

Human Physiology Practice Questions for Exam 2

1. Which of the following statements about the resting membrane potential is TRUE?
  - a. it is normally equal to 0 mV
  - b. the inside of the membrane is positive with respect to the outside
  - c. it is due to the presence of extracellular proteins
  - d. it is due, in part, to the concentration gradients of Na<sup>+</sup> and K<sup>+</sup>
2. When a peptide or catecholamine hormone binds to surface receptors at a target cell,
  - a. the cell becomes less permeable to all ions
  - b. a second messenger appears in the cytoplasm
  - c. the cell becomes inactive
  - d. the hormone is transported to the nucleus where it directs DNA transcription
3. Which of the following statements about peptide hormones is FALSE?
  - a. Peptide hormones are first synthesized in an inactive form
  - b. Peptide hormones require signal transduction to carry their message to the target cell
  - c. Peptide hormones have relatively short half-lives
  - d. Peptide hormones are always found in the bloodstream bound to carrier proteins
4. What are catecholamines? (what kind of molecules are they?)
5. What determines the meaning of a message in a signal transduction event?
6. How does a nerve fiber code for signal strength?
7. Draw and describe the adrenal sympathetic pathway.
8. Describe the basic categories of sensory receptors in the body and give an example of each.
9. What two factors determine the equilibrium potential for an ion?
10. Define "driving force" for an ion.
11. Describe events at the axon terminal leading to the exocytosis of a neurotransmitter.
12. What accounts for the resting membrane potential seen in all cells?
13. Describe the role of ATP in a skeletal muscle contraction.
14. What is the "dark current" in the rods?
15. How does the inner ear code for pitch and amplitude?
16. What is lateral inhibition and why is it important in sensory perception?
17. Compare the sympathetic and parasympathetic pathways in terms of ligands and receptor types.
18. Why are there ganglia in the autonomic motor division (but not in the somatic motor)?
19. If denervation of targets in the autonomic motor division does NOT result in dysfunction of the tissue, what is the purpose of autonomic innervation?