

Nervous Transmission - Mark Scheme

Q1.

Question number	Answer	Additional guidance	Mark
	<p>An explanation that makes reference to four of the following:</p> <ul style="list-style-type: none"> • potential difference across axon changing (1) • due to increased permeability to sodium ions / (voltage gated) sodium channels open (1) • sodium ions { move into the axon / cause depolarisation } (1) • (followed by) an increased permeability to potassium ions / potassium channels open (1) • potassium ions { move out of the axon / cause repolarisation of the membrane } (1) 	e.g. when depolarised from negative to positive or from -70mV to +40mV or repolarised from +40mV to -70mV	(4)

Q2.

Question Number	Acceptable Answer	Additional Guidance	Mark
(a)	<ul style="list-style-type: none"> • Idea that {cell body / centron} in middle / dendrites at both ends (1) 		(1)

Question Number	Acceptable Answer	Additional Guidance	Mark
(b)	<p>An explanation that makes reference to five of the following:</p> <ul style="list-style-type: none"> • reference to Schwann cells covering the axon in myelinated neurone (1) • {myelin/Schwann cells} provide insulation (1) • {action potential/depolarisation} at nodes of Ranvier (1) • local currents occur over a longer distance (1) • reference to saltatory conduction (1) • impulse jumps from node to node (1) 		(5)

Q3.

Question Number	Answer				Additional Guidance	Mark
(i)	Stage	Voltage-gated K⁺ channel open	Voltage-gated K⁺ channel closed	Voltage-gated Na⁺ channel closed	3 columns correct = 2 marks 2 columns correct = 1 mark	
	Depolarisation		✓			
	Repolarisation	✓		✓		
						(2)

Question Number	Answer	Mark
(ii)	A ;	(1)