**Exam 4 Part A. Your Name:**

**Please TYPE your answers in an MS Word Document. When complete send your exam answers as an ATTACHMENT to an Email to Dr. Kravitz. Exam 4 Part A is due Friday April 16 by 12midnight. No late papers accepted. Also, academic honesty is totally active here. Please do your OWN work!**

**This EXAM is open note. Please use the April 12-16 WEB LINK to guide your answers.**

**Pulmonary Physiology Term and Anatomy Review**

**Term Definitions: Please define and answer the following (3 pts each)**

1. Define Ventilation:

2. Define Respiration

3. Define External Respiration:

4. Define Internal Respiration:

5. What anatomical structure is sometimes called the ‘wind pipe’?

6. When the diaphragm contracts, which way does it go (up or down)?

7. In the bronchial tree there are INCOMPLETE cartilages around the bronchus. Why is this an advantage for exercising people?

8. About how many alveoli are in the lungs of each person?

9. What cell in the alveoli is like a ‘cell vacuum’ cleaner?

**Understanding Pressure Gradients and Pulmonary Ventilation**

1. What is a pressure gradient? (3 pts)

2. What does equilibrium mean? (3 pts)

3. In humans, which way do pressures go: Higher to Lower or Lower to Higher? (3 pts)

4. What law is the foundation of resting ventilation? (3 pts)

5. What two muscles are involved in resting ventilation? (2 pts)

6. As done in the ventilation Youtube video, explain Inspiration (5 pts)

7. As done in the ventilation Youtube video, explain Expiration (5 pts)

**Partial Pressure and Partial Pressure Calculations Questions:**

1. John Dalton presented two laws that are very specific to pulmonary ventilation. What are these two laws? (6 pts)

2. What is the concentration of Nitrogen in air? (3 pts)

3. What is the concentration of Oxygen in air? (3 pts)

4. What is the concentration of Carbon dioxide in air? (3 pts)

***CLASS, TYPE YOUR WORK FOR FULL CREDIT as done in the Youtube Video and on the WEB link (so I can see your set up for the calculation) for questions 5-10.***

**Standard Barometric Pressure at Sea Level is 760 mmHg.**

5. Calculate the Partial Pressure of Nitrogen (5 pts)

6. Calculate the Partial Pressure of Oxygen (5 pts)

7. Calculate the Partial Pressure of Carbon Dioxide (5 pts)

**Standard Barometric Pressure at Mt. Everest is 253 mmHg**

8. Calculate the Partial Pressure of Nitrogen (5 pts)

9. Calculate the Partial Pressure of Oxygen (5 pts)

10. Calculate the Partial Pressure of Carbon Dioxide (5 pts)

11. What law for John Dalton should you use to check to see if your Partial Pressure calculations are correct? (3 pts)

**Internal and External Respiration and Bohr Effect**

**Using the Partial Pressure Diagram on the Web, please answer the following:**

1. PO2 of alveolar air in mmHg? (3 pts)

2. PCO2 of alveolar air in mmHg? (3 pts)

3. PO2 of pulmonary veins in mmHg? (3 pts)

4. PCO2 of pulmonary veins in mmHg? (3 pts)

5. PO2 of systemic arteries in mmHg? (3 pts)

6. PCO2 of systemic arteries in mmHg? (3 pts)

7. PO2 of muscle cells (& tissues) in mmHg? (3 pts)

8. PCO2 of muscle cells (& tissues) in mmHg? (3 pts)

9. PO2 of systemic veins in mmHg? (3 pts)

10. PCO2 of systemic veins in mmHg? (3 pts)

11. PO2 of pulmonary artery in mmHg? (3 pts)

12. PCO2 of pulmonary artery in mmHg? (3 pts)

**Bohr Effect Questions:**

13. Please describe the 4 factors of the Bohr Effect (4 pts)

14. How is the Bohr Effect beneficial for Exercisers? (3 pts)

**Asthma and Exercise-Induced Asthma**

1. Define Asthma? (3 pts)

2. Certain triggers cause what to the bronchiole muscles to do and what happens to the bronchiole lining? (3 pts)

3. Name THREE triggers of Asthma. (3 pts)

4. What is the difference in Exercise-Induced Asthma and Asthma? (3 pts)

5. When does Exercise-Induced Asthma usually PEAK? (3 pts)

6. Name THREE winter sports that may predispose persons to EIA? (3 pts)

7. What is the theory explaining EIA? (5 pts)

**End of Exam.**