Honors Physiology Exam Review

1. Differentiate between anatomy and physiology.

2. What is homeostasis? Which two systems are responsible for maintaining homeostasis in the body?

3. What is the difference between negative and positive feedback? Give examples of each.

4. Compare and contrast the following:

    Anterior/posterior

    Superior/inferior

    Medial/ lateral

    Proximal/ distal

    Superficial/deep

5. Differentiate between integral and peripheral proteins.

6. Contrast extracellular and intracellular environments.

7. What are the major components of the plasma membrane?

8. Contrast facilitated diffusion and active transport in relation to energy expenditure and movement of substances with or against their concentration gradient.

9. How is the rate of diffusion affected by an increased concentration gradient?

10. Contrast isotonic, hypotonic and hypertonic solutions. Explain how they affect osmosis.

11. Explain lysis and crenation and in which type of solution does each happen.

12. Remind yourselves of the sodium/potassium pump. What is its function? Where do you find the greatest concentration of $Na^+$ ions and $K^+$ ions?

13. List where the 3 types of muscle tissue can be found in the body:

Skeletal –

Cardiac –

Smooth –

14. List and describe the 5 functions of bones.

15. Which bones make up the axial skeleton?

16. Which bones make up the appendicular skeleton?

17. Explain the organization of a muscle (from muscle to myofilament).

18. What is the role of acetylcholine in skeletal muscle contractions? The role of calcium?

19. What is a motor unit?

20. Be able to put the events of muscle contraction in proper order:

a. Actin sites are exposed
b. Nerve signal arrives at the synaptic knob
c. Motor end plate is now depolarized
d. Cross bridges occur and muscle contracts
e. Sarcoplasmic reticulum releases calcium ions
f. Acetylcholine is released into synaptic cleft
g. Calcium ions enter synaptic knob
h. Action potentials spread from end plate down the t-tubules
i. Calcium ions cause synaptic vesicles to fuse with membrane of axon terminal
j. Calcium ions bind to the troponin of the thin filaments
k. Ach diffuses across the cleft and binds to receptor proteins

21. Name the specific blood vessels around the heart that carry blood high in oxygen.

22. Name the specific blood vessels around the heart that carry blood low in oxygen.

23. Starting with a red blood cell in the superior vena cava, list the structures in the order that the red blood cell will travel through. You can assume that this particular red blood cell will travel to the brain and back during it's journey.

24. What is the primary function of red blood cells?

25. What is the primary function of white blood cells?

26. What is hematopoiesis?

27. Fill in the chart:

| A person with: | Has these agglutinogens: | Has these agglutinins: | Can donate to: | Can receive from: |
|---|---|---|---|---|
| Type A blood | | | | |
| Type B blood | | | | |
| Type AB blood | | | | |
| Type O blood | | | | |

28. Why are people with type O blood called universal donors?

29. Why are people with type AB called universal recipients?

30. Starting with the SA node, list the following structures of the cardiac conduction system in the order that they conduct action potentials across the heart.

AV bundle (bundle of His) Purkinje Fibers SA node Bundle branches

AV node