Anatomy and Physiology II
Exam #4 Review

1. Mix and match; note that the mix and match may include diagrams of the lung.

2a. What is respiration?

2b. What three process are involved in respiration?

2c. Why do cells need oxygen?

3a. How many lobes does the right lung have and how many lobes does the left lung have?

3b. Why does the left lung have fewer lobes?

4a. What are the plural membranes?

4b. What are the layers of the plural membranes (three)?

5. Explain how inspiration and expiration of air into the lungs occurs?

6. Why is the trachea surrounded by cartilage?

7. What is surfactant and what does it do?

8. Explain how the vocal cords produce sound.

9a. How is the breathing rate regulated?

9b. What does your body sense to up the breathing rate?

10a. Be able to explain Boyle’s law.

10b. Be able to explain Dalton’s law.

10c. Be able to explain Henry’s law.

11. Which gas oxygen, carbon dioxide, or nitrogen has the highest solubility coefficient? What does this mean?

12. Explain the affects of partial pressure, temperature, and pH have on hemoglobin's affinity for oxygen.

13. Explain the two ways oxygen is transported in the blood.

14. Explain three ways the carbon dioxide is carried in the blood.

15. Be able to explain in detail the movement of CO_2 through the blood as bicarbonate ion. Know the equations for carbonic acid and bicarbonate ion formation.

16. How does the respiratory system respond to going up in altitude where air is thinner?

17a. Where is myoglobin found and what is its function?

17b. Be able to explain why the saturation curves for hemoglobin and myoglobin are different.

17c. Be able to explain the saturation curves for adult and fetal hemoglobin.

18. Be able to define and explain the following lung capacity measures: anatomic dead air space, tidal volume, inspiratory reserve volume, expiratory reserve volume, vital capacity, residual volume, minute respiratory rate, and alveolar ventilation rate.

Anatomic dead air space:

Tidal Volume:

Inspiratory reserve volume:

Expiratory reserve volume:

Vital Capacity:

Residual Volume:

Minute Respiratory Rate:

Aveolar Ventilation Rate:

19. What two processes occur in the kidney?

20. Of what benefit is it to have the kidney filter out everything below a given molecular weight?

21. What is the juxtaglomerular apparatus and how does it control the filtration rate.

22. What is filtered out of the blood?

23. What is reabsorbed and what is secreted in the proximal convoluted tubule?

24. What is reabsorbed and what is secreted in the descending and ascending loop of Henle?

25. How do the loop of Henle and the vasa recta lead to increased water reabsorption by counter current multiplication?

26. What is reabsorbed and what is secreted in the distal convoluted tubule?

27. Explain how antidiuretic hormone and aldosterone affect reabsorption in the kidney.

28. What is reabsorbed and what is secreted in the collecting duct?

29. What is acidosis and why do respiratory acidosis or metabolic acidosis occur?

30. What is alkalosis and why do respiratory alkalosis or metabolic alkalosis occur?

31. How do the kidney and the lung function to regulate blood pH?

32. How does carbonic acid buffer the blood?

33. Name and explain two other blood buffers.

34. What compounds act as urinary buffers?

35. How is water distributed in the body?

36. What hormones regulate water balance at the kidney and what do they do?

37. How are the major ions in the body distributed inside and outside cells?

Ions	Intracellular	Extracellular
K^+		
Na^+		
HPO_4^{-2}		
Cl^-		
HCO_3^-		

38. How are the following ions (Na^+, Cl^-, K^+, HCO_3^-, Ca^{++},

phosphates, Mg^{++}) regulated in the body?

39. Explain how dialysis works?