

CBSE CLASS X
Science (086)

QUESTION PAPER

AI-generated question paper

Code: SEGVAP

Questions: 36

Maximum Marks: 75

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SELECTIONS USED

Subject	Science
Lessons	6 Control and Coordination
Level of understanding	Exam-ready
Question selection	CBSE board paper, whole lesson (~80 marks across Sections A-E)
Model	claude-sonnet-4-6

Composition — Difficulty: 11 straightforward · 20 medium · 5 deep | Types: 13 MCQ · 6 Very short · 6 Short · 5 Assertion–reason · 3 Long · 3 Case-based | Sections: A 18Q/18m · B 6Q/12m · C 6Q/18m · D 3Q/15m · E 3Q/12m

Q1. straightforward exam-ready

[1]

Which of the following correctly describes the function of the cerebellum?

- (A) It controls involuntary actions such as breathing and blood pressure
- (B) It is the centre for thinking, memory and voluntary actions
- (C) It coordinates precise voluntary movements and maintains posture and balance
- (D) It relays sensory signals between the spinal cord and the fore-brain

- A It controls involuntary actions such as blood pressure and vomiting.
- B It is responsible for thinking and decision-making.
- C It maintains posture and precision of voluntary actions.
- D It relays sensory impulses from sense organs to the fore-brain.

◆ Control and Coordination

Q2. straightforward exam-ready

[1]

When a nerve impulse reaches the end of an axon, what event allows it to continue to the next neuron?

- A The electrical impulse jumps directly across the gap.
- B Chemicals are released that cross the synapse and start an impulse in the next dendrite.
- C The axon elongates to physically touch the next neuron.
- D The cell body of the next neuron is stimulated directly by the blood.

◆ Control and Coordination

Q3. straightforward exam-ready

[1]

A squirrel encounters a predator. Which hormone prepares its body for 'fight or flight', and from which gland is it secreted?

- A Insulin — Pancreas
- B Thyroxin — Thyroid gland
- C Adrenaline — Adrenal gland
- D Growth hormone — Pituitary gland

◆ Control and Coordination

Q4. straightforward exam-ready**[1]**

Which of the following statements correctly identifies where reflex arcs are primarily located and why?

- (A) In the fore-brain, because conscious processing speeds up the reflex
- (B) In the spinal cord, because this allows a rapid response without waiting for signals to reach the brain
- (C) In the peripheral nervous system, because reflexes bypass the central nervous system entirely
- (D) In the cerebellum, because it coordinates all involuntary muscular responses

- A Fore-brain
- B Medulla oblongata
- C Spinal cord
- D Cerebellum

◆ Control and Coordination

Q5. straightforward exam-ready**[1]**

Which plant hormone inhibits growth, promotes seed dormancy, and causes stomatal closure during water stress?

- (A) Auxin
- (B) Gibberellin
- (C) Cytokinin
- (D) Abscisic acid

- A Auxin
- B Gibberellin
- C Cytokinin
- D Abscisic acid

◆ Control and Coordination

Q6. medium exam-ready**[1]**

Which of the following is NOT a function of thyroxin?

- (A) Regulation of carbohydrate, protein and fat metabolism
- (B) Control of the rate of heartbeat and body temperature
- (C) Stimulation of the development of secondary sexual characters in males
- (D) Regulation of physical and mental development during childhood

- A Regulation of carbohydrate metabolism
- B Regulation of protein metabolism
- C Regulation of blood sugar levels
- D Regulation of fat metabolism

◆ Control and Coordination

Q7. straightforward exam-ready**[1]**

The peripheral nervous system consists of:

- (A) The brain and the spinal cord
- (B) The cranial nerves and spinal nerves that connect the CNS to rest of the body
- (C) The autonomic nervous system and the central nervous system
- (D) Only the sensory nerves that carry information to the brain

- A Brain and spinal cord
- B Cranial nerves and spinal nerves
- C Fore-brain and hind-brain
- D Medulla and cerebellum

◆ Control and Coordination

Q8. medium exam-ready

[1]

When germinating bean seeds are placed so that only one side receives light, the shoots bend towards the light source. Which hormone, and from where, is responsible for this bending?

- A Gibberellin, synthesised in the roots
- B Auxin, synthesised at the shoot tip and diffusing to the shady side
- C Cytokinin, synthesised in the leaves and moving to the stem
- D Abscisic acid, synthesised throughout the plant body

◆ Control and Coordination

Q9. straightforward exam-ready

[1]

A deficiency of growth hormone during childhood results in:

- (A) Gigantism — abnormally large body size
- (B) Dwarfism — stunted growth and short stature
- (C) Cretinism — delayed mental and physical development
- (D) Diabetes mellitus — inability to regulate blood sugar

- A Goitre
- B Diabetes
- C Dwarfism
- D Gigantism in adulthood only

◆ Control and Coordination

Q10. medium exam-ready

[1]

How do plant cells bring about movement in the absence of muscle tissue?

- A By generating electrical impulses in specialised nerve-like cells
- B By changing the amount of water in the cells, causing swelling or shrinking
- C By rearranging contractile proteins similar to those in animal muscle
- D By releasing auxin which directly contracts the cell wall

◆ Control and Coordination

Q11. medium exam-ready

[1]

Which of the following correctly pairs a hormone with the process it primarily controls?

- (A) Insulin — regulation of blood calcium levels
- (B) Thyroxin — stimulation of uterine contractions during childbirth
- (C) Testosterone — development of male secondary sexual characteristics at puberty
- (D) Adrenaline — regulation of growth and metabolism in infants

- A Insulin — onset of puberty in males
- B Testosterone — development of male secondary sexual characteristics at puberty
- C Adrenaline — regulation of menstrual cycle in females
- D Thyroxin — development of female sex organs

◆ Control and Coordination

Q12. medium exam-ready

[1]

Which region of the fore-brain is associated with the sensation of hunger?

- A The auditory area
- B The motor area
- C A centre associated with hunger in a separate part of the fore-brain
- D The olfactory lobe of the mid-brain

◆ Control and Coordination

Q13. straightforward exam-ready

[1]

Which of the following correctly identifies the structural protection provided to the brain and spinal cord respectively?

- A Vertebral column for the brain; bony box for the spinal cord
- B Fluid-filled balloon only for both
- C Bony box and fluid-filled balloon for the brain; vertebral column for the spinal cord
- D Cartilage rings for the brain; fluid-filled balloon for the spinal cord

◆ Control and Coordination

Q14. straightforward exam-ready

[1]

Assertion (A): Iodised salt is recommended in the human diet.

Reason (R): Iodine is essential for the synthesis of thyroxin by the thyroid gland, and its deficiency can cause goitre.

- 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.

◆ Control and Coordination

Q15. medium exam-ready

[1]

Assertion (A): Reflex actions are carried out without conscious thought.

Reason (R): In a reflex action, the nerve signal travels from the receptor to the brain before reaching the effector muscle.

- 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.

◆ Control and Coordination

Q16. straightforward exam-ready

[1]

Assertion (A): Plant hormones are synthesised at places away from where they act.

Reason (R): Plant hormones diffuse from their site of synthesis to the site of action.

- 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.

◆ Control and Coordination

Q17. medium exam-ready

[1]

Assertion (A): The level of insulin secreted by the pancreas decreases when blood sugar levels fall.

Reason (R): Hormone secretion in the body is regulated by a feedback mechanism.

- 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.

◆ Control and Coordination

Q18. deep exam-ready [1]

Assertion (A): Electrical impulses are a faster means of communication in the body than chemical signals.

Reason (R): Chemical signals, unlike electrical impulses, can potentially reach all cells of the body regardless of nervous connections.

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.

◆ Control and Coordination

Q19. straightforward exam-ready [2]

Name the part of a neuron where information from the environment is first received. How is this information then converted and transmitted along the length of the nerve cell to reach the next neuron?

◆ Control and Coordination

Q20. medium exam-ready [2]

A patient is unable to maintain balance while walking and stumbles frequently, even though his leg muscles are healthy. Which part of the brain is likely damaged? Justify your answer.

◆ Control and Coordination

Q21. medium exam-ready [2]

Distinguish between voluntary and involuntary actions, giving one example of each. Which part of the brain controls involuntary actions such as heartbeat and breathing?

◆ Control and Coordination

Q22. medium exam-ready [2]

Why is the movement of the leaves of a touch-me-not plant in response to touch considered different from the bending of a seedling towards light? Give one reason each for the basis of both movements.

◆ Control and Coordination

Q23. medium exam-ready [2]

State two physiological changes that occur in the body when adrenaline is released into the blood. Explain how each change helps the organism.

◆ Control and Coordination

Q24. deep exam-ready [2]

Diabetes mellitus patients are treated with insulin injections rather than oral tablets. Suggest a reason why injections are necessary. Also state the role of insulin in the body.

◆ Control and Coordination

Q25. medium exam-ready [3]

What is geotropism? With the help of an example each, distinguish between positive geotropism and negative geotropism in plants.

◆ Control and Coordination

Q26. medium exam-ready [3]

Draw a neat labelled diagram of a neuron. Name any two parts shown in your diagram and state the specific function of each.

◆ Control and Coordination

Q27. deep exam-ready [3]

What happens at the synapse between two neurons? Why is it important that a synapse converts an electrical signal into a chemical signal rather than simply passing the electrical impulse directly?

◆ Control and Coordination

Q28. medium exam-ready [3]

How does a pea plant tendril coil around a support? Name the type of movement involved and explain the mechanism that causes the tendril to wrap.

◆ Control and Coordination

Q29. deep exam-ready [3]

Compare the manner in which the nervous system and the endocrine system achieve control and coordination in animals. State one advantage that each system has over the other.

◆ Control and Coordination

Q30. medium exam-ready [3]

Explain how auxin causes a plant shoot to bend towards light. In your answer, describe (i) where auxin is produced, (ii) how it redistributes in response to light, and (iii) the cellular mechanism by which bending occurs.

◆ Control and Coordination

Q31. medium exam-ready [5]

(i) Define a reflex arc. Draw a labelled diagram of a reflex arc and trace the complete sequence of events that occur when you accidentally step on a sharp object.

(ii) Explain why reflex arcs evolved in animals, and why they continue to be useful even in animals that possess highly developed brains.

◆ Control and Coordination

Q32. medium exam-ready [5]

(i) Draw a neat labelled diagram of the human brain identifying its three major regions.

(ii) Describe the specific functions of the fore-brain, cerebellum, and medulla oblongata.

(iii) Why is damage to the medulla oblongata considered immediately life-threatening, whereas damage to the cerebellum, though serious, is not?

◆ Control and Coordination

Q33. medium exam-ready [5]

(i) Plants show two broad categories of movement — one that involves growth and one that does not. Explain each category with a suitable example, and identify the underlying mechanism in each case.

(ii) Name four plant hormones. For each, state whether it promotes or inhibits growth, and give one specific function.

◆ Control and Coordination

Q34. medium exam-ready

[4]

Read the following and answer the questions that follow:

Rahul was studying late at night when he accidentally placed his hand on a hot soldering iron. He instantly pulled his hand away before he even registered the pain consciously. His mother noticed this and asked him to explain the mechanism behind such a rapid response.

- (a) Name the type of action described above and state which part of the central nervous system coordinates it. (1 mark)
(b) Trace the complete pathway of the nerve signal from the moment Rahul's hand touches the hot iron to the moment his hand is withdrawn. (2 marks)
(c) Even though the spinal cord coordinates this response, Rahul still feels the pain a moment later. Explain why. (1 mark)

◆ Control and Coordination

Q35. medium exam-ready

[4]

Read the following and answer the questions that follow:

Dr. Sharma is examining two patients. Patient A has a swollen neck and complains of sluggish metabolism. Patient B is a child whose growth has been significantly slower than that of other children his age, and doctors find no genetic abnormality.

- (a) Identify the likely hormonal deficiency in Patient A. Name the hormone, its gland, and the dietary mineral whose absence can cause this condition. (2 marks)
(b) Identify the likely hormonal deficiency in Patient B. Name the hormone and the gland that secretes it. (1 mark)
(c) What general mechanism does the body use to ensure that hormone levels do not become excessively high or low? (1 mark)

◆ Control and Coordination

Q36. deep exam-ready

[4]

Read the following and answer the questions that follow:

A biology teacher set up an experiment using freshly germinated bean seeds placed on a wire mesh over a water-filled flask. The setup was placed inside an open-sided box facing a window. After three days, the shoots were observed to bend towards the light and the roots bent away from the light.

- (a) Name the type of tropism shown by (i) the shoot and (ii) the root in response to light. Are these responses the same or opposite in direction? (1 mark)
(b) The teacher then placed identical fresh seedlings in a dark box with a small hole on one side. After three days, the shoots bent towards the hole. Name the hormone responsible for this bending, state where it is produced, and explain the mechanism by which it causes the shoot to curve. (2 marks)
(c) Name one other type of tropism in plants and give one specific example from the plant kingdom. (1 mark)

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