1. The nasal cavity is divided into right and left cavities by the_______________________________.

2. T/F The lacrimal ducts drain into the oropharynx.

3. T/F The nasal membrane is well supplied with blood vessels.

4. Distinguish between external and internal respiration.

5. The__________________________are known as the false vocal cords.

6. What prevents food that has been swallowed from entering the larynx?

7. The broad base of the lungs rests on what muscle?

8. T/F In the pulmonary circuit, blood is pumped from the lungs to the spleen, where debris and waste products are filtered out of the plasma.

9. T/F Both primary and secondary bronchii have cartilagenous rings for support.

10. T/F Arteries always carry blood away from the lungs.

11. A vein carries its blood supply toward the___________________.

12. Terminal bronchioles terminate in small air sacs called _______________________.

13. In external respiration, gases diffuse through a simple squamous tissue known as the____________________and then enter a capillary.
14. The average total lung volume of a typical human is_________________.

15. A portion of the total lung volume will never leave the lungs, even after the strongest expiration. What is portion called? Why must it always be present in the lungs?

16. What is tidal volume?

17. Air in the pleural cavity is known as a_________________.

18. The respiratory tract is lined with what type of epithelium?

19. The_________________ is a common passageway for food, water, and air. Name the three regions of this structure:
   A._________________
   B._________________
   C._________________

20. The eustachian tubes connect the_________________ with the_________________.

21. Name and describe the location of the three sets of tonsils:

22. T/F The cricoid cartilage is superior to the thyroid cartilage.

23. These structures can temporarily close off the trachea and larynx, preventing air from moving upward temporarily(such as in coughing):
   A. Vocal folds
   B. Vestibular folds
   C. Arytenoid folds
   D. False vocal cords
   E. A & B
   F. B & D
   G. all of the above
24. Explain why the C-shaped cartilage rings of the trachea do not extend all the way around to the posterior surface:

25. What and where is the pulmonary hilus?

26. What is expiratory reserve volume? What is this volume (in ml) for the average person? Give some reasons why this average would vary for different people.

27. The area that divides the visceral pleura from the parietal pleura is called the ____________________________.

28. What is the pressure exerted by the atmosphere at sea level (give answer in ml of Mercury)?

29. T/F From #28 above: This is the same pressure as the pressure of the pleural cavity.

30. Any time you have a thin film of fluid between two surfaces which creates a sticky suction it is called__________________.

31. What substance prevents surface tension in the alveoli of the lungs?

32. T/F The partial pressure of a gas (when in a mixture of other gases) is the portion of the total pressure which that particular gas exerts.

33. T/F The atmosphere is composed of roughly 78% Oxygen and 21% Nitrogen.

34. The oxygen saturation level of the hemoglobin in the capillaries around an alveolus is determined mainly by:
   A. The surrounding PCO₂ concentration
   B. The surrounding O₂ concentration
   C. The rate of cellular respiration
   D. The stretch of the diaphragm
   E. A & C
   F. B & D
35. T/F Hemoglobin exhibits only tertiary structure.

36. The "Adam's apple" is a common name for what piece of cartilage?

37. Which is larger, the right or left primary bronchii? Explain why this occurs.

38. T/F As the diaphragm lowers and stretches the lungs, the pressure within the lungs increases.

39. T/F Gases can dissolve in liquids.

40. T/F Hemoglobin is the carbohydrate in the red blood cells responsible for carrying oxygen.

41. Which of the following most specifically describes the binding site for oxygen in the red blood cell?
   A. Globin portion
   B. Heme portion
   C. The porphyrin ring
   D. Iron

42. List four factors that affect the unloading of PO₂.

43. What compound can compete with oxygen for the binding site on heme?

44. What color will blood turn with Carbon Monoxide poisoning?

45. A shortage of oxygen in the bloodstream, resulting in a bluish tint in the blood is a condition known as what?
46. Most of the carbon dioxide carried in the blood is in the form of:
   A. Carbonic acid
   B. Carbonic anhydrase
   C. Bicarbonate
   D. Carbamino compounds
   E. Sodium carbonate

47. What is the Bohr effect?

48. What is the chloride shift?

49. Hydrogen ions bond to this molecule, causing the release of oxygen.
   A. Water
   B. Bicarbonate
   C. Hemoglobin
   D. Mercury

50. Respiratory acidosis occurs when:

51. What is the function of the enzyme carbonic anhydrase?

52. Describe how hyperventilation affects internal respiration.
1. Nasal septum
2. F
3. T
5. Vestibular folds
6. Epiglottis
7. Diaphragm
8. F
9. T
10. F
11. Heart
12. Alveoli
13. Respiratory membrane
14. 6000ml
15. Residual volume
   With no air in the lungs, the lungs would collapse
16. Volume of air moving in and out of lungs with quiet breathing
17. Pneumothorax
18. Pseudostratified ciliated columnar epithelium
19. Pharynx: naso-, oro-, laryngo-
20. Middle ear, nasopharynx
21. Lingual tonsils - base of tongue
   Palatine tonsils - side walls at oropharynx
   Pharyngeal tonsils -(adenoids) posterior wall of nasopharynx

22. F

23. F (b and d)

24. Because the esophagus lies behind the trachea. Normally it is collapsed, but when you swallow food, it needs room too expand. Hence, no cartilage on posterior side of trachea.

25. Pulmonary hylus is where the primary bronchi and blood vessels enter the lungs (mediastinum region).

26. a) Maximum amount of air you can forcefully exhale from lungs
   b) 1000 mL
   c) Depends on size of person, conditioning, disease (like asthma), age, etc.

27. Pleural cavity

28. 760 mL of Hg

29. F

30. Surface tension

31. Pulmonary surfactant

32. T

33. F

34. B

35. F (has primary, secondary, tertiary, and quaternary-four proteins make up hemoglobin)

36. Thyroid cartilage (laryngeal prominence)

37. The right is larger; the left lung is smaller because the heart is centered more on that side and there is less room available.

38. F

39. T

40. F

41. D
42. 1. $pO_2$
    2. Temperature
    3. Amount of $pCO_2$

43. Carbon monoxide is an example

44. Bright red

45. Anoxia

46. C

47. H+ ions bond to hemoglobin causing the release of oxygen

48. Bicarbonate is formed in RBC and then diffuses into plasma as it does, chloride diffuses into the RBC

49. C

50. You are not breathing. $CO_2$ is still produced, and hence H+ ions are still produced. H can hold only so much. When H+ concentration gets too high it kills the RBC

51. It converts $CO_2$ & $H_2O$ into carbonic acid and vice versa

52. When you hyperventilate, you don't have enough $CO_2$; $CO_2$ remember, creates the H+ ions. So if there is a lack of $CO_2$ there is a lack of H+ ions. When you don't have enough H+ ions binding to hemoglobin then $O_2$ can't be released! That's when you faint.