

GCSE Biology B (Twenty First Century Science)
J257/03 Breadth in Biology (Higher)

Question Set 9

1

Reflexes help us to respond to stimuli. In a simple reflex, nerve impulses are passed along a pathway called a reflex arc.

The diagram in **Fig. 1.1** shows a reflex arc.

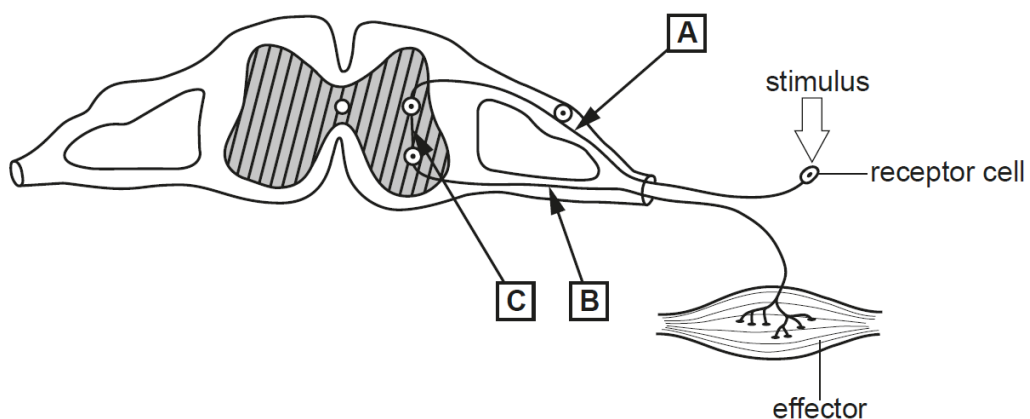


Fig. 1.1

(a) Name the structures labelled **A**, **B** and **C**.

	Name of structure
A	<i>Sensory neurone</i>
B	<i>Motor neurone</i>
C	<i>Relay neurone</i>

[3]

(b) Write down **one** advantage of a reflex arc **not** involving the brain.

Rapid response ∴ protective role

[1]

(c) Two students want to investigate reflex actions.

They set up an experiment as shown in Fig. 1.2.

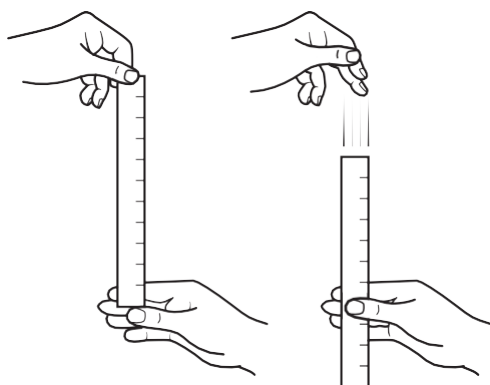


Fig.1.2

Each student decides to use a different method.

- Using a stop clock, student A measures the time it takes for the participant to catch the ruler.
- Student B measures the distance the ruler falls through the participant's hand

- (i) Write down **one** reason why student B's method is better than student A's. [1]
Greater accuracy and less uncertainty as student A must account for their reaction time whereas student B does not have to.
- (ii) Write down **two** variables that both students would need to keep the same. [2]
**Same hand (i.e. dominant hand) of participant used to catch the ruler.
Weight of the ruler**
- (iii) Both students decide to repeat their experiment.

Explain why.

To increase the reliability and precision of the results, enabling any anomalies to be identified and allowing the calculation of a mean. [1]

- (d) (i) Some nerve impulses can travel at a speed of 119 m/s.

Which of the following shows 119 written in standard form?

Tick (✓) **one** box.

1.19×10^2

1.19×10^{-2}

11.9×10^1

119×10

[1]

(ii) Which part of a neuron speeds up transmission of a nerve impulse?

Tick (✓) **one** box.

Axon

Fatty sheath

Neurotransmitter

Synapse

[1]

Total Marks for Question Set 9 : 10

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