Control and Coordination

Standard difficulty · 20 questions · 40 marks · Time: 37 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. The hormone that regulates how the body uses carbohydrates, proteins and fats is:

(a) thyroxin **(b)** growth hormone
(c) a releasing hormone **(d)** oestrogen

2. Which part of the nervous system controls pulling the hand away from a hot object?

(a) The mid-brain **(b)** The hypothalamus
(c) The spinal cord **(d)** The medulla

3. The functional unit of the nervous system is the:

(a) alveolus **(b)** nephron **(c)** hormone **(d)** neuron

4. In a reflex arc, which comes immediately after the motor neuron?

(a) Sensory neuron **(b)** Receptor (e.g. in the skin)
(c) Effector (muscle) **(d)** Relay neuron in the spinal cord

5. A root growing down, towards gravity is an example of:

(a) hydrotropism **(b)** negative geotropism
(c) a growth response to touch **(d)** positive geotropism

6. Talking to a friend is:

(a) a voluntary action **(b)** a hormonal action
(c) an involuntary action **(d)** a reflex action

7. A nerve impulse travels 0.8 m along a neuron at 60 m/s. The time taken is:

(a) 1.33 ms **(b)** 133.33 ms **(c)** 48 ms **(d)** 13.33 ms

8. Assertion (A): A tomato seedling with a lamp on its right bends towards the right.
Reason (R): Auxin collects on the shaded side of the shoot and makes the cells there grow longer.

(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.

Section B — Short answer — 8 × 2 = 16 marks

9. Name the hormone that controls the changes at puberty in boys, and the gland that secretes it.

10. Which part of the nervous system controls the release of hormones by the pituitary gland? Is it part of the brain?

11. In a ruler-drop test, a student catches a falling ruler after it has dropped 24.2 cm. Using $t = \sqrt{(2d \div g)}$ with $g = 10\ m/s^2$, find the reaction time in milliseconds.

12. What is a reflex action? Give an example.

13. Name the response shown by a root growing towards a source of water. What is the stimulus?

14. In a reflex action, the message travels 1 m along a sensory neuron to the spinal cord and 0.8 m along a motor neuron to the muscle, at 100 m/s. How long does the journey take (ignore the time at the synapses)?

15. Give two differences between auxin and abscisic acid.

16. Classify each as a voluntary, an involuntary or a reflex action: the movement of food in the intestine; sneezing; the mouth watering at the sight of food.

Section C — Word problems — 4 × 4 = 16 marks

17. Draw and describe the structure of a neuron.

18. In three ruler-drop trials, the ruler fell 28.8, 45, 5 cm for student A and 31.25, 11.25, 9.8 cm for student B. Using $t = \sqrt{(2d \div g)}$, $g = 10\ m/s^2$, find each student's reaction times and the average for each, in milliseconds. Who reacts faster?

19. A bean plant seedling is turned upside down. Describe how it responds and explain why.

20. A child touches a cactus thorn and pulls the hand away at once. (a) What kind of action is this? (b) Trace the path of the message. (c) If the total path is 2 m and impulses travel at 40 m/s, how long does the message take? (d) Why is the brain not needed for this action?

Want another sheet on this chapter? In the Ambiful Worksheets app every sheet is new, with its answer key, and your child never gets the same question twice.
Scan the code to get the free app, or open **worksheets.ambiful.com/get**

Answer key

Control and Coordination · AW-10S-CAC-2026-V1 · For parents — fold back or tear off before handing the sheet to your child.

Q	Answer	Working
1	**(a) thyroxin**	secreted by the thyroid gland
2	**(c) The spinal cord**	—
3	**(d) neuron**	—
4	**(c) Effector (muscle)**	receptor (e.g. in the skin) → sensory neuron → relay neuron in the spinal cord → motor neuron → effector (muscle)
5	**(d) positive geotropism**	—
6	**(a) a voluntary action**	done by choice, controlled by the fore-brain
7	**(d) 13.33 ms**	0.8 ÷ 60 s = 13.33 ms
8	**(a) Both A and R are true, and R is the correct explanation of A.**	A is true: the shoot bends towards the light, on the right. R is true and explains A.
9	**Testosterone; the testes**	—
10	**The hypothalamus; yes, it is part of the fore-brain**	—
11	**220 ms**	d = 0.242 m; t = √(2 × 0.242 ÷ 10) = √0.0484 = 0.22 s
12	**A sudden, automatic response to a stimulus, without thinking, e.g. pulling your hand away from a hot object.**	—
13	**Hydrotropism; the stimulus is water**	—
14	**18 ms**	(1 + 0.8) ÷ 100 s
15	**Auxin promotes growth by making cells grow longer; abscisic acid inhibits growth and causes wilting of leaves.**	—
16	**the movement of food in the intestine: involuntary; sneezing: reflex; the mouth watering at the sight of food: involuntary**	—
17	**A neuron has a cell body with a nucleus, short branched dendrites that receive information, and a long axon that carries the electrical impulse away to the nerve ending, where chemicals are released into the synapse.**	—
18	**A: 240, 300, 100 ms, average 213.33 ms; B: 250, 150, 140 ms, average 180 ms; faster: B**	convert cm to m, then t = √(d ÷ 5)

Q	Answer	Working
19	**Its root turns and grows down again and its shoot grows up again, because of geotropism.**	—
20	**(a) A reflex action. (b) Receptor in the skin → sensory neuron → relay neuron in the spinal cord → motor neuron → arm muscle. (c) 50 ms. (d) The spinal cord processes the message close by, which is faster and protects the body; the brain is informed later.**	2 ÷ 40 s