



Level : First preparatory year

Matter : Cellular Biology

Date : 16/01/2024

Duration: 1h30

First Name :

Last Name :

Registration number :

First Semester Exam (Ordinary Session)

A) Choose the correct answer(s) (6 points) :

- Which of the followings is not a fundament of the cell theory
 - All living organisms are composed of one or more cells.
 - All cells arise from pre-existing cells.
 - All cells are made up of a cell membrane and genetic material.
 - The cell is the basic unit of structure of organization in organisms.
- The presence of Membrane-bound organelles is a characteristic of:
 - Prokaryotes.
 - Bacteria.
 - Eukaryotes.
 - Archaea.
- The protective structure that surrounds the outer surface of some bacterial cells is called:
 - Cell wall.
 - Plasma membrane.
 - Capsule.
 - Envelope.
- The Lysogenic cycle occurs when a phage enters:
 - Eukaryotic cells.
 - Animal cells.
 - Bacterial cells.
 - Plant cells.

05) Membrane lipids represent mainly:

- Phospholipids + glycoproteins+ cholesterol.
- Phospholipids + glycolipids+ cholesterol.
- Phospholipids + cholesterol.
- Phospholipids + glycolipids.

06) Which of the following is not a characteristic of the plasma membrane:

- Unclear under the light microscope.
- A structural element present in all cells.
- Has a trilaminar appearance under the transmission electron microscope.
- Has a selective permeability.

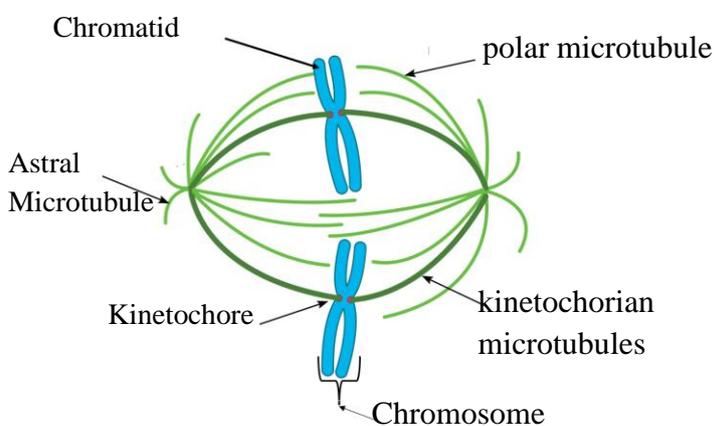
B) Are these statements True or false? (6 points)

- Diffusion is the movement of molecules from an area of low concentration to high concentration. **False.**
- Facilitated diffusion involves the direct passage of molecules through the phospholipid bilayer. **False.**
- Uniport transporter proteins are capable of transporting multiple substances simultaneously. **False.**
- The $\text{Na}^+/\text{Ca}^{2+}$ exchanger moves three sodium ions and three calcium ions in the same direction **False.**
- Osmosis involves the movement of water molecules from a less concentrated medium to a more concentrated medium. **True.**
- The $\text{Na}^+/\text{K}^+/\text{ATPase}$ pump is an example of active transport. **True.**

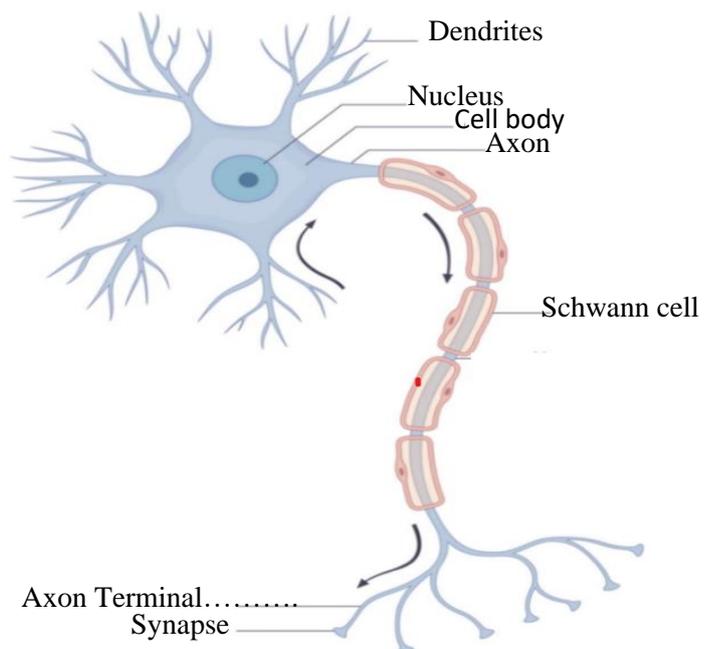
C- Put marks as appropriate in the following table (Follow the example in question 01) (4 points)

	Cell cycle phases	G1	S	G2	Prophase	Metaphase	Anaphase	Telophase	Cytokinesis
01	The nucleolus decreases in size and disappears.				X				
02	Elongation of polar microtubules leading to cell lengthening						X		
03	G2 Checkpoint			X					
04	Shortening of the kinetochorian microtubules						X		
05	Spindle Checkpoint					X			
06	Stoppage of migration of chromosomes grouped in a fan at the cell poles.							X	
07	Synthesis of RNA molecules and proteins necessary for cell growth.	X							
08	The cytoplasm of a single eukaryotic cell divides into two daughter cells.								X
09	The mitotic spindle comes into contact with the chromosomes.				X				

D) Put the appropriate legend on the following figures: (2 points)



Title: Mitotic Spindle



Title: Structure of a Neuron.

E) Give the correct term for each of the following definitions: (2 points)

- 1- Endogenous chemicals that allow neurons to communicate with each other = **neurotransmitters**.
- 2- Proteins that are located on the cell membrane of neurons or other cells in the body, specialized to bind with specific neurotransmitters = **neurotransmitter receptors**.
- 3- After neurotransmitter release, some neurotransmitters are taken back up into the presynaptic neuron through a process called = **Neurotransmitter Reuptake**.
- 4- The gap between the pre-and postsynaptic cells = **Synaptic Cleft**.

Good luck