

Unit I	Nervous System	Name _____	50
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Part A. Multiple Choice. Circle the letter of the **BEST** answer for each of the following (25 marks)

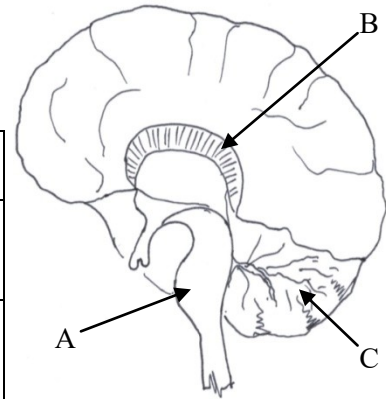
1. The nervous system in an embryo begins with the development of the
 - A. brain.
 - B. spinal cord.
 - C. sense organs.
 - D. peripheral nerves.
2. What protects the CNS from the skeletal system?
 - A. Meninges
 - B. Cerebrospinal fluid
 - C. Dorsal and ventral roots
 - D. Fatty tissue such as myelin
3. Which pair of associations is **TRUE**?
 - A. Temporal lobe - vision; frontal lobe - moving
 - B. Temporal lobe - interpreting words; frontal lobe - vision
 - C. Temporal lobe - interpreting words; frontal lobe - moving
 - D. Temporal lobe - moving; frontal lobe - interpreting words
4. Which of the following is function of a different brain part than the rest?
 - A. Seeing
 - B. Smelling
 - C. Thinking
 - D. Balancing
5. Impulses that generate movements start in the
 - A. cerebrum and are coordinated in the cerebellum.
 - B. cerebellum and go to the cerebrum for coordination.
 - C. cerebrum and go directly down the spinal cord to muscles.
 - D. cerebellum and go directly down the spinal cord to muscles.
6. The substances conducted to the posterior pituitary for secretion are
 - A. hormones delivered by blood capillaries.
 - B. hormones delivered by specialized neurons.
 - C. neurotransmitters delivered by blood capillaries.
 - D. neurotransmitters delivered by specialized neurons.
7. The hypothalamus and the medulla oblongata both monitor an aspect of blood. Which is a correct pairing?
 - A. Hypothalamus – blood pressure; medulla oblongata – blood temperature
 - B. Hypothalamus – blood pressure; medulla oblongata – chemical composition
 - C. Hypothalamus – blood temperature; medulla oblongata – chemical composition
 - D. Hypothalamus – chemical composition; medulla oblongata – blood temperature
8. Which is the correct order of structures an impulse encounters while travelling anteriorly along the spinal cord?
 - A. Medulla oblongata, pons, thalamus
 - B. Medulla oblongata, thalamus, pons
 - C. Pons, thalamus, medulla oblongata
 - D. Thalamus, medulla oblongata, pons
9. A correct sequence for spinal cord regions is
 - A. cervical, sacral, thoracic, lumbar
 - B. sacral, lumbar, thoracic, cervical
 - C. sacral, thoracic, lumbar, cervical
 - D. cervical, lumbar, thoracic, sacral
10. In which order would the following structures be encountered if one were to pierce the spinal cord with a needle?
 1. Pia mater
 2. Dura mater
 3. Grey matter
 4. White matter
 - A. 1, 2, 3, 4
 - B. 1, 2, 4, 3
 - C. 2, 1, 4, 3
 - D. 2, 1, 3, 4
11. Which would **MOST** likely result from severing a dorsal root?
 - A. A loss of feeling and paralysis
 - B. Paralysis but not a loss of feeling
 - C. A loss of feeling but not paralysis
 - D. Neither a loss of feeling nor paralysis

12. Which is a function of Schwann cells?
- Store ions for impulse transmission
 - Promote communication between neurons
 - Restrict ion movement across axomembrane
 - Form a continuous sheath on long neuron fibres
13. Which pair of neural structures is peripheral to the CNS?
- Motor axons and sensory dendrites
 - Sensory axons and motor dendrites
 - Interneuron cell bodies and dendrites
 - Motor neuron cell bodies and dendrites
14. Reflexive actions are involuntary and either
- autonomic or somatic.
 - somatic or sympathetic.
 - somatic or parasympathetic.
 - parasympathetic or sympathetic.
15. Which is characteristic of the resting potential in a neuron?
- Fluctuates when an impulse occurs
 - Is established by the activity of membrane proteins
 - Is easily maintained without the expenditure of energy
 - Describes the nature of the extracellular fluid relative to the axoplasm
16. Which of the following is a mismatch between a voltage reading and a description of activity?
- 10mV = sodium rushing in
 - +40mV = resting potential
 - 65mV = Na/K pump functions
 - +20mV = potassium rushing out
17. Which is a correct combination of simultaneous events associated with a nerve impulse?
- Up-swing, depolarization, Na gates are open
 - Up-swing, repolarization, Na gates are closed
 - Down-swing, depolarization, K gates are open
 - Down-swing, repolarization, K gates are closed
18. Myelinated nerve fibres conduct impulses more quickly than non-myelinated fibres because
- ion concentrations are greater at nodes of Ranvier.
 - myelin reduces the energy required for ion movement.
 - Schwann cells have surface proteins that speed up ion movement.
 - ions only cross the axomembrane in regions not covered by Schwann cells.
19. What is the role of calcium gates during synaptic transmission?
- Allow calcium ions into an axon.
 - Allow calcium ions into a dendrite.
 - Prevent calcium ions from entering an axon.
 - Prevent calcium ions from entering a dendrite.
20. In what sequence do the following participate during synaptic transmission?
- Enzymes
 - Calcium ions
 - Receptor sites
 - Secretory vesicles
- 1, 2, 3, 4
 - 4, 3, 2, 1
 - 2, 4, 3, 1
 - 1, 4, 3, 2
21. Depolarization of a postsynaptic membrane normally
- occurs just before exocytosis.
 - results in the opening of K gates.
 - requires the presence of synaptic vesicles.
 - allows the reception of neurotransmitters.
22. Motor axons of the sympathetic nervous system release
- adrenaline
 - acetylcholine.
 - noradrenaline.
 - acetylcholinesterase.
23. Increasing parasympathetic stimulation promotes
- deep breathing, increased peristalsis and decreased visual alertness.
 - deep breathing, decreased peristalsis and decreased visual alertness.
 - shallow breathing, increased peristalsis and decreased visual alertness.
 - shallow breathing, decreased peristalsis and increased visual alertness.
24. Heart rate can be increased by increasing the activity of the adrenal
- cortex and cerebral cortex.
 - medulla and cerebral cortex.
 - cortex and medulla oblongata.
 - medulla and medulla oblongata.
25. During the flight or fight response
- sweating increases.
 - heart rate becomes irregular.
 - blood is diverted to skeletal muscles.
 - parasympathetic stimulation increases.

Part B. Written Answers. Answer the following questions in the spaces provided. **(25 marks)**

1. Complete the following table by naming the indicated brain regions and describing a possible impairment that could result from damage to the indicated brain part. **(3 marks)**

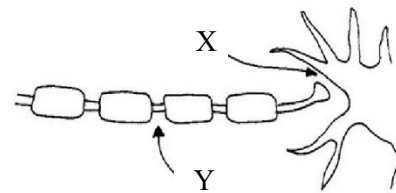
Brain Region	Name	Possible Impairment
A		
B		
C		



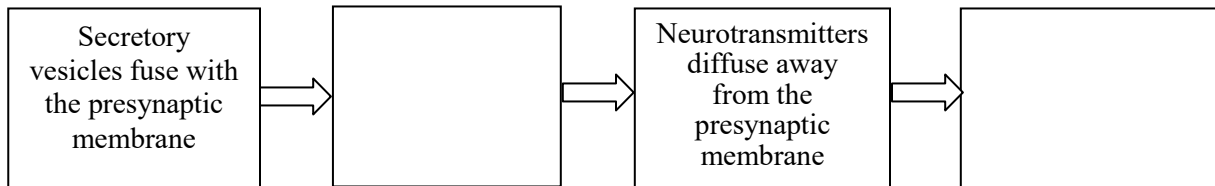
2. a. Name regions X and Y as labeled in the diagram to the right. **(2 marks)**

X = _____

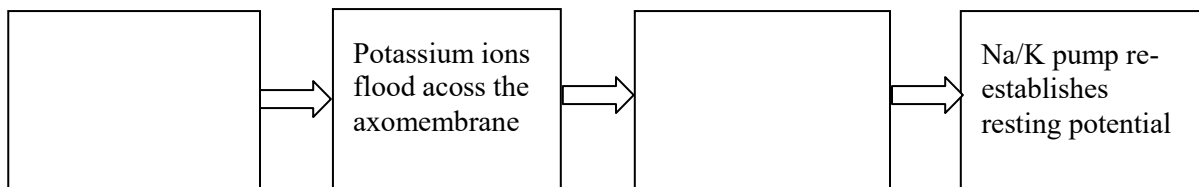
Y = _____



- b. Below is a partially completed flow chart describing activity that occurs at region X. Complete the flow chart. **(2 marks)**



- c. Below is a partially completed flow chart describing activity that occurs at region Y. Complete the flow chart. **(2 marks)**



3. Complete the following table, which contrasts various aspects of neurons. **(3 marks)**

Type of Nerve Cell	Length of Dendrite vs. Axon	Location of Cell Body	Function
motor neuron			
interneuron			
sensory neuron			

