

BELOW ARE OLD NEUROPHYSIOLOGY EXAM QUESTIONS THAT CAN BE USED FOR PRACTICE BUT DO NOT ASSUMED THE ANSWER KEY IS CORRECT. IF YOU DOUBT THE ANSWER, PLEASE CHECK IN CLASS OR IN REVIEW SECTION.

Fall 2020, Spring 2021

1. Which of the following statements about a secondary active transport carrier protein is **NOT** true?

- a. It moves only one type of ion or molecule at a time
- b. It does not break down ATP
- c. It can move an ion against its energy gradient
- d. It may move neurotransmitter back into the neuron
- e. It can move an ion in the same direction as its energy gradient

2. Which is **NOT** a property of the Na-K ATPase (sodium-potassium pump)?

- a. It is an antiporter
- b. It moves potassium against its concentration gradient
- c. It moves sodium along its concentration gradient
- d. It is an example of primary active transport
- e. It produces the high potassium concentration found in most cells

3. This structure is involved in the exchange of signals between the left and right cerebral hemispheres.

- A. Corpus callosum
- B. Choroid plexus
- C. Thalamus
- D. Hypothalamus
- E. Pons

4. In describing a neuron's action potential, which of the following is **NOT** true?

- a. Sodium channels open faster but potassium channels stay open longer
- b. The relative refractory period occurs during the after-hyperpolarization
- c. At threshold, all sodium channel are open
- d. Sodium channel inactivation accounts for the absolute refractory period
- e. At the peak depolarization of the action potential, the neuron's sodium conductance is larger than its potassium conductance.

5. Rapid, repetitive stimulation of a presynaptic neuron produces what response in that presynaptic neuron?

- A. Spatial summation
- B. Facilitation
- C. Reciprocal inhibition
- D. Disinhibition
- E. Lateral inhibition

6. The electrochemical potential energy of which ion is most often used in secondary active transport to move neurotransmitters back into neurons?

- a. Chloride
- b. Potassium
- c. Sodium
- d. Magnesium
- e. Calcium

7. Which of the following is the most accurate description of the function of Renshaw cells?

- a. Activates the gamma motor neurons to the muscle spindle
- b. Blocks the output of the sensory neurons from the muscle spindle
- c. Stimulates reciprocal inhibition
- d. Blocks the cross-extension reflex
- e. Inhibits motor neurons using glycine as its neurotransmitter

8. The "hopping" of an action potential from one node of Ranvier to the next is called?

- A. Regenerative responses
- B. Saltatory conduction
- C. Myelin matching
- D. Action potential conduction
- E. Field potential propagation

9. This is a brain imaging technique that gives detailed structural information and the images are not impaired by the skull.

- A. Electroencephalography - EEG
- B. Magnetic Resonance Imaging -MRI
- C. Ultrasound
- D. X-ray
- E. Electron Microscopy

10. Which sensory system is described by this transduction pathway?

"The membrane receptor activates a G-protein that leads to production of cAMP, which activates a channel that allows calcium entry, which then opens an excitatory chloride channel".

- a) hearing
- b) gustation
- c) vision
- d) olfaction
- e) pain

11. Norepinephrine is most likely to be the neurotransmitter used by which of the following neurons?

- A. motor neuron
- B. preganglionic sympathetic neuron
- C. preganglionic parasympathetic neuron
- D. postganglionic sympathetic neurons
- E. postganglionic parasympathetic neurons

12. This brain area is involved in control of body temperature and food intake:

- A. Thalamus
- B. Amygdala
- C. Cerebellum
- D. Medulla oblongata
- E. Hypothalamus

13. Which of the following structures is most likely to be infected in meningitis?

- A. hippocampus
- B. hypothalamus
- C. pia mater
- D. pons
- E. medulla

14. If the sodium equilibrium potential is +60 mV, at which of the following cell membrane potentials is the driving force for sodium the largest?

- A. -70 mV
- B. -30 mV
- C. 0 mV
- D. +60 mV
- E. There is insufficient information provided