Short Question Answer

Q1. Why is it advised to use iodized salt in our diet?

Answer. Iodine stimulates the thyroid gland to produce thyroxin hormone. Deficiency of this hormone results in the enlargement of the thyroid gland. This can lead to goiter

Q2. State how concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light?

Answer. When light falls on the side of the shoot auxin diffuses towards the shady side of the shoot. This concentration of the auxin stimulates the cell to grow longer on the side of the shoot which is away from light. Thus plant appears to bend towards light.

Q3. What is synapse? In a neuron cell how is an electrical impulse created and what is the role of synapse in this context?

Answer. A synapse is the gap between the two neurons. Here the axon terminal of one neuron is in close proximity to the dendrite of the second neuron. When a nerve impulse reaches the knob like nerve ending of an axon, a tiny amount of a chemical substance is released in the synapse. This chemical substance is called as the neurotransmitter. At synapse the electrical signals converted into chemicals, that can easily cross over the gap and pass on to the next neurons where it again converted into electrical signals.

Q4. (i) Name the hormones that are released in human males and females when they reach puberty.

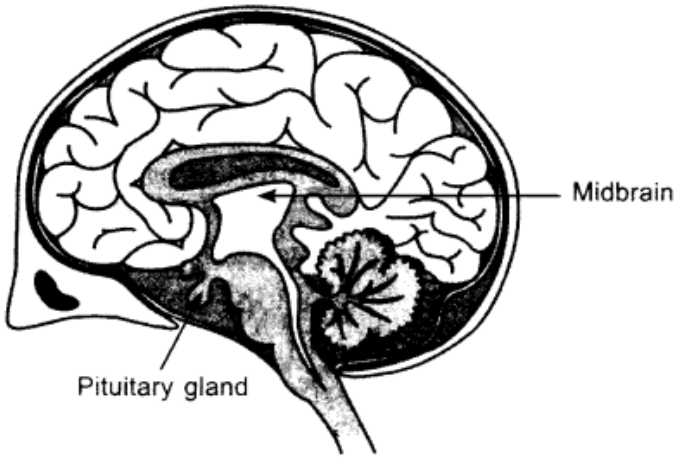
(ii) Name a gland associated with brain. Which problem is caused due to the deficiency of the hormone released by this gland?

Answer.

(i) Testes in males produces hormone testosterone.
Ovaries in females produces hormone estrogen.

(ii)Pituitary gland present in the brain is responsible for body growth, development of bones and muscles (if excess-gigantism) (if less-dwarfism).

Q5. Draw neat diagram of human brain and label on it the following parts :
(i) Midbrain (ii) Pituitary gland
Answer.



Human brain

Q6. Write one example each of the following tropic movements:
(i) Positive phototropism

(ii) Negative phototropism
(iii) Positive geotropism

(iv) Negative geotropism
(v) Hydrotropism

(vi) Chemotropism
Answer.
(i) Positive phototropism: shoots growing towards light.
(ii)Negative phototropism: roots growing away from light towards ground.
(iii) Positive geotropism: growth of roots towards earth due to the pull of the earth.
(iv)Negative geotropism: shoots growing away from the earth.
(v) Hydrotropism: roots growing towards the source of water.
(vi)Chemotropism: growth of pollen tubes towards the ovules.

Q7. (a) Explain any three directional movements in plants.
(b) How brain and spinal cord are protected in human?
(c) Name the master gland present in the brain.
Answer.
(a) Stimuli is responsible for the movement of the plant parts towards or away from it. This movement is called as Tropic Movement.
Phototropism: movement of plant towards or away from the light.

Geotropism: movement of plant parts towards the earth or away from it

Hydrotropism: movement of plant parts towards or away from any source of water.

(b) Both the brain and the spinal cord are protected by bone: the brain by the bones of the skull and the spinal cord is protected by a set of ring-shaped bones called vertebrae. They are both cushioned by layers of membranes called meninges as well as a special fluid called cerebrospinal fluid. This fluid helps to protect the nerve tissue to keep it healthy, and remove waste products.
(c) Pituitary gland present in the brain is known as the master gland.

Q8. List in tabular form three differences between nervous control and chemical control.
Answer.

Nervous System	Endocrine System
(*i*) Formed of a collection of neuron cells.	(*i*) Formed of a set of glands.
(*ii*) Electrochemical pulses are the mean of signal transmission.	(*ii*) Chemicals called hormones are the means of signal transmission.
(*iii*) Signal transmission is fast, but the functions are not prolonged.	(*iii*) Signal transmission is slow, but the functions are long lasting.
(*iv*) The cells are interconnected and the whole system is continuous.	(*iv*) The organs of the whole system are not physically connected yet those are discrete.
(*v*) Use the neurons to transmit the signal.	(*v*) Use the circulatory system to transmit the signal.

Q9. Which organ secretes a hormone when blood sugar rises in our body? Name the hormone and name one enzyme released by this organ.

Answer. Pancreas secretes a hormone when blood sugar rises in our body. Insulin is the hormone released by this organ and the name of the enzyme is pancreatic juice.

Q9.(a) Explain how auxins help in bending of plant stem towards light.
(b) State the objective of the experiment for which experimental set-up is shown in the given diagram.
Answer.
(a) In plant shoots, the role of auxin is to cause a positive phototropism, i.e. to grow the plant towards the light. When light is incident on a plant from one direction, it causes the auxins to redistribute towards the shaded side of the plant. One function of auxin is to cause cell elongation. The redistribution causes the cells on the shaded side to elongate more than those on the side with the light shining on them. This causes the shoot to bend towards the light.
(b) The objective of the experiment is to show phototropic movement of plant.

Q10.What causes a tendril to encircle or coil around the object in contact with it is? Explain the process involved.
Answer. When a tendril comes in contact with any support, the part of the tendril in contact with the object does not grow as rapidly as the part away of the tendril away from the object. This cause the tendril to circle around the object and thus, cling to it.

Q11. Name any three endocrine glands in human body and briefly write the function of each of them.
Answer. Three endocrine glands with their function in human body are as follows:

1. **Thyroid gland:** It secretes a hormone called thyroxine which regulates the metabolism of carbohydrates, fats and proteins in the body and so provide the best balance for nutrients and mental ability.
2. **Adrenal gland:** It secretes two hormones—adrenalin and corticoid hormones regulate blood pressure, heartbeat, breathing rate and carbohydrate metabolism.
3. **Pancreas:** It secretes two hormones—insulin and glucagon. Insulin hormone lowers the blood glucose level. Glucagon hormone increases the blood glucose level.

Q12.Which part of the brain controls involuntary actions? Write the function of any two regions of it.

Answer. Hind-brain controls the involuntary actions. Cerebellum controls the coordination of body movement and posture. Medulla oblongata regulates center for swallowing, coughing, sneezing and vomiting.

Q13. What is chemotropism? Give one example. Name any two plant hormones and mention their functions.

Answer. Chemotropism is the movement of a part of the plant in response to a chemical stimulus. It can be positive chemotropism or negative chemotropism.
Example: The growth of pollen tube towards a chemical which is produced by an ovule during the process of fertilisation in a flower.
Two plant hormones with their functions are as follows:
Auxins promote cell elongation, root formation, cell division, respiration and other physiological processes like protein synthesis, etc.
Gibberellins stimulate stem elongation, seed germination and flowering.

Q14. State the functions of any three of the structural and functional unit of nervous system.

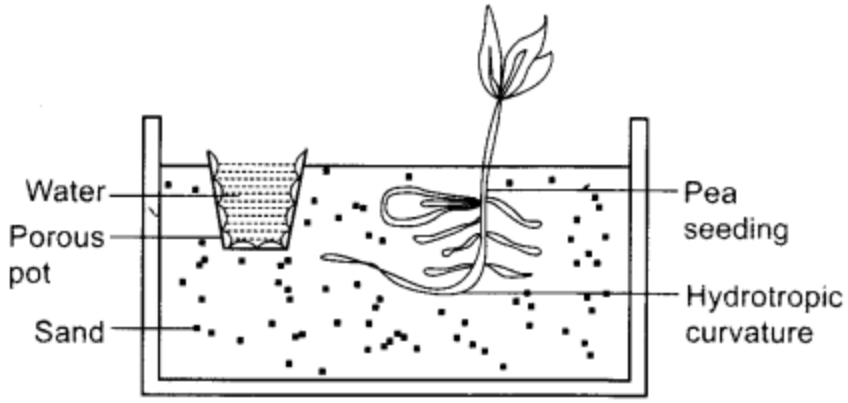
Answer. The structural and functional unit of nervous system, i.e. neuron with their functions are as

1. **Cell body:** Stimulus received from dendrite is changed into impulse in the cyton.
2. **Dendrites:** They receive sensation or stimulus, which may be physical or chemical.
3. **Axon:** It conducts impulse away from the cell body.

Q15. What is 'hydrotropism'? Describe an experiment to demonstrate 'hydrotropism'.

Answer. 'Hydrotropism' is the directional growth of a plant part in response to water. For example, roots show hydrotropism as they grow towards water in the soil and are positively hydrotropic.

An experiment to demonstrate hydrotropism is as follows:



1. A porous pot filled with water is taken and inserted in a tub filled with dry sand.
2. A freshly germinated pea seedling is sowed in the sand.
3. As water is not available in sand, the root growing will bend towards the porous pot filled with water.
4. A hydrotropic curvature of the root is observed as it grows towards water.
5. This bending of root shows the movement in response towards water.

Q16. What are 'hormones'? State one function of each of the following hormones:
(i) Thyroxine

(ii) Insulin

Answer.

Hormones are the chemical substances which coordinate and control the activities of living organisms and also their growth. The term hormone was introduced by Bayliss and Starling.
(i) Function of Thyroxine: This hormone regulates the metabolism of carbohydrates and fats.
(ii) Function of insulin: This hormone helps in regulating sugar level in the blood.

Q17. What is the function of receptors in our body? Think of situation where receptors do not work properly. What problems are likely to arise?

Answer.

Receptors are present in our all parts of the body for example in skin, eye, nose tongue etc. They detect the signals and then send them to brain in the form of electrical signals. If these receptors are damaged then it they will not detect the input which leads to the harm for our body in dangerous situation.

Q18. Name, the two main organs of our central nervous system. Which one of them plays a major role in sending command to muscles to act without involving thinking process? Name the phenomenon involved.
Answer.

The two main organs of CNS are brain and spinal cord.
Spinal cord plays a major role in sending command to muscles to act without involving thinking process. This phenomenon is called reflex action.

Q19.Name the hormone secreted by human testes. State its functions.
Answer.

Testes secrete male sex hormone called testosterone. The function of testosterone is to regulate male accessory sex organs and secondary sexual characters like moustache, beard and voice.

Q20.Name and explain the function of the hormone secreted by the pituitary gland in humans.
Answer. Hormones secreted by pituitary gland along with their functions are:

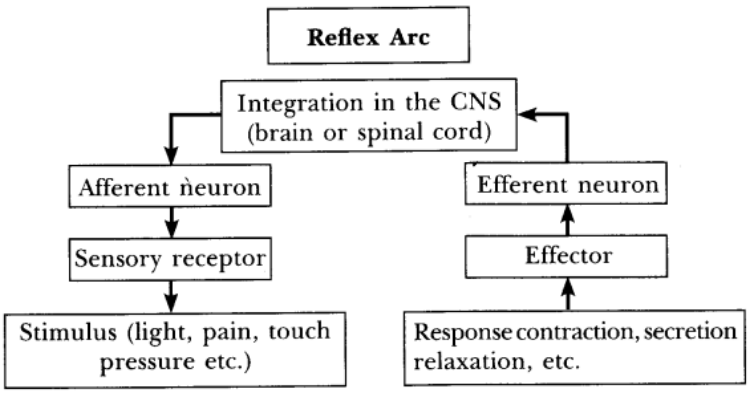
1. **Growth hormone:** It regulates growth and development of bones and muscles.
2. **Trophic hormone:** It regulates secretion of hormones from other endocrine glands.
3. **Prolactin hormone:** It regulates the function of mammary glands in females.
4. **Vasopressin hormone:** It regulates water and electrolyte balance in the body,
5. **Oxytocin hormone :** It regulates ejection of milk during lactation.

Q21.What is a reflex action? Describe the steps involved in a reflex action.
Answer.
Reflex action: It is defined as an unconscious, automatic and involuntary response of effectors, i.e. muscles and glands, to a stimulus, which is monitored through the spinal cord.
Mechanism of reflex action. It involves the following steps:

1. Receptor organ like skin perceives the stimulus and activates a sensory nerve impulse.
2. Sensory organ carries message in the form of sensory impulse to the spinal cord.

3. The spinal cord acts as modulator: The neurons of spinal cord transmit the sensory nerve impulse to motor neuron.
4. Motor never conducts these impulses to the effectors like leg muscles which responds by pulling back the organ away from the harmful stimulus.

Q22.List the components of reflex arc in correct sequence. State in brief the role of brain in reflex action.
Answer.
The reflex arc pathway is shown in the flow chart as follows. The Reflex arc does not involve brain. It minimizes the overloading of brain.



Q23.What are 'nastic' and 'curvature' movements? Give one example of each.
Answer. Nastic movements: These are non-directional movements which are neither towards nor away from the stimulus. Example: Dropping of leaves.
Curvature movements: In such movements plant organs move towards or away from the stimulus. Example: Bending of shoot towards a source of light.

Q24. Write the name and functions of any two parts of the human hind-brain.
Answer

Any two parts of human hind-brain with their functions are as follows:
(i) Cerebellum, which controls the coordination of body movement and posture.

(ii) Medulla oblongata, which regulates the center of swallowing, coughing, sneezing and vomiting.

Q25. What are plant hormones? Write two important functions of auxin.
Answer.

Plant hormones can be defined as a chemical substance which is produced naturally in plants and are capable of translocation and regulating one or more physiological processes when present in low concentration. .
Two important functions of auxin are that it promotes cell elongation, root formation, cell division, etc.

Q26. (a) Name the two main constituents of the Central Nervous System in human beings.
(b) What is the need for a system of control and coordination in human beings?
Answer.

(a) The two main constituents of the Central Nervous System in human beings are the brain and the spinal cord.

(b) A living being does not live in isolation. It has to constantly interact with its external environment and has to respond properly for its survival. For example; when a hungry lion spots a deer, the lion has to quickly make a move so that it can have its food. On the other hand, the deer needs to quickly make a move to run for its life. The responses which a living being makes in relation to external stimuli are controlled and coordinated by a system; especially in complex animals. So, control and co-ordination is essential in maintaining a state of stability and a steady state between the internal conditions of an organism and the external environment.