

Question I:

(2

pts.)

Answer by true or false and correct the wrong ones.

- 1- The intensity of the stimulus is coded by the amplitude of the action potential
- 2- Cell bodies of neurons synthesize one or several neurotransmitters and store them in vesicles.
- 3- At rest a neuron has more Na in the extra cellular fluid
- 4- The maximum intensity of stimulation that can affect all fibers is called threshold intensity.

Question II:

(9.5

pts.)

The table below lists the amplitudes of the action potential registered following stimulations with increasing intensities, applied on an isolated nerve fiber from one side and the whole nerve from other side.

Intensity of stimulation in arbitrary units(a.u)	Amplitude of AP in mv	
	In the isolated nerve fiber	In the whole nerve
0.3	0	0
0.5	0	0
0.7	0	0
0.9	0	0
1	100	100
1.5	100	200
2	100	300
2.5	100	500
3.5	100	750
4	100	800
4.5	100	800

- 1- Change the above table into a graph.

(3

pts.)

- 2- Analyze the graph, what can you deduce?

(5

pts.)

- 3- What is the value of the threshold and maximum intensity? Define each one.

(1

pt.)

- 4- How can you explain the response of a nerve resulting from the stimulations of increasing intensities?

(2

pts.)

Question III:
pts.)

(5

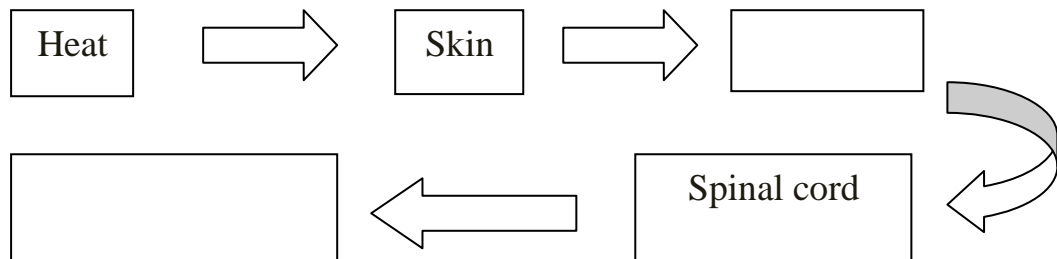
Human skin is the residence of variety of somatic sensory receptors that respond to mechanical, chemical and thermal stimuli. These receptors are particularly numerous in the skin of the fingertips, lips and genital, where they provide heightened sensitivity. Several mechanoreceptors such as the *Pacenic* corpuscles consist of free sensory nerve ending surrounded by a capsule whose layers of connective tissue resemble the layers of onion. The contents of the capsule suppress slight mechanical stimuli, preventing initiation of neural impulse. On contrast, *Meissener's* corpuscles which are located closer to though surface and lack the multilayered capsule are activated by light touch.

1- Pick up from the text: a- The role of somatic sensory receptors. (1.5 pts.)

b- The role of *Pacenic* corpuscles.

(1.5pts.)

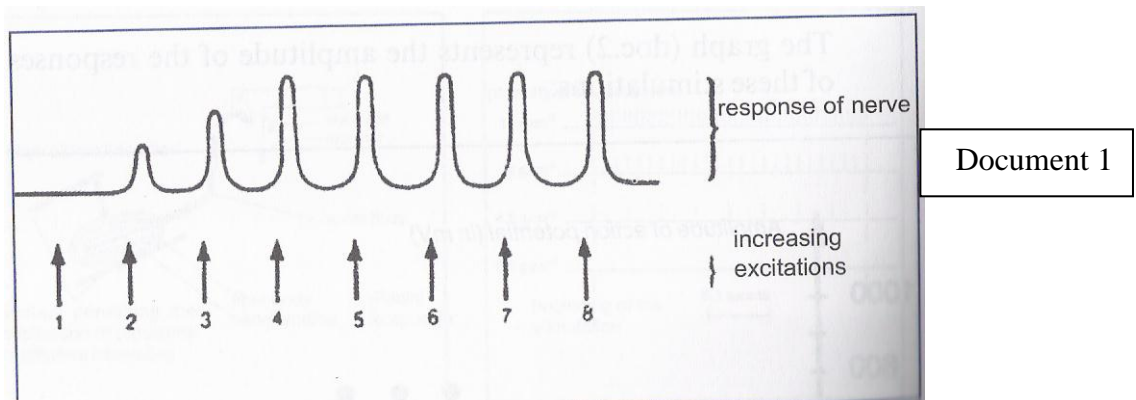
2- Complete the following functional diagram that represents a simple reflex act. (2 pts.)

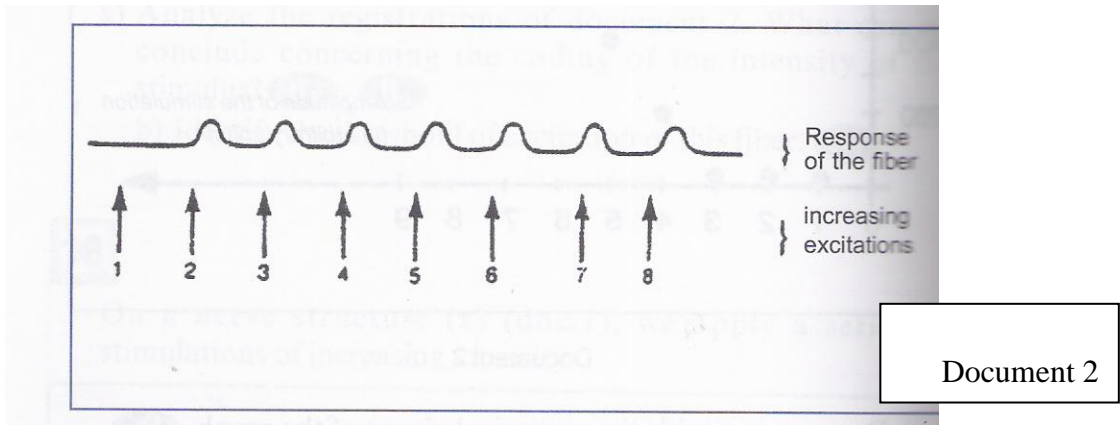


Question IV:
pts.)

(3.5

The documents below represent series of excitations with increasing intensities applied on a nerve (document 1) and a fiber (document 2).





1- By referring to your acquired knowledge:

- a- Name and define the intensity of stimulation 1 in (document 2) and 4 in (document 1). (0.5 pt.)
- b- Explain the observed results in document 1 and document 2. (1.5 pts.)

GOOD WORK