

1. In the presence of oxygen and favorable conditions which metabolic pathway(s) is (are) to proceed ?

- a. glycolysis
- b. citric acid cycle (TCA, Krebs's cycle)
- c. electron transport chain
- d. a, b and c

2. A increase in the membrane content of cholesterol, for eukaryotic plasma membranes (like for a human), a cell will.

- A) decrease its fluidity
- B) increase its fluidity
- C) have no effect on fluidity of the membrane

3. What is the reason for the downward slope of the membrane potential for an action potential after it has reached its peak amplitude?

- A) The permeability for sodium ions increases.
- B) Many voltage-gated potassium channels are open.
- C) Potassium ions flow into the cell.
- D) Many voltage-gated sodium channels open up

4. Providing two stimuli to an axon that are above the normal threshold. What term is given to the period of time in which a second action potential CAN NOT be initiated with a second stimulus ?

- A) depolarization
- B) relative refractory period
- C) absolute refractory period
- D) it is the time constant of the cell ($\tau = RC$)
- E) none of the above

5. If the equilibrium potential for chloride ions is below ($E_{Cl} = -90$) the resting membrane potential ($-70mV$), and all the sudden chloride channels opened in the membrane for a cell that was at rest, what would most likely occur? (Given: $[Cl]_{outside} = 100$ mM, $[Cl]_{inside} = 10$ mM).

- a) there is no net flux of chloride ions
- b) chloride ions rush out of the cell
- c) chloride ions rush into the cell
- d) the cell will depolarize

6. A single quantum of response measured in a postsynaptic cell refers to a

- A) The response measured in a postsynaptic cell due to the release of a single vesicle from a presynaptic cell.
- B) a measure of current needed to elicit an action potential.
- C) summated electrical response due to many vesicles being released from the presynaptic neuron.
- D) The amount of electrical response to hyperpolarize a cell below its resting membrane potential

7. During Long Term Potentiation (LTP) there is _____ at postsynaptic membrane.

- a) An increase in NMDA receptors
- b) A decrease in AMPA receptors
- c) An increase in AMPA receptors
- d) A decrease in NMDA receptors

8. If one is poisoned with cadmium, which blocks voltage gated calcium channels, what would most likely occur to synaptic transmission at a chemical synapse?

- a) The amount of evoked transmitter release would increase.
- b) There would be a reduced amount of transmitter released by an evoked stimulus
- c) There would be no difference in the amount of evoked transmitter release
- d) The action potential would be blocked from occurring in the axon due to direct effect on the action potential initiation and then the voltage gated calcium channels would not be able to be opened.

9. In a normal biological situation at rest for a cell, if the Na/K pump was blocked with an inhibitor what would be the most likely situation that would occur?

- A) The K concentration would become greater within the cell
- B) No change would occur to the membrane potential
- C) The membrane potential would gradually hyperpolarize
- D) The membrane potential would gradually depolarize

10. In order to function properly, membranes must remain fluid. A key mechanism by which temperature conformers, like fish or a rodent, cope with changing temperatures is to vary the relative proportion of saturated and unsaturated fatty acids in their lipid membranes. To acclimatize to cold winter temperatures, animals increase their membrane levels of:

- a. saturated fatty acids
- b. unsaturated fatty acids