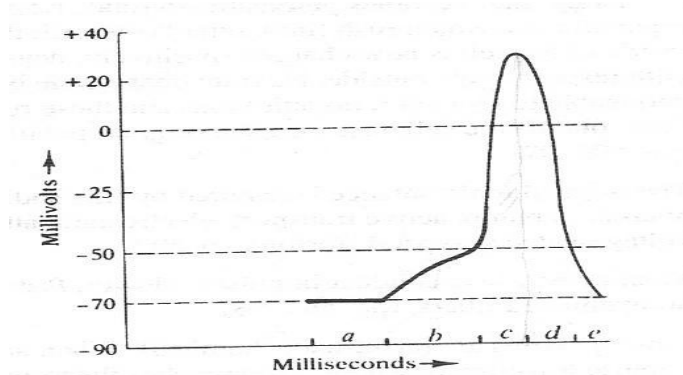


Exercise one :The nervous message

3 pts

1- The following diagram represents the effect of a transmitter substance on the membrane potential of a neuron.



A- In the diagram what is the resting potential?

- (a) +50 millivolts
- (b) 0 millivolts
- (c) -50 millivolts
- (d) -70 millivolts

B- Which of the following statements most accurately describes what is happening in part d of the diagram of the action potential?

- a- K^+ ions are flowing out of the cell.
- b- K^+ ions are flowing into the cell.
- c- Na^+ ions are flowing out of the cell.
- d- Na^+ ions are flowing into the cell.
- e- None of the above.

C- Part c in the graph stands for:

- a- K^+ ions are flowing out of the cell.
- b- K^+ ions are flowing into the cell.
- c- Na^+ ions are flowing out of the cell.
- d- Na^+ ions are flowing into the cell.

2- Where A stands for axon, D for dendrite, S for synapse, and CB for cell body, a typical sequence of structures between a receptor and an effector is:

- a- D-CB-A-S-D-CB-A
- b- A-D-CB-S-A-D-CB
- c- D-CB-A-S-A-CB-D
- d- D-A-S-CB-D-A-CB
- e- A-CB-D-S-D-CB-A

3- Parkinson disease is due to

- a- Destruction of neurons releasing Acetylcholine.
- b- Destruction of neurons releasing Serotonin.
- c- Destruction of neurons releasing Dopamine.
- d- Destruction of neurons releasing Endorphin.

Exercise Two : The effect of Cocaine

5pts

Cocaine is a stimulant drug, which means it speeds up the activity of the brain and other parts of the central nervous system. Cocaine can vary in purity and strength, which makes it difficult to predict the extent to which a person's driving ability will be impaired after using cocaine. As a general guide, some of the effects of cocaine that can affect a person's driving include: impaired ability to react appropriately, poor concentration and judgment, over-confidence in driving skills that is not necessarily supported by an actual improvement in driving ability, feelings of aggression, which may lead to dangerous driving. Drowsiness as the cocaine wears off, which may increase the risk that the driver could suddenly fall asleep. A person who has used cocaine may think that they can alter their driving to counteract any impairment to their driving ability; however, the effects of cocaine may mean that the driver has an altered view and experience of reality. This means that their actions and responses may be quite different to what is actually needed, and they may be unaware how much their driving skills are affected after using cocaine.

1-Pick up from the text:

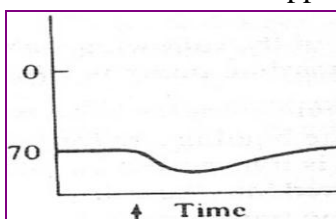
- a- The effect of cocaine on the brain.
- b- The effect of cocaine on driving ability.

2- By referring to your acquired knowledge, explain the mode of action of cocaine.

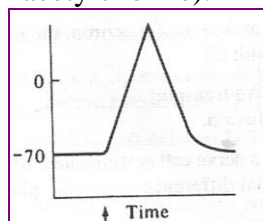
Exercise Three: The effect of acetylcholine

4pts

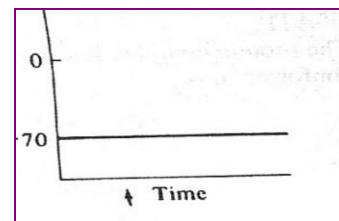
In order to know the effect of acetylcholine on two organs x and y experiments were done in which acetylcholine was applied to both structures. The following results were recorded. (The arrow indicates the time of application of acetylcholine).



Document 1 : Organ X



Document 2:Organ Y



Document 3:Organ Y+Enzyme 1

1- Formulate a hypothesis

- a- Indicating the nature of X and Y knowing that both are muscles.
- b- Explaining the effect of enzyme 1 on acetylcholine.

2- Analyze the results of documents 1 and 2, what can you deduce with respect to the role of acetylcholine in both cases?

Exercise four: alcohol and car accidents.

8pts

The frequency of car accidents was measured as a function of alcohol concentration of blood. The results are shown in the table below.

Concentration of alcohol in blood in g/l	0.2	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8
Coefficient of multiplication of car accidents in %	1	1	3	4	5	7	15	25	35

- 1- Analyze the data given in the table, what can you deduce?
- 2- Translate this table into a graph.
- 3-State four preventions that can decrease the percentage of car accidents.