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Control and Coordination — CBSE Class 10 Science Chapter Test

FREE CHAPTER TEST · CLASS X · SCIENCE (086) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	20 (A 10 · B 4 · C 3 · D 1 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 20 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–14 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q15–17 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q18 is a long answer (LA) type question, carrying 5 marks.
7. In Section E, Q19–20 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Science (086) Sample Question Paper 2026-27, at about half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Control and Coordination · **Topics:** Neurons and synapses · Reflex action and reflex arc · Human brain · Voluntary and involuntary actions · Tropic movements in plants · Plant hormones · Animal hormones and endocrine glands · Feedback mechanism

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. In a neuron, information from the surroundings is first acquired at the 1

(A) axon (B) cell body

(C) dendrite (D) nerve ending

2. Which plant hormone inhibits growth and causes wilting of leaves? 1

(A) Abscisic acid (B) Auxin

(C) Gibberellin (D) Cytokinin

3. People are advised to use iodised salt in their diet to prevent 1

(A) diabetes (B) dwarfism

(C) night blindness (D) goitre

4. Which part of the brain is responsible for maintaining the posture and balance of the body? 1

(A) Medulla (B) Cerebellum

(C) Fore-brain (D) Pons

5. The growth of a pollen tube towards the ovule is an example of 1

(A) phototropism (B) chemotropism

(C) geotropism (D) hydrotropism

6. Which hormone is secreted directly into the blood by the adrenal glands when a person is frightened? 1

(A) Insulin (B) Thyroxin

(C) Adrenaline (D) Growth hormone

7. The junction between the nerve ending of one neuron and the dendrite of the next is called a 1

(A) synapse (B) receptor

(C) reflex arc (D) effector

8. Which pair of hormone and gland controls the level of sugar in the blood? 1

(A) Thyroxin — thyroid (B) Adrenaline — adrenal

(C) Growth hormone — pituitary (D) Insulin — pancreas

9. **Assertion (A):** When we touch a very hot object, we pull our hand away before we feel the pain. 1
Reason (R): In a reflex action the nerve connection between the input and the output is made in the spinal cord, before the information reaches the brain.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** The folding of the leaves of the touch-me-not (sensitive) plant when touched is a growth movement. 1

Reason (R): The cells of the touch-me-not plant change shape by changing the amount of water in them.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 4 very short answer (VSA) type questions of 2 marks each.

11. (a) Trace the path of a reflex arc, naming its parts in order, for the action of pulling the hand away from a hot object. 2

OR

(b) Name the parts of a neuron through which information travels, in order, and explain how it passes from one neuron to the next.

12. Give two differences between coordination by the nervous system and coordination by hormones in animals. 2

13. What is a feedback mechanism? Explain it using the example of insulin. 2

14. How are the brain and the spinal cord protected in the human body? 2

SECTION C

This section comprises 3 short answer (SA) type questions of 3 marks each.

15. (a) Name the plant hormone that (i) promotes cell division, (ii) helps the growth of the stem, (iii) inhibits growth. In which part of the plant is auxin made, and what does it do? 3

OR

(b) (i) How do the root and the shoot of a plant respond to gravity? Name the response. (ii) How do shoots respond to light and roots to water? (iii) How do the tendrils of a pea plant climb a support?

16. Which part of the brain controls each of the following? (i) Walking along a straight line, or riding a bicycle. (ii) Salivation and vomiting. (iii) Thinking and recognising a familiar face. 3

17. Give two limitations of communication by electrical impulses through the nervous system. How do multicellular organisms overcome them? 3

SECTION D

This section comprises 1 long answer (LA) type questions of 5 marks each.

18. (a) Name the hormone, and the gland that secretes it, for each of the following: 5

(i) It makes the heart beat faster and supplies more oxygen to the muscles in an emergency.

(ii) It regulates carbohydrate, protein and fat metabolism, and its production needs iodine.

(iii) Its deficiency in childhood leads to dwarfism.

(iv) It brings about the changes associated with puberty in boys.

(v) Its deficiency causes diabetes.

OR

(b) (i) Distinguish between voluntary and involuntary actions, giving one example of each and the part of the brain that controls each.

(ii) What is a reflex action? Give two examples.

(iii) Why are reflex actions useful?

(iv) How do muscles contract when they receive a nerve impulse?

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

19. A student kept a potted seedling in a box with a small hole on one side, so that light entered only from that side. After a few days the shoot had bent towards the hole, while the roots had grown downwards.

(i) Name the response of the shoot shown here. [1]

(ii) Name the plant hormone responsible for this bending. [1]

(iii) Explain how this hormone causes the shoot to bend towards the light. [2]

OR

(iii) Name the response of the roots, and explain how the responses of roots and shoots to gravity differ. [2]

20. A ten-year-old boy is much shorter than other children of his age. His doctor says that a gland at the base of the brain is not producing enough of a hormone that regulates growth and development.

(i) Name the gland the doctor is referring to. [1]

(ii) Name the condition caused by a deficiency of this hormone in childhood. [1]

(iii) What is the role of the hypothalamus in the release of this hormone, and how does the hormone reach the parts of the body where it acts? [2]

OR

(iii) Name the hormone made by the thyroid gland, give its function, and explain why its deficiency can cause goitre. [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(C)	(A)	(D)	(B)	(B)	(C)	(A)	(D)	(A)	(D)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (C). Information is acquired at the dendritic tip, travels through the cell body and along the axon as an electrical impulse to the nerve ending.

Q2. Answer (A). Abscisic acid inhibits growth; auxin and gibberellins promote growth and cytokinins promote cell division.

Q3. Answer (D). Iodine is needed by the thyroid gland to make thyroxin; its deficiency can cause goitre (a swollen neck).

Q4. Answer (B). The cerebellum, in the hind-brain, controls the precision of voluntary actions and the posture and balance of the body.

Q5. Answer (B). The pollen tube grows in response to chemicals from the ovule: chemotropism.

Q6. Answer (C). Adrenaline prepares the body for an emergency: the heart beats faster, more blood goes to the skeletal muscles and breathing becomes faster.

Q7. Answer (A). At the synapse the electrical impulse sets off the release of chemicals that cross the gap and start an impulse in the next neuron.

Q8. Answer (D). Insulin, made by the pancreas, regulates the blood sugar level; its deficiency causes diabetes.

Q9. Answer (A). Both true: the reflex arc is completed in the spinal cord, so the response is quick; the information also goes on to the brain, which is when we feel the pain. Answer (A).

Q10. Answer (D). A is false: the movement happens at once and does not involve growth. R is true and explains how the leaves fold. Answer (D).

Q11. (2 marks) Answer: (a) receptor → sensory neuron → spinal cord (relay neuron) → motor neuron → effector muscle; (b) dendrite → cell body → axon → nerve ending; chemicals cross the synapse.
(a) Receptor (in the skin) → sensory neuron → relay neuron in the spinal cord [1]
→ motor neuron → effector (the muscles of the arm, which contract and pull the hand away). [1]
OR (b) Dendrite → cell body → axon → nerve ending (the information travels as an electrical impulse). [1]
At the nerve ending the impulse releases chemicals, which cross the gap (synapse) and start a similar impulse in the dendrite of the next neuron. [1]

Q12. (2 marks) Answer: Nervous: electrical impulses through nerves, quick and short-lived; hormonal: chemicals through blood, slower and longer-lasting.
The nervous system sends electrical impulses along nerve fibres to particular cells, and its responses are very quick and short-lived. [1]
Hormones are chemicals carried by the blood to target cells all over the body; their action is slower but lasts longer. [1]

Q13. (2 marks) Answer: Hormone release is regulated by its own effect; rising sugar → more insulin, falling sugar → less.
The timing and amount of a hormone released are regulated by the effect it produces; this is a feedback mechanism. [1]
When the blood sugar level rises, the cells of the pancreas detect it and release more insulin; as the sugar level falls, insulin secretion is reduced. [1]

Q14. (2 marks) Answer: Skull and fluid around the brain; vertebral column around the spinal cord.
The brain sits inside a bony box (the skull), within a fluid-filled balloon that provides further shock absorption. [1]
The spinal cord is protected by the vertebral column (backbone). [1]

Q15. (3 marks) Answer: (a) cytokinins; gibberellins; abscisic acid; shoot tip, cell elongation; (b) roots +ve, shoots −ve geotropism; phototropism, hydrotropism; tendrils coil round supports.
(a) (i) Cytokinins (present in high concentration where cell division is rapid, as in fruits and seeds). [1]
(ii) Gibberellins. (iii) Abscisic acid. [1]
Auxin is made at the tip of the shoot and helps the cells to grow longer. [1]
OR (b) (i) Roots grow towards gravity (positive geotropism); shoots grow away from it (negative geotropism). [1]
(ii) Shoots grow towards light (phototropism). Roots grow towards water (hydrotropism). [1]
(iii) Tendrils of a pea plant coil round a support they touch: the part of the tendril away from the support grows faster. [1]

Q16. (3 marks) Answer: (i) cerebellum; (ii) medulla; (iii) fore-brain.
(i) The cerebellum (in the hind-brain), which controls the precision of voluntary actions and balance. [1]
(ii) The medulla (in the hind-brain), which controls involuntary actions such as blood pressure, salivation and vomiting. [1]
(iii) The fore-brain, the main thinking part of the brain. [1]

Q17. (3 marks) Answer: Impulses reach only connected cells, cells need time to reset; hormones diffuse widely.
Electrical impulses reach only those cells that are connected by nervous tissue; [1]
and once a cell has generated an impulse it needs time to reset before it can generate another, so it cannot send impulses continuously. [1]
So organisms also use chemical communication: hormones released by cells diffuse all around the original cell (and are carried by the blood), and other cells detect them with special molecules on their surfaces. [1]

Q18. (5 marks) Answer: (a) adrenaline–adrenal; thyroxin–thyroid; growth hormone–pituitary; testosterone–testes; insulin–pancreas; (b) voluntary vs involuntary with examples; reflex action; quick protection; proteins change shape and arrangement.
(a) (i) Adrenaline — adrenal glands. [1]
(ii) Thyroxin — thyroid gland. [1]
(iii) Growth hormone — pituitary gland. [1]
(iv) Testosterone — testes. [1]
(v) Insulin — pancreas. [1]
OR (b) (i) Voluntary actions are done by choice, under the control of the fore-brain (e.g. writing, talking). Involuntary actions happen without thinking, under the control of the mid-brain and hind-brain (e.g. heartbeat, breathing). [1]
(ii) A reflex action is a sudden, automatic response to a stimulus in the environment, such as pulling the hand back from a flame or blinking at a bright light. [1]
(iii) Reflexes are quick, protective responses that do not wait for thinking; much of the processing is in the spinal cord, close to the input. [1]
(iv) Muscle cells have special proteins that change their shape and arrangement in response to nerve impulses, which makes the cells shorter: the muscle contracts. [2]

Q19. (4 marks) Answer: (i) phototropism; (ii) auxin; (iii)(a) auxin moves to the shaded side, which grows faster; (b) geotropism, roots +ve, shoots −ve.
(i) Phototropism (positive, towards light). [1]
(ii) Auxin. [1]
(iii)(a) Auxin made at the shoot tip diffuses towards the side away from the light. [1]
It makes the cells on that side grow longer faster, so the shoot bends towards the light. [1]
OR (iii)(b) Geotropism. [1]
Roots grow downwards, towards gravity (positively geotropic); shoots grow upwards, away from it (negatively geotropic). [1]

Q20. (4 marks) Answer: (i) pituitary; (ii) dwarfism; (iii)(a) hypothalamus releasing factor stimulates pituitary; hormones travel in the blood; (b) thyroxin, metabolism; iodine needed.

(i) The pituitary gland. [1]

(ii) Dwarfism. [1]

(iii)(a) The hypothalamus releases a growth hormone releasing factor, which stimulates the pituitary to release growth hormone. [1]

Endocrine glands release hormones into the blood, which carries them to the target organs. [1]

OR (iii)(b) Thyroxin regulates carbohydrate, protein and fat metabolism in the body. [1]

Iodine is needed to make thyroxin; without enough iodine the thyroid swells, which is goitre. [1]

All questions are original and © Master Testing Agency. Free to download and use for personal practice; not for resale. Every answer in this paper was checked against the NCERT Class 10 Science textbook, and each multiple-choice key was matched by computer against tables of glands, hormones, brain regions and tropisms.