**16. Respiratory System homework questions (Ch. 23)**

Name and date submitted (3 pts):

Instructions: Create space in the document below and respond to all questions. Turn in your completed work by the due date.

(50 questions, 100 points, average 2 points per question)

Respiratory System Anatomy

1. The respiratory system consists of (complete each word)
   1. N
   2. P
   3. L
   4. T
   5. B
   6. L
2. The interior structures of the nose have these three functions
3. A ‘nose job’ is technically called \_\_\_\_\_\_\_\_\_\_\_\_\_
4. Divides the nasal cavity into right and left sides \_\_\_\_\_\_\_\_\_\_\_\_\_
5. In the nose, describe the function of
   1. Capillaries
   2. Goblet cells
   3. Cilia
6. Anatomical term for “throat” \_\_\_\_\_\_\_\_\_\_\_\_
7. The throat functions as
   1. Pass…
   2. Reson…..
   3. Hous….
8. Function of tonsils?
9. Removal of tonsils is called \_\_\_\_\_\_\_\_\_\_\_\_\_
10. Anatomical term for “voice box” \_\_\_\_\_\_\_\_\_\_\_\_
11. Anatomical term for “adam’s apple” \_\_\_\_\_\_\_\_\_\_\_\_
12. Anatomical term for trap door which seals off airway during swallowing \_\_\_\_\_\_\_\_\_\_\_\_
13. What mechanism controls the “pitch” (low vs. high) of your voice? Must be specific…
14. Anatomically speaking, how is “whispering” accomplished? Must be specific….
15. Cancer of the larynx (throat) is almost 100% caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. Anatomical term for “windpipe” \_\_\_\_\_\_\_\_\_\_\_\_
17. Function of the C-shaped cartilage rings which run along the windpipe, and which you can feel?
18. Describe “tracheotomy”
19. Describe “intubation”
20. Arrange the “bronchial tree” in order from large to small: (i.e. put these in the right order) Terminal bronchioles – primary bronchi – secondary bronchi – bronchioles – tertiary bronchi
21. Each lung is surrounded and protected by a membrane called \_\_\_\_\_\_\_\_\_\_\_\_\_\_
22. Function of pleural fluid?
23. The collapse of part of a lung due to surgery, stab or gunshot wound is technically called \_\_\_\_\_\_\_\_\_\_\_\_\_\_
24. What goes in the “cardiac notch”?
25. Which lung is larger, right or left?
26. Structure AND function of alveolus (plural alveoli)?
27. Coronavirus attacks the production of surfactant. What is the surfactant (chemistry)? What is its purpose? Knowing that, explain how Covid-19 affects breathing? Answer all 3 questions…
28. The exchange of O2 and CO2 takes place by diffusion across \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ walls.
29. The lungs receive blood through two arteries

Pulmonary Ventilation

1. Inhalation is technically called \_\_\_\_\_\_\_\_\_\_
2. Air moves into the lungs
   1. Because your nose and mouth function together with your lungs to push air down the trachea, filling the lungs as needed
   2. Because your diaphragm muscle flattens or lowers, increasing the volume of the lungs, thus drawing air into the lungs due to pressure difference
   3. Because your diaphragm muscle contracts and raises, drawing the right amount of air into the expanding lungs
   4. Because when your autonomous nervous system senses that you need a breath, it causes the lung muscles in the right and left lobes to expand, thus increasing lung volume and drawing air down the trachea
3. At rest (normal quiet inhalation) you breathe in \_\_\_\_\_ mL of air
4. During strenuous activity, you inhale \_\_\_\_\_\_\_ L of air
5. Exhalation is technically called \_\_\_\_\_\_\_\_\_\_\_
6. Air moves out of the lungs (during quiet breathing)
   1. Because your stomach muscles (erectus abdominis) contract and push in, thus forcing air to expel from lungs up into the trachea and out
   2. Because the diaphragm muscle relaxes and moves upward (superiorly), the intercostal muscles relax, and the ribs depress, thus decreasing the lung volume and forcing air out
   3. Because the diaphragm muscle relaxes and moves downward (flattens), the intercostal muscles relax, and the ribs depress, thus decreasing the lung volume and forcing air out
   4. Because your autonomous nervous system senses that you need to exhale, and motor nerves controlling the thoracic (T1-T12) muscles cause them to contract, decreasing lung volume and forcing air out the trachea
7. Surfactant:
   1. Alveolar fluid exerts surface tension, causing the alveoli to assume the (smallest?/largest?) diameter size.
   2. Surfactant produced by special “Type II” cells overcomes this by (raising?/lowering?) the surface tension in the alveoli sacs.
   3. A deficiency of surfactant causes Respiratory Distress Syndrome. Explain what that is \_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Coronavirus attacks “Type II” cells. Therefore, how does Covid-19 (the disease caused by Coronavirus) kill? Tie it together and be somewhat specific \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (read the RDS “Clinical connection” box, where it is described in the context of infants)

Lung Volumes and Capacities

1. The volume of one breath is called \_\_\_\_\_\_\_\_\_\_
2. The volume of air inhaled and exhaled each minute is called \_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the MV in L/min of a health adult at rest \_\_\_\_\_\_\_\_\_\_
4. You are having difficulty breathing, so you go see your asthma-allergy doctor, and he/she tells you, “Take a very deep breath and blow into this apparatus”. That apparatus is called a \_\_\_\_\_\_\_\_\_\_\_\_ or a \_\_\_\_\_\_\_\_\_\_\_\_\_.
5. When you took your “deep breath” above, you breathed-in an additional “inspiratory reserve volume”. How much is that in mL for Males \_\_\_\_\_\_\_\_\_\_\_\_\_? Females \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ? (average, state units in mL)
6. When you forcefully breathed out (scenario above) you pushed out an additional “expiratory reserve volume”. Males \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Females \_\_\_\_\_\_\_\_\_\_\_\_\_ (average, state units in mL)
7. Summary: Your “total lung capacity” is the sum of all the above. Males \_\_\_\_\_\_\_\_\_\_\_\_ Females \_\_\_\_\_\_\_\_\_\_\_\_\_ (average, state units in mL)

Transport of Oxygen and Carbon Dioxide

1. Why do you even need Oxygen? (Biology question. If you don’t remember, do Internet research)
2. Why do you need to get rid of Carbon Dioxide? (same as above. Use the Internet)

Note: to receive credit for the above two questions, at a minimum your answers must use and explain the terms, “cellular respiration”, “glucose”, and “glycolysis”

1. Hemoglobin: The heme portion of hemoglobin contains four \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, each capable of binding to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Hemoglobin
   1. Is a protein molecule contained within white blood cells (leukocytes) that carries oxygen and carbon dioxide
   2. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen to, and carbon dioxide from, the body
   3. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen and glucose (blood sugar)
   4. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen from, and carbon dioxide to, the body
3. What is hypoxia? (see the blue Clinical Connection window)
4. What is cause of anemic hypoxia (anemia)?
5. What is cause of ischemic hypoxia (ischemia)? (Do Internet research to find the “cause”)