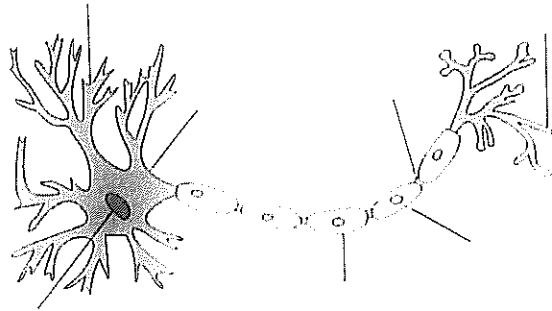


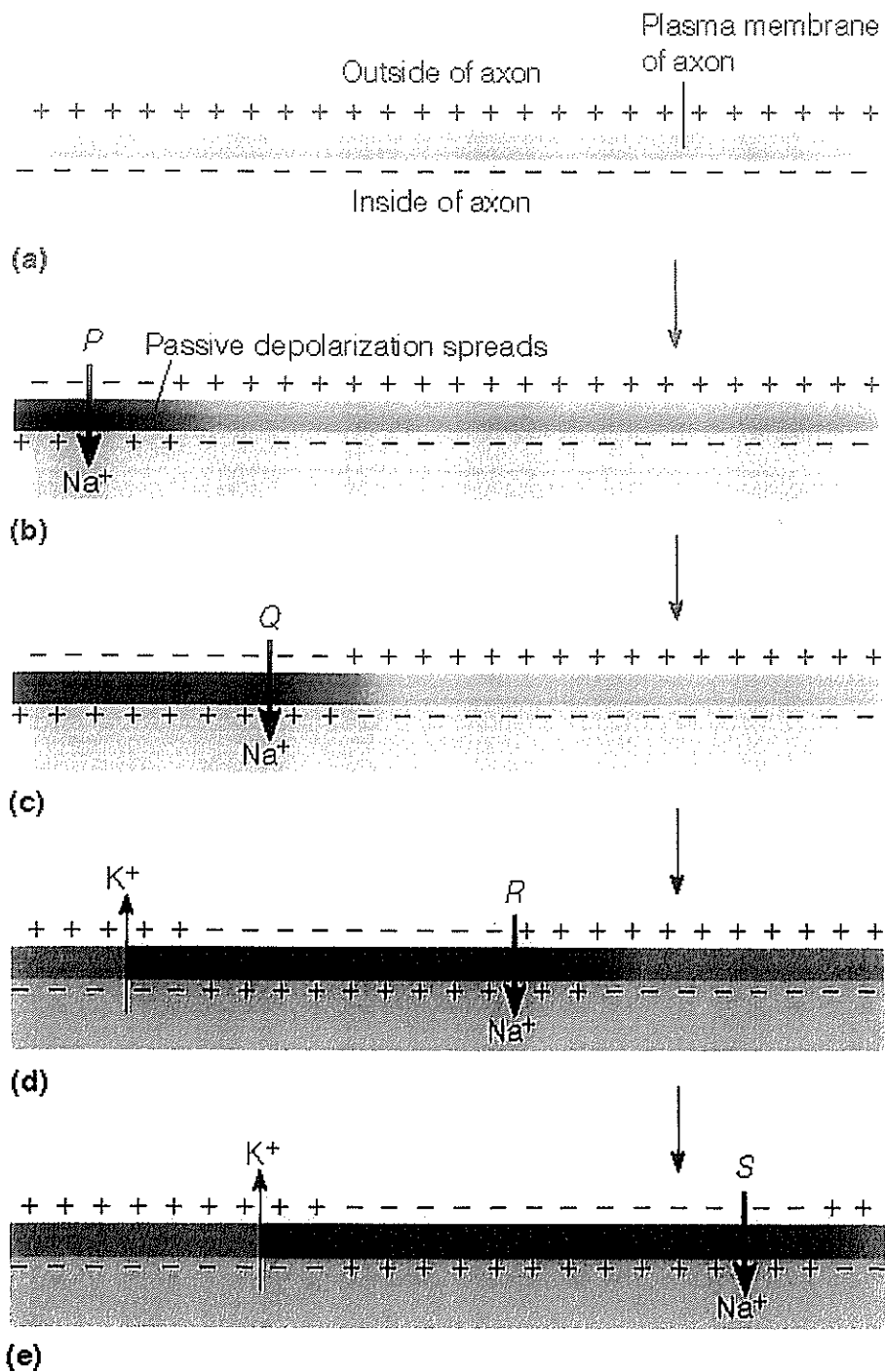
3A.1 Nervous system

Worksheet

1. Label the following neuron.

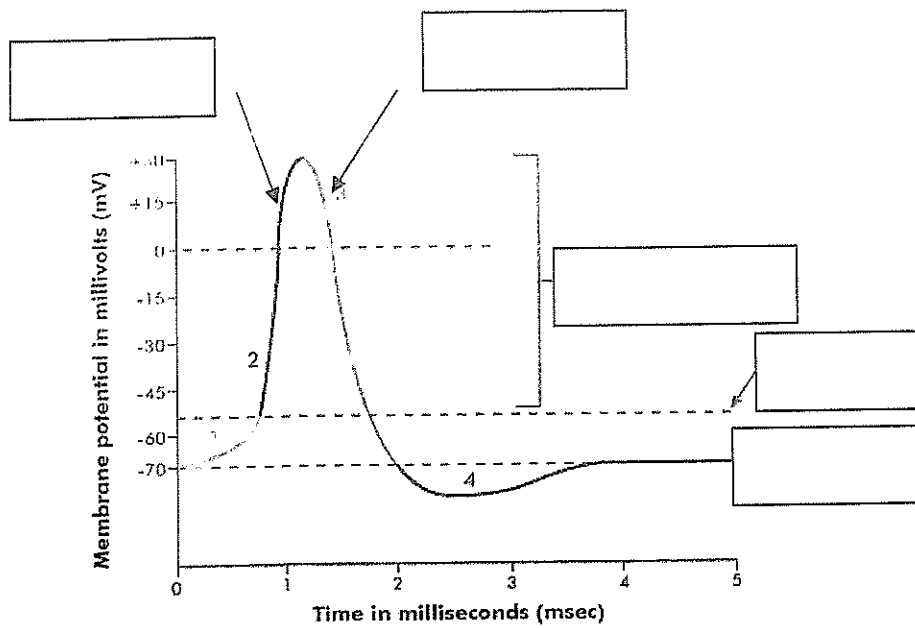


2. Explain the process of impulse propagation using the diagram below.

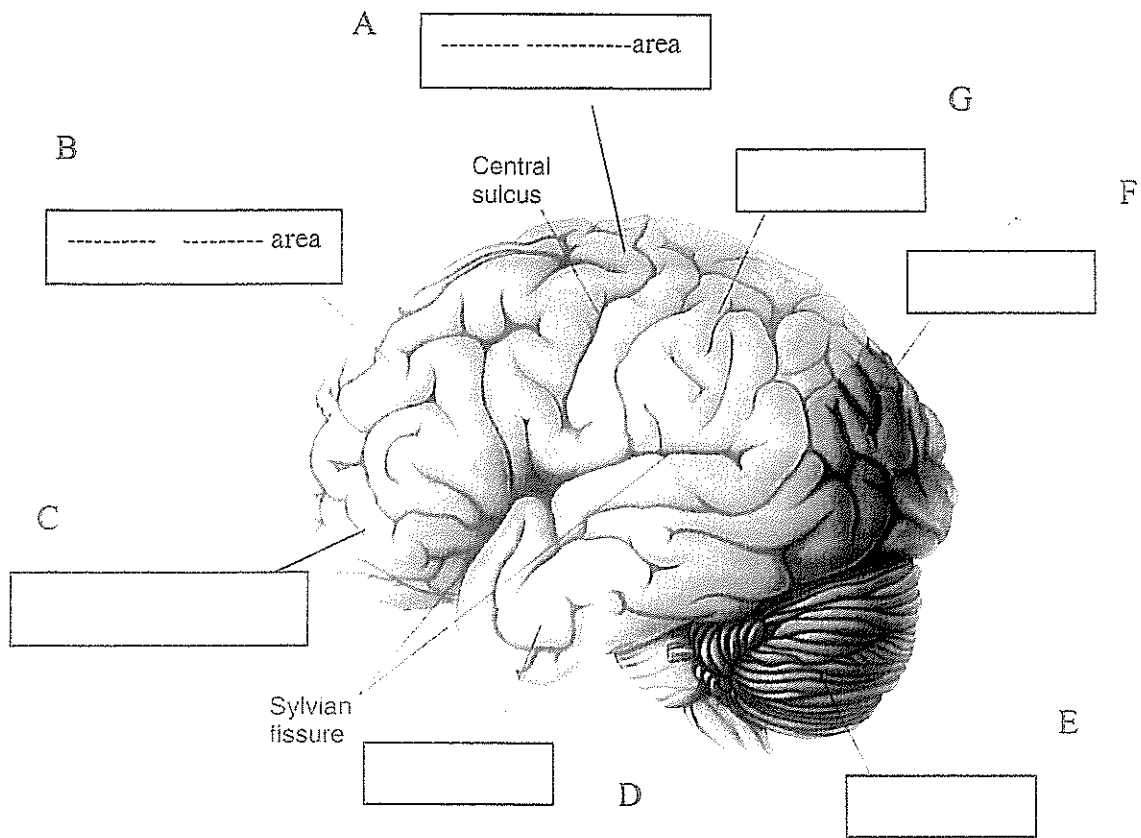


3. What is meant by all-or-none response?

4. Label the missing terms and explain what is happening at every section of the graph.



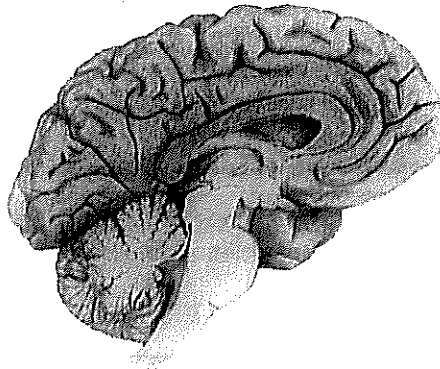
5. Label the following diagram and state the function of each structure.



- | | |
|---|-------|
| A | _____ |
| B | _____ |
| C | _____ |
| D | _____ |
| E | _____ |
| F | _____ |
| G | _____ |

6. Indicate where the following structures are found by using an arrow with a label for that structure.

Thalamus; hypothalamus; cerebrum; cerebellum; pons; medulla; spinal cord; pituitary gland; midbrain.



7. State three functions of cerebrospinal fluid(CSF).
8. Identify three major centres found in the medulla oblongata that play a key role in homeostasis.
9. Match each part of the brain with the correct function.

PART OF BRAIN		FUNCTION	
1.	cerebrum	A.	Links right and left cerebral hemispheres
2.	cerebellum	B.	Acts as a relay centre for sensory impulses
3.	pons	C.	Releases hormones important in regulating many endocrine glands
4.	midbrain	D.	Protects and nourishes the brain
5.	medulla oblongata	E.	Concerned with the control of balance and coordination
6.	hypothalamus	F.	Connects spinal cord and brain, and links various parts of brain
7.	thalamus	G.	Interprets sensory input and directs motor activity and controls intellect and memory
8.	corpus callosum	H.	Contains centres for control of heartbeat, blood pressure and breathing
9.	pituitary gland	I.	Coordinates many homeostatic activities like water balance and body temperature
10.	meninges	J.	Contains centres controlling eye movements in response to sound stimuli

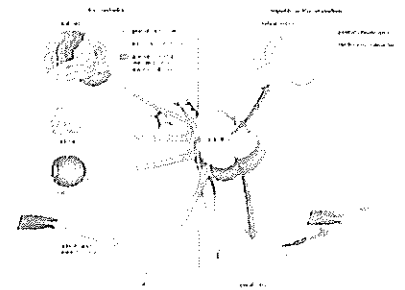
10. What type of neurons are interneurons?

11. Contrast the location of a cell body of a sensory neuron to that of a motor neuron.

12. Explain the phrase 'all or nothing response'.

13. List the 3 factors that affect the speed of impulse conduction.

14. Name two chemicals that can stimulate release of neurotransmitters and one chemical that inhibits their release.



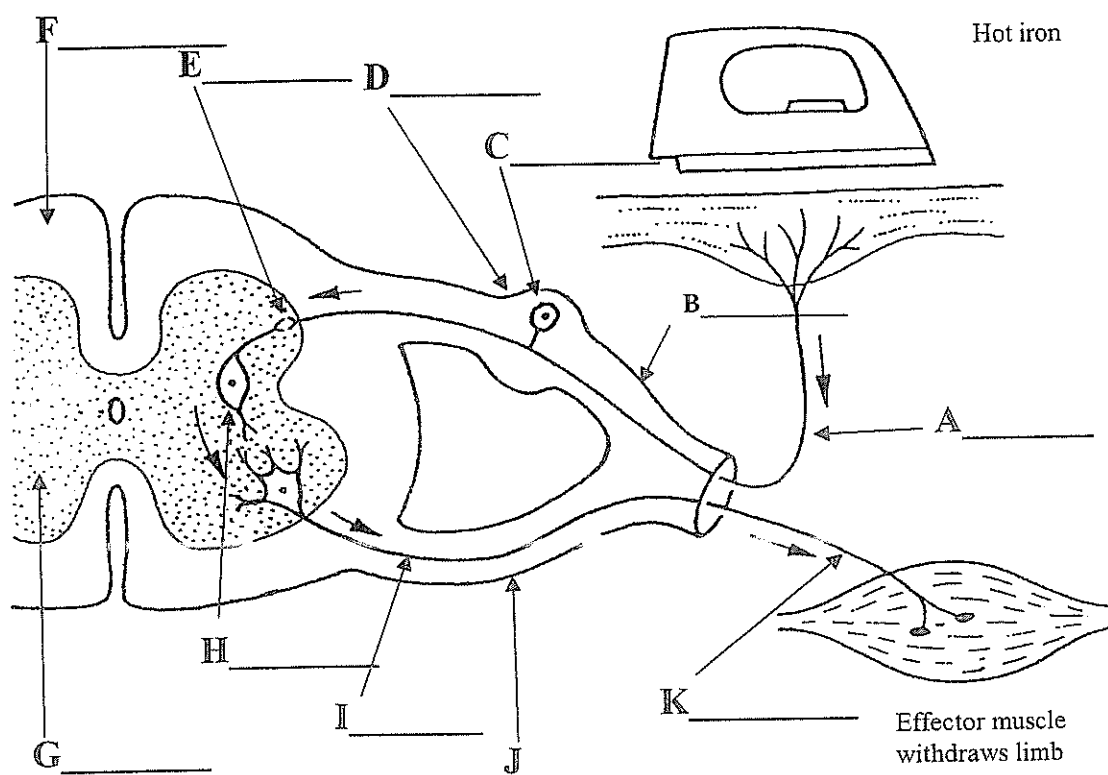
15. State two differences between somatic and autonomic nervous systems.

16. Explain the role of the cerebrum and cerebellum in the control of actions required to pick up a toy on the floor.

17. Contrast how sympathetic and parasympathetic innervation impact on body functions in the following table.

Body organ	Sympathetic stimulation	Parasympathetic stimulation
Heart		
Skin blood vessels		
Bladder		
Lungs		

18. Label the following diagram:



Answer the following questions:

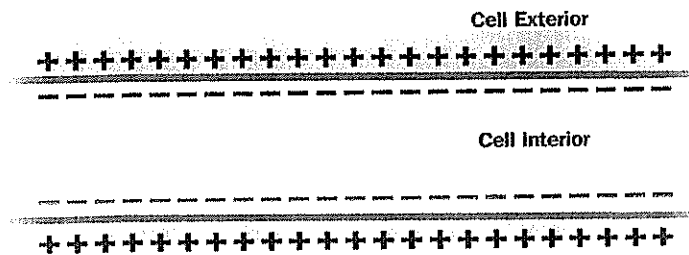
- H will also synapse with neurons to the brain. How do we know this?
- What effect would it have on
 - response and
 - sensation if we could block the impulse at
 - A
 - H before and after synapses connecting to the brain and
 - K
- What is the difference in structure between F and G? How does this arrangement contrast with that in the brain?
- What effect would a chemical have if it could block a neurotransmitter?
- Are spinal nerves mixed nerves?
- What is a conditioned reflex?
- How does a reflex action differ from
 - reactions controlled by the autonomic nervous system and
 - voluntary actions.

19. Where do Afferent somatic nerves originate from?
20. A student complained of a tummy ache. By which nervous division was that sensation picked up?
21. List three features of a spinal reflex.
22. Name four major body functions regulated by the hypothalamus.
23. What is the role of the cerebellum?
24. Describe how the neurotransmitter Dopamine is involved in the development of Parkinson's disease.
25. Define the nature of the disease Alzheimer and relate its symptoms to the pathology of the disease.

26. Explain the change in polarity across the neural membrane during depolarisation.

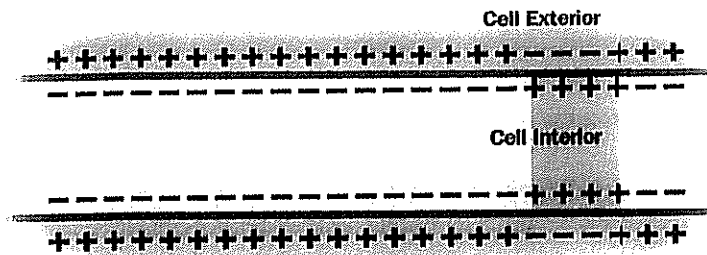
27. How do sodium ions move back to the extracellular fluid during repolarisation?

28. a) Explain what is happening in this section of an axon.



An action potential can only occur when opposite charges exist on two sides of a cell membrane.

b) Explain the event taking place here.



Electricity is created by a sudden reversal in charge. As you see here, an action potential is simply an electrical current that travels down an axon of a neuron.

http://outreach.mcb.harvard.edu/animations/actionpotential_short.swf