

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

جميع أسئلة الدكتور فيصل

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Quiz no. 1

3. What is the effect of cholesterol on the fluidity of plasma membrane

Enter your answer

It reduces the impact of temperature fluctuation on fluidity

- at lower T it prevents the phospholipids from tightly packing so it increases fluidity
- at higher T it decreases fluidity

4. What is the main difference in function between the Gap junction and the Tight junction?

Enter your answer

Gap junction: it prevents passage of any substances between the cells.

Tight junction: forming small tunnels between adjacent cells to communicate together

5. Mention 3 Molecules that can be transported by simple diffusion through lipid bilayer structure?

Enter your answer

NO, CO, O₂

6. Regarding transport of ions through channels, is it following the kinetics of simple diffusion or facilitated diffusion?

Enter your answer

Simple diffusion

7. Calculate the osmolarity of a 300 mMolar CaCl₂ solution??

Enter your answer

osmolarity = n x molarity

→ 3 x 300 = 900 mOsm

8. What is the Composition and the Osmolarity of the Normal Saline solution?

Enter your answer

Isotonic, 280 mosm

9. What is the Osmolarity of 5% glucose solution? mention also if it is considered as an Isotonic, Hypotonic or Hypertonic solution

Enter your answer

Remember !

Molarity: $\frac{\text{mole}}{\text{Volume}}$

Mole: $\frac{\text{mass}}{\text{Molecular weight}}$

5% glucose means: 50 g glucose

in this cases osmolarity = n x molarity

$$\Rightarrow \text{osmolarity} = 1 \times \frac{\text{mole}}{\text{Volume}} \rightarrow 1 \times \frac{50}{180} = 0.277 \text{ osm} \rightarrow 277 \text{ mosm}$$

10. How many grams of CaCl_2 do you need to dissolve in 1 litre of water to get an ISOTONIC solution?

Enter your answer

Osmolarity = n x molarity

$$\Rightarrow 0.280 = 3 \times \text{molarity} \rightarrow \text{molarity} = 0.093 \text{ molar}$$

$$\Rightarrow \text{molarity} = \frac{\text{moles}}{\text{Volume}} \Rightarrow 0.093 = \frac{\text{moles}}{1} \rightarrow \text{moles} = 0.093 \text{ mole}$$

$$\Rightarrow \text{Moles} = \frac{\text{mass}}{\text{M.W}} \Rightarrow 0.093 = \frac{\text{mass}}{110} \rightarrow 10.26 \text{ grams}$$

جماعة هون انا خليت ال osmolarity بال milli من الاول عشان يطلع الحل دايركت

Quiz no. 2

لِكِ الْهَرَالِ الْاَلِه ...

2. What we mean by electro-chemical equilibrium?

Enter your answer

Balance in the movement of electrons for a specific ion, the movement of this ion from inside to outside will be the same movement from outside to inside

3. What ion is having the most negative Equilibrium Potential?

Enter your answer

$K^+ \rightarrow -94$

4. Are we generating in all excitable cells the same resting membrane potentials?
Question 4b: Explain why?

Enter your answer

NO, because Channels are different between different membranes

5. At a plasma membrane, a resting potential of (-85) mv has been established,
Question: What happens to that potential by activation of more Cl^- channels?

Enter your answer

Nothing because it has the same potential

6. How can we measure the membrane potential?

Enter your answer

Nernst equation and Goldman-Hodgkin equation

7. The patch clamp technique is useful to clamp (fix) the membrane potential at a specific voltage,
Question: What can we study by using this technique?

Enter your answer

conductance of difference ions at different membrane potentials

8. Inside cells the concentration of proteins is higher than in the extracellular fluid.

Question: Is the presence of protein in a higher concentration inside contributing in establishing resting membrane potential?



Enter your answer

NO effect, because the membrane is not permeable for such large molecules

2. At which part of a motor neuron is the action potential generated first?

Enter your answer

Axon hillock

3. Name 3 functions for the supportive cells.

Enter your answer

- ① Maintenance of neural environment
- ② Synthesize and release neurotrophic factors
- ③ Responsible for myelination of axon

4. What the myeline sheath is?

Enter your answer

protein lipid complex

5. What type of conduction is found at the myelinated fibers

Enter your answer

Insulates nerve fiber

6. If you have 2 unmyelinated fibers one with a small diameter (A fiber) and the other is having a larger diameter (B Fiber), Question: which of them is having a higher velocity of conduction for the impulse? Explain why??

Enter your answer

Fiber [B] is going to have a higher velocity [that is because higher diameters have smaller resistance]

7. What type of channels can be activated to generate the Inhibitory Post Synaptic Potentials (IPSPs)?

Enter your answer

K^+ channels , Cl^- channels

8. What is the difference between Excitatory Post Synaptic Potentials and Action Potentials?

Enter your answer

EPSP: Small depolarization that can be induced by activation of few Na^+ channels

Action potential: OCCURS when a neuron sends information down an axon away from cell body.

9. Describe the Temporal Summation

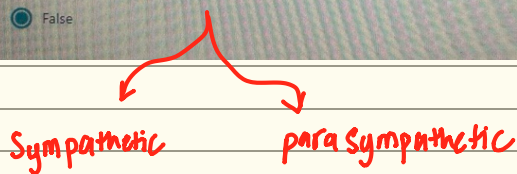
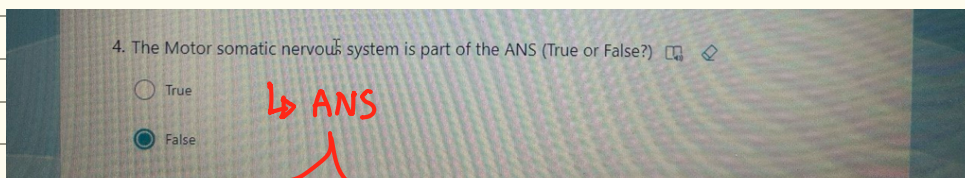
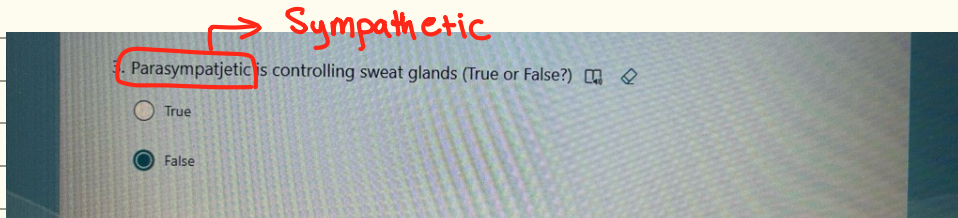
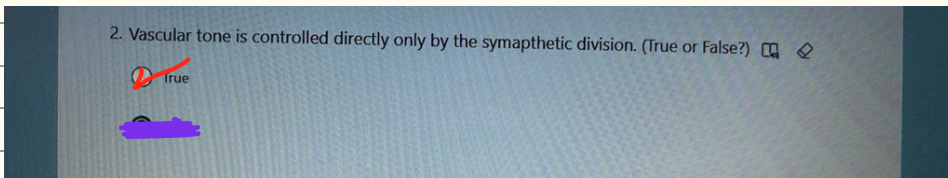
Enter your answer

2 or more postsynaptic potentials which were elicited by one presynaptic neuron at different times to induce more depolarizing

10. Can we record the action potential over an axon by placing the two electrodes at the external surface of the membrane???

Enter your answer

yes ☺



5. What division of ANS is having high Divergence and Convergence in their synaptic network? What is the Functional importance when having that synaptic organization?

Amplification of Signals and Coordinate of responses

6. What type of neurotransmitter is released from the Preganglionic fibers of Sympathetic?

Acetylcholine

7. What neurotransmitter is released by the sympathetic fibers that innervate suprarenal gland? → adrenal gland

Acetylcholin

8. The receptors for Acetylcholin at the effector cells innervated by the parasympathetic is called.....
(name the type of receptor) □

muscarinic , cholinergic

9. What happens by blocking Beta adrenergic receptors? □

treating abnormally high heart rate

اللهم إني أسالك توفيقاً في طريقي وراحه في نفسي
وتيسيراً لأمري، ربي أعوذ بك من شتات الأمر
ومس الضر و ضيق الصدر. اللهم إني استغفرك من
كل ذنب يعقب الحسرة و يُورث الندامة و يرد الدعاء
و يحبس الرزق، ربي إن كان هناك ذنب يحول بيني
وبين تيسير أموري اغفره لي