SmartKalike

CBSE Class 10 · Science

Control and Coordination

10 most probable questions for Boards 2027

Q1. 1 mark · Multiple choice

How do plants convey information about a stimulus from cell to cell?
(A) By electrical-chemical means, without specialised conduction tissue
(B) Through a specialised nervous system
(C) Through muscle tissue
(D) Only by transporting hormones in blood

Answer

(A) By electrical-chemical means, without specialised conduction tissue — plants use electrical-chemical means to convey information from cell to cell, but there is no specialised tissue in plants for the conduction of information.

Q2. 2 marks · Short answer

Name the two components of the central nervous system and state its role in receiving and integrating information. How does the peripheral nervous system connect it to the rest of the body?

Answer

The brain and spinal cord constitute the central nervous system. They receive information from all parts of the body and integrate it. The communication between the central nervous system and the other parts of the body is facilitated by the peripheral nervous system consisting of cranial nerves arising from the brain and spinal nerves arising from the spinal cord.

Q3. 3 marks · Medium answer

Explain how adrenaline prepares the body for action by describing its effects on blood flow, heart rate and breathing rate. Also state how animal hormones provide a means of control and coordination.

Answer

1. Adrenaline, secreted by the adrenal glands into blood, acts on the heart and other tissues. It makes the heart beat faster, supplying more oxygen to muscles.
2. It reduces blood flow to the digestive system and skin, diverting blood to skeletal muscles; contractions of the diaphragm and rib muscles increase the breathing rate.
3. Animal hormones provide chemical coordination through the endocrine system.

Q4. 5 marks · Long answer

Define a reflex action and a reflex arc. Explain how connecting stimulus-detecting nerves to nerves that move muscles enables a rapid response, using withdrawal of the hand from a hot object as an example.

Answer

A reflex action is a rapid response to an environmental change that occurs without conscious thought, and a reflex arc is the pathway connecting an input nerve to an output nerve.
1. When a hand touches a hot object, nerves detecting heat or pain carry the input towards the spinal cord, alerting the body to danger.
2. Reflex arc connections are formed in the spinal cord, where the incoming signal can pass to nerves that move muscles without waiting for conscious thought.
3. The output nerve carries a signal to the arm muscles, which contract and pull the hand away from the hot object.
4. The information about the stimulus also goes on to reach the brain, where it can be processed consciously after the rapid response begins.
A reflex arc therefore enables the body to withdraw from danger quickly and helps limit injury.

Q5. 1 mark · Multiple choice

When light falls on a shoot from one side, which action of auxin causes the shoot to bend towards the light?
(A) It collects on the illuminated side and reduces cell elongation there.
(B) It collects on the shaded side and increases cell elongation there.
(C) It collects equally on both sides and stops cell elongation.
(D) It collects in the roots and increases their growth towards the light.

Answer

(B) It collects on the shaded side and increases cell elongation there — Auxin diffuses towards the shady side of the shoot, stimulating cells to grow longer on the side away from light.

Q6. 2 marks · Short answer

Name the three major regions of the human brain.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/science/control-and-coordination

Q7. 5 marks · Long answer

Explain where reflex arcs are formed and what happens to the information after it enters this pathway. Why may conscious processing be too slow to protect the body from an urgent danger?

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Q8. 1 mark · Multiple choice

Which statement describes the response of roots and shoots to gravity?
(A) Roots grow upwards and shoots grow downwards.
(B) Both roots and shoots grow downwards.
(C) Roots grow downwards and shoots usually grow upwards.
(D) Both roots and shoots grow upwards.

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Q9. 2 marks · Short answer

State the main role of the forebrain in thinking and decision-making, including how it directs a voluntary response.

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Q10. 5 marks · Long answer

Explain why reflex arcs evolved in animals and why they remain an efficient way of producing quick responses even in animals with complex brains.

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