

Nervous System and Communication:

- 1) Distinguish between resting potential, action potential and generator potential? (3)
- 2) Draw a labelled diagram of a sensory and motor neurone and state their differences? (4)
- 3) Explain what is meant by the following terms; (6)
 - a. All or nothing
 - b. Hyperpolarisation
 - c. Refractory period
- 4) Describe how the resting membrane potential is set up and maintained? (3)
- 5) Draw a graph of an action potential, label the different stages and explain what happens during each stage? (10)
- 6) What is the importance of the refractory period? (3)
- 7) How does the brain distinguish between stimuli of different intensities? (2)
- 8) What is the myelin sheath and how does it improve the speed of conduction? (3)
- 9) Using a diagram, describe and explain the sequence of events which takes place during synaptic nerve transmission? (6)
- 10) Suggest how opioids such as morphine help to block pain sensation by its actions at the synapse? (3)
- 11) Suggest how nicotine helps to increase alertness by its actions at the synapse? (3)
- 12) The disorder Multiple Sclerosis is an autoimmune condition which leads to progressive paralysis; suggest the pathology? (3)
- 13) An anaesthetic drug such as tubocurarine leads to temporary paralysis of the muscles; suggest how it does this? (2)
- 14) Describe what would happen if a gene coding for the enzyme Acetylcholine esterase became mutated such that it lost its function? (2)
- 15) Describe and explain the role of synapses? (6)
- 16) How is unidirectional transmission maintained by the neurones and synapses? (2)
- 17) A particular drug blocks the voltage gated calcium channels; what effect is this likely to have and why? (3)
- 18) What is the significance of having voltage gated and non-voltage gated sodium channels in neurones? (2)
- 19) What is the difference between the absolute and relative refractory periods and why is this important? (3)
- 20) What is the potential difference at resting, generator and action potential? (3)
- 21) A particular drug blocks the sodium potassium ATPase pump; what effect will this have? (2)

- 22) Why do neurones have so many mitochondria? (2)
- 23) What is a neuromuscular junction? Draw a simple diagram to aid your answer? (3)
- 24) Atropine blocks the acetylcholine receptors. What effects will this have? (2)
- 25) What happens to the breakdown products of neurotransmitters such as acetylcholine after they have finished acting at the synapse and why is this important? (2)

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