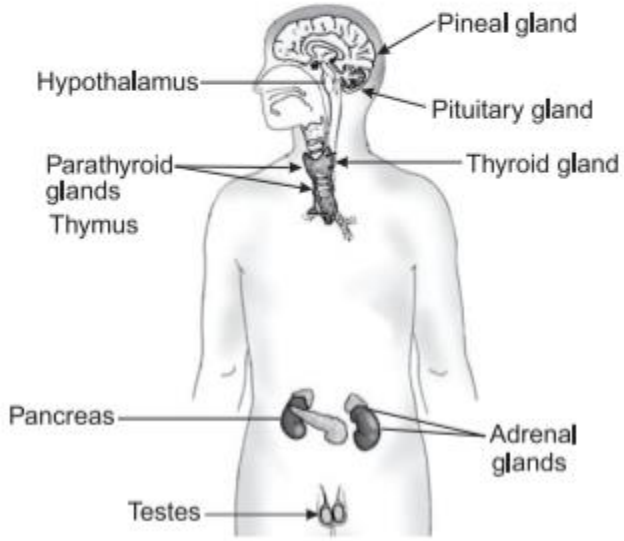
Control and Coordination

Case Study Based Questions

Case Study 1

Endocrine glands are ductless glands of the endocrine system that secrete their products, hormones, directly into the blood. The major glands of the endocrine system include the pineal gland, pituitary gland, pancreas, ovaries, testes, thyroid gland, hypothalamus and adrenal glands.

Glands	Hormones
Pituitary gland	Growth hormone
Thyroid gland	Thyroxine
Pancreas	Insulin
Testes	Testosterone
Adrenal gland	Adrenaline



Endocrine glands in male

Read the above passage carefully and give the answer of the following questions:

Q1. Dwarfism results due to:

a. excess secretion of thyroxine

b. less secretion of growth hormone
c. less secretion of adrenaline
d. excess secretion of growth hormone

Q2. Which of the following endocrine glands is not present in males?
a. Adrenal
b. Testes
c. Pituitary
d. Ovary

Q3. Which of the following endocrine glands secretes digestive enzyme as well as hormones?
a. Pancreas
b. Thyroxine
c. Adrenaline
d. Insulin

Q4. Which of the following statements are true about the endocrine glands?
(i) They are ductless glands.
(ii) They release their hormones into a duct.
(iii) They produce chemical messengers called hormones.
(iv) They release their hormones directly into the bloodstream.
a. (i) and (iii)
b. (i), (iii) and (iv)
c. (i), (ii) and (iii)
d. (i) and (iv)

Q5. Which of the following hormone is responsible for regulation of blood pressure?
a. Thyroxine
b. Insulin
c. Testosterone
d. Adrenaline

Answers

1. (b) less secretion of growth hormone

2. (d) Ovary

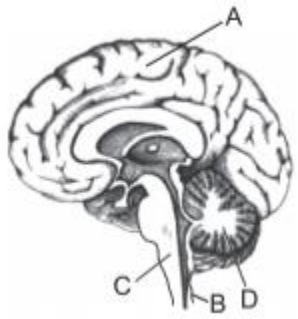
3. (a) Pancreas

4. (b) (i), (iii) and (iv)

5. (d) Adrenaline

Case Study 2

Study the figure related to human brain and answer the questions that follow.



Q1. Name the parts A, B, C and D of human brain.

Q2. What is the function of the fluid filled in the brain?

Q3. Name the endocrine gland associated with brain.

Q4. What constitutes the central nervous system?

Q5. What constitutes Peripheral Nervous System (PNS)?

Answers

1. A-Cerebrum:
B-Spinal cord
C-Medulla;
D – Cerebellum

2. It prevents the brain from mechanical shocks.

3. Pituitary gland

4. The brain and spinal cord constitute the central nervous system.

5. PNS contains the cranial nerves arising from the brain and spinal nerves arising from the spinal cord.

Case Study 3

Thyroid Stimulating Hormone (TSH) stimulates thyroid gland to produce thyroxine. Study the table given below:

Table: TSH levels during pregnancy

Stage of pregnancy	Normal (mU/L)	Low (mU/L)	High (mU/L)
First trimester	0.2-2.5	< 0.2	2.5-10
Second trimester	0.3-3.0	< 0.3	3.0-4.5
Third trimester	0.8-5.2	< 0.8	> 5.2

It is important to monitor TSH levels during pregnancy. High TSH levels and hypothyroidism can especially affect chances of miscarriage. Therefore, proper medication in consultation with a doctor is required to regulate/control the proper functioning of the thyroid gland. (CBSE 2020)

Read the above passage carefully and give the answer of the following questions:

Q1. Give the full form of TSH.

Q2. Where is thyroid gland situated in our body?

Q3. State the main function of TSH.

Q4. Why do TSH levels in pregnant women need to be monitored?

Q5. A pregnant woman has TSH level of 8.95 mU/L. What care is needed for her?

Answers

1. The full form of TSH is Thyroid Stimulating Hormone.

2. The thyroid gland is present in the neck region.

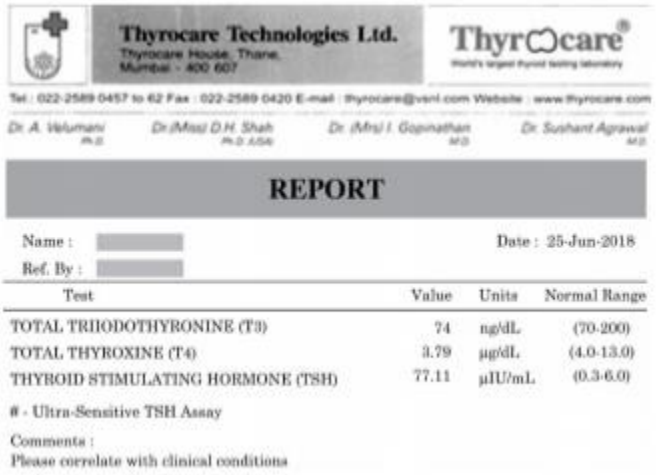
3. TSH regulates the production of thyroid hormone, i.e.. thyroxine by the thyroid gland.

4. It is because high and low TSH level may increase the chances of miscarriage.

5. A proper medication in consultation with a doctor is required to bring the TSH level down.

Case Study 4

Study the table related to blood thyroxine levels and answer the questions that follow.



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REPORT

Name :
Ref. By :

Date : 25-Jun-2018

Test	Value	Units	Normal Range
TOTAL TRIIODOTHYRONINE (T3)	74	ng/dL	(70-200)
TOTAL THYROXINE (T4)	3.79	µg/dL	(4.0-13.0)
THYROID STIMULATING HORMONE (TSH)	77.11	µIU/mL	(0.3-6.0)

- Ultra-Sensitive TSH Assay

Comments :
Please correlate with clinical conditions

Q1. What do you analyse from this blood test report?

Q2. Which gland secretes thyroxine and TSH hormone?

Q3. Which diet would you recommend to the affected patient?

Q4. Enlist the alternative name for "hormones".

Answers

1. TSH level is high and thyroxine level is low.

2. Thyroid gland secretes thyroxine and pituitary gland secretes TSH hormone.

3. Iodine rich diet

4. Chemical coordinators (messengers)