of being under too much pressure either mentally or emotionally.

**Answer:** Stress

**10. Name the hormone which would be released during the following situations:**

**(a)** A frightened person.

**Answer:** Adrenaline.

**(b)** Growth of a child to adult.

**Answer:** Growth hormone

**(c)** Development of tadpoles to frogs.

**Answer:** Thyroxine.

## Section B

**Short Answer Question:**

**11. Define Cretinism**

**Answer:** Cretinism is a condition resulting from a deficiency of thyroid hormone in fetal or early life, characterized by intellectual disability, short stature, and mental retardation.

**12. Define Adolescence.**

**Answer:** The period of life, when the body undergoes changes, leading to reproductive maturity, is called adolescence. In other words, adolescence is a transitional phase of growth and development between childhood and adulthood.

**13. Distinguish between Cretinism and Myxoedema (symptoms)**

**Answer:**

Characteristic	Cretinism	Myxoedema



Symptoms	Cretinism occurs in infants resulting in physical and mental retardation.	Myxoedema occurs in adults and is characterized by symptoms such as sluggishness with swelling on the face and hands.
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**14. Give reason/explain — Epinephrine is also called the 'emergency hormone'.**

**Answer:** Epinephrine (also called adrenaline) is released by the adrenal glands in response to stress. This hormone prepares the body to meet any emergency situation i.e., to face danger or flee from a situation. Hence it is called the 'fight or flight hormone' or the 'emergency hormone'.

**15. Differentiate between Thyroxine and insulin**

**Answer:**

Sl. No.	Thyroxine	Insulin
1.	It is secreted by the thyroid gland.	It is secreted by the islet of Langerhans.
2.	It regulates the rate of cellular metabolism and body temperature.	It regulates the amount of glucose in the blood and the conversion of glucose into glycogen.
3.	Irregular secretion leads to hyperthyroidism or hypothyroidism.	Irregular secretion leads to diabetes.

**16. What is the function of the islets of Langerhans?**

**Answer:** The islets of Langerhans secrete **insulin** which regulates the amount of glucose in the blood and the conversion of glucose into glycogen.

**16. What happens when the thyroid gland secretes less thyroxine?**

**Answer:** When the thyroid gland secretes less thyroxine, it leads to a condition known as hypothyroidism. It can be caused by to deficiency of Iodine. Hypothyroidism makes a person sleepy and sluggish, leading to weight gain. It leads to the swelling of the thyroid gland, a condition called goiter.

**17. How is the level of glucose regulated by the pancreas?**

**Answer:** The endocrine component of the Pancreas called the islets of Langerhans secretes insulin hormone. Insulin regulates the amount of glucose in the blood. Extra glucose in the body is converted into glycogen by insulin and stored in the liver.



## 18. Write the function of the pituitary gland in our body.

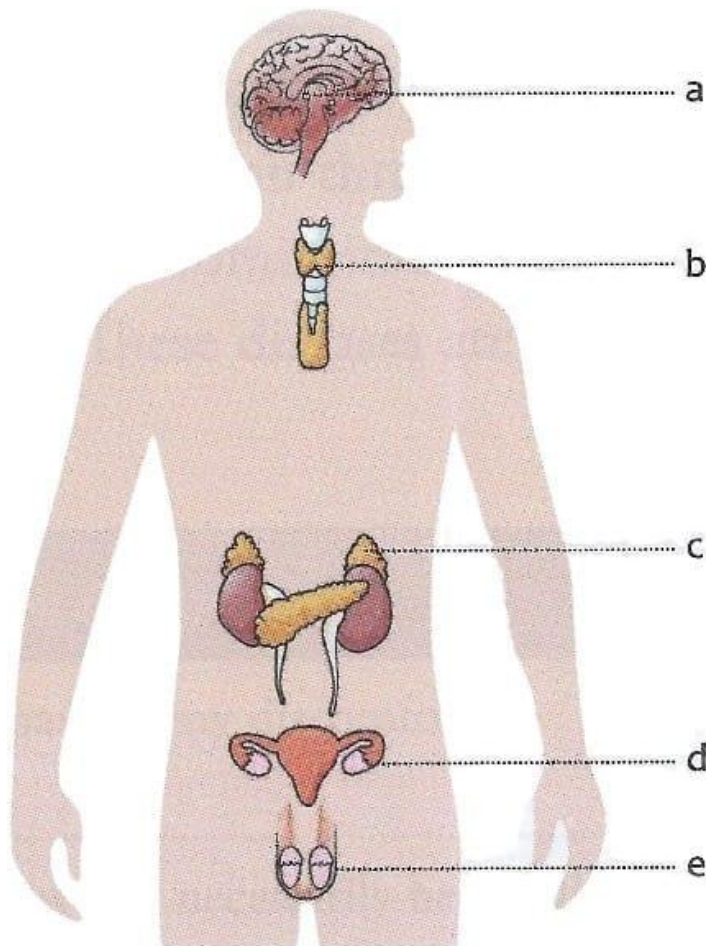
**Answer:** The pituitary gland is also known as the master gland. Its functions are:

1. It controls the functioning of all other endocrine glands.
2. It secretes growth hormones that control the overall development or growth of the body, muscles, and bones.
3. It increases the rate of protein synthesis.

## Section C

### Picture Study:

19. In the figure given alongside, label the glands marked a-e and name the hormones secreted by them.



### Answer

The labelled glands and the hormones secreted by them are as follows:

a — Pituitary gland (growth hormone)



- b — Thyroid gland (thyroxine, calcitonin)
- c — Adrenal gland (adrenaline, noradrenaline)
- d — Ovaries (oestrogen, progesterone)
- e — Testes (testosterone)

**20.** The pancreas acts as both exocrine and endocrine glands. Explain.

**Answer:** The pancreas is a dual gland that has both exocrine and endocrine functions. The exocrine portion of the pancreas makes up about 85% of its mass and secretes digestive enzymes into the gastrointestinal tract through ducts. The endocrine portion of the pancreas secretes hormones into the bloodstream