

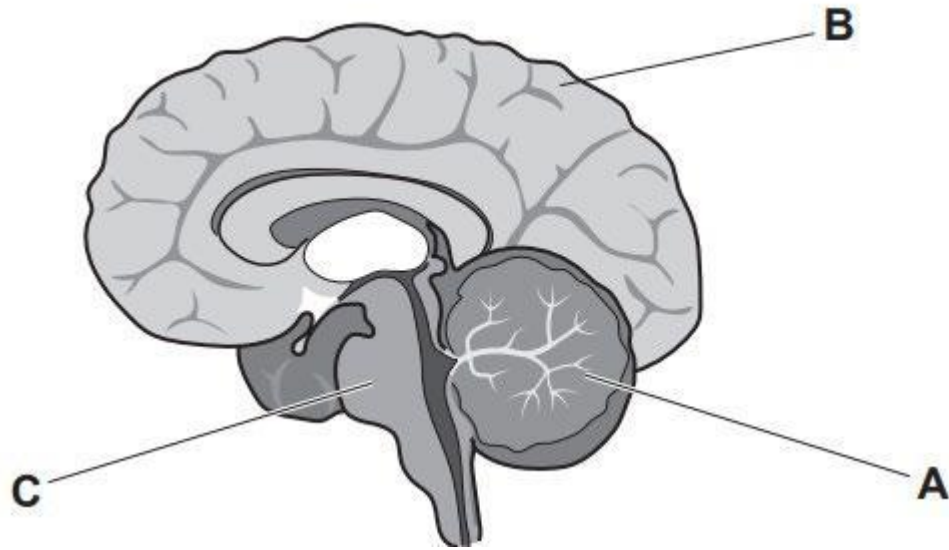
GCSE Biology B (Twenty First Century Science)
J257/03 Breadth in Biology (Higher)

Question Set 3

1

Different areas of the brain are responsible for different functions.

Three areas have been labelled **A**, **B** and **C** on the diagram of the brain.



(a) (i) The table describes the functions of areas **A**, **B** and **C**.

Complete the table by writing the correct area of the brain for each function.

Area of the brain	Function
A	Responsible for conscious movement.
B	Responsible for intelligence, memory, consciousness and language.
C	Responsible for the regulation of heart rate and breathing rate.

[2]

(ii) Scientists want to find out more about the functions of the brain. One way they can do this is to use patients with brain damage.

Suggest why there are concerns about using patients with brain damage.

[1]

May cause further damage to brain.

(iii) Write down **one other** way scientists could study the brain.

[1]

Using fMRI

(b) The cerebral cortex is a highly folded area of the brain made up of billions of neurons.

Describe the features of a neuron that allow it to transmit electrical impulses quickly and over long distances.

[2]

The axon has a fatty sheath and is myelinated. The axon is long -

(c) Parkinson's disease is a disease of the central nervous system.

It is caused by the loss of neurons in one part of the brain. These neurons are responsible for producing a transmitter substance called dopamine.

(i) Dopamine acts as a transmitter substance in parts of the brain and nervous system that control movement.

Which neurons are most likely to be affected by Parkinson's disease?

Tick (✓) **one** box.

Relay neurons only.

Relay and motor neurons.

Sensory neurons only.

Sensory and motor neurons.

[1]

(ii) At a synapse, transmitter substances are released from the first neuron.

Which word describes how the transmitter substances move across the gap from the first neuron to the second neuron?

Tick (✓) **one** box.

Active transport

Diffusion

Net movement

Osmosis

[1]

(iii) Scientists have been investigating the use of stem cells in the treatment of Parkinson's disease.

Suggest **one** feature of stem cells that makes them useful in the treatment of Parkinson's disease.

They are unspecialised so can still differentiate into neurones.

[1]

Total Marks for Question Set 3: 9

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