

## **Review Questions for Respiratory System:**

1. *What are the basic functions of the respiratory system?*
2. *What is pulmonary ventilation?*
3. *What is external respiration?*
4. *What is internal respiration?*
5. *What is cellular respiration? Where does it take place? What does it require and what does it produce?*
6. *What are the differences between aerobic and anaerobic metabolism?*
7. *What structures comprise the upper respiratory tract?*
8. *What structures comprise the lower respiratory tract?*
9. *What structures comprise the conducting zone? What are the basic functions of the conducting zone?*
10. *What structures comprise the respiratory zone? What are the basic functions of the respiratory zone?*
11. *How does air enter the nasal cavity?*
12. *What is the nasal septum composed of?*
13. *What forms the roof of the nasal cavity?*
14. *What form the floor of the nasal cavity?*
15. *What forms the hard palate?*
16. *What are the functions of the soft palate and uvula?*
17. *What forms the lateral walls of the nasal cavity?*
18. *What are the functions of the nasal conchae?*
19. *What type of tissue lines the majority of the nasal cavity?*
20. *What are the functions of respiratory epithelium?*
21. *Where is the olfactory epithelium and what does it do?*
22. *What connects the nasal cavity with nasopharynx?*
23. *What and where are the paranasal sinuses? What are their functions?*
24. *What are the nasolacrimal ducts and what do they do?*
25. *What are the divisions of the pharynx?*
26. *Where is the nasopharynx? What type of tissue lines it? What significant structures are found within it? What are their functions?*
27. *Where is the oropharynx? What type of tissue lines it? What significant structures and landmarks are nearby?*
28. *Where is the laryngopharynx? What type of tissue lines it?*
29. *What are the functions of the larynx?*
30. *Where is the larynx located?*
31. *Of what is the larynx composed?*
32. *Where and what is the thyroid cartilage? What is the laryngeal prominence? What is the "Adam's Apple?"*
33. *Where and what is the cricoid cartilage?*
34. *Where are the arytenoids, corniculate, and cuneiform cartilages?*
35. *Where is the epiglottis? What is it composed of and what is its function?*
36. *Where and what are the true vocal cords? What is their function?*
37. *Where and what are the false vocal cords? What is their function?*
38. *What and where is the glottis?*

39. *What and where is the trachea? What type of epithelium lines it?*
40. *What and where are the primary bronchi?*
41. *What is the shape of the tracheal cartilage? What is the advantage of this shape?*
42. *What and where is the trachealis?*
43. *What and where is the carina?*
44. *What are the differences between the left and right primary bronchi?*
45. *What and where are the secondary bronchi? What is the difference between the left and right secondary bronchi?*
46. *What are tertiary bronchi?*
47. *What are quaternary bronchi?*
48. *What are bronchioles?*
49. *What are terminal bronchioles?*
50. *What are respiratory bronchioles?*
51. *What are alveoli?*
52. *What are alveolar ducts?*
53. *What are alveolar sacs?*
54. *What happens to the density of goblet cells and cilia as you travel down the bronchial tree?*
55. *What happens to the relative abundance of smooth muscle as you travel down the bronchial tree?*
56. *What happens to the abundance of cartilage as you travel down the bronchial tree?*
57. *What kind of epithelium lines alveoli?*
58. *What are type I alveolar cells?*
59. *What is the relationship between alveoli and pulmonary capillaries?*
60. *What structures constitute the respiratory membrane?*
61. *What are type II alveolar cells? What is their function?*
62. *What are dust cells?*
63. *Why are alveoli covered by elastic fibers?*
64. *What structures form the boundary of the thoracic cavity?*
65. *What is the pleural cavity?*
66. *What is the lung root?*
67. *Where are the lung's costal surface, apex, and base?*
68. *What and where is the lung hilum?*
69. *What and where is the cardiac impression?*
70. *What are the lobes and fissures of the left lung?*
71. *What are the lobes and fissures of the right lung?*
72. *How do the left and right lungs differ?*
73. *What are the pleurae?*
74. *Where are the visceral pleurae located? Where are the parietal pleurae located?*
75. *What are the functions of the pleurae and pleural fluid?*
76. *What is atmospheric pressure?*
77. *What is intrapulmonary pressure?*
78. *What is intrapleural pressure?*

79. *Why is it necessary for intrapulmonary pressure to exceed intrapleural pressure?*
80. *What is pneumothorax?*
81. *What is Boyle's Law?*
82. *What is the entire sequence of events during inspiration?*
83. *What muscles are involved with quiet inspiration?*
84. *What nerves are involved with quiet inspiration?*
85. *What volume changes occur during inspiration?*
86. *What pressure changes occur during inspiration?*
87. *When does inspiration stop?*
88. *What muscles are involved with forced expiration?*
89. *What is the entire sequence of events during expiration?*
90. *What muscles are involved with quiet expiration?*
91. *What nerves are involved with quiet expiration?*
92. *What volume changes occur during expiration?*
93. *What pressure changes occur during expiration?*
94. *When does expiration stop?*
95. *What muscles are involved with forced expiration?*
96. *What is airway resistance? How and when does airway resistance change?*
97. *What is surface tension? Why is it problematic for the alveoli? How do the alveoli overcome surface tension?*
98. *Where is surfactant produced?*
99. *What is compliance? How do changes in lung compliance affect breathing? What could cause lung compliance to change?*
100. *What is the normal percentage of air composed of nitrogen? Of oxygen?*
101. *What is partial pressure? How does the concept of partial pressure relate to the concept of total pressure?*
102. *Why is the concept of partial pressure important?*
103. *What is the  $PO_2$  in the alveoli? In pulmonary arteries? In systemic arteries? In pulmonary veins? In systemic veins? In systemic tissues?*
104. *What is the  $PCO_2$  in the alveoli? In pulmonary arteries? In systemic arteries? In pulmonary veins? In systemic veins? In systemic tissues?*
105. *Explain internal and external respiration in terms of partial pressure gradients.*
106. *Why is there a smaller partial pressure gradient for  $CO_2$  than for  $O_2$ ?*
107. *What are the 2 ways in which oxygen is transported within the blood? Which method predominates?*
108. *How many  $O_2$ 's can hemoglobin carry?*
109. *What's the difference between oxyhemoglobin and reduced hemoglobin? Where are they likely to be found?*
110. *What is the equation for the loading and unloading of  $O_2$  by hemoglobin?*
111. *When/where does that equation proceed to the left?*
112. *When/where does that equation proceed to the right?*
113. *What is the difference between saturated and unsaturated hemoglobin?*
114. *What is the hemoglobin saturation in the lungs? In pulmonary veins? In systemic arteries? In systemic veins? In pulmonary arteries?*

115. *What is the benefit of the high Hb saturation in systemic veins?*
116. *How do heat, low pH, and high PCO<sub>2</sub> affect the affinity that Hb has for O<sub>2</sub>?*
117. *What effect does carbon monoxide have on Hb?*
118. *What are the 3 ways CO<sub>2</sub> is transported in the blood? What % of CO<sub>2</sub> travels via each mechanism?*
119. *Why does blood contain more dissolved CO<sub>2</sub> than dissolved O<sub>2</sub>?*
120. *What's the equation for the loading and unloading of CO<sub>2</sub> by Hb?*
121. *Why does CO<sub>2</sub> binding to Hb not block O<sub>2</sub> from binding to Hb?*
122. *What's the equation for the formation of bicarbonate? Where does this reaction take place – i.e., in what cell and in what vessels? What enzyme catalyzes the reaction?*
123. *What is the chloride shift?*
124. *How do the events associated with bicarbonate formation reverse themselves in the pulmonary capillaries?*
125. *Where is the ventral respiratory group? What is its function? When is it active? What muscles does it control?*
126. *What is eupnea?*
127. *Where is the dorsal respiratory group? What is its function?*
128. *Where are secondary control centers for respiration found? What do they do?*
129. *How do irritants affect respiration?*
130. *What is the Hering-Breuer reflex?*
131. *What effect does the hypothalamus have on respiration?*
132. *What effect does the cerebral cortex have on respiration?*
133. *What are the 3 main respiratory stimuli? Which is the most important?*
134. *Where are central chemoreceptors located and what do they do?*
135. *Where are peripheral chemoreceptors located and what do they do?*
136. *What is the relationship between plasma CO<sub>2</sub> and plasma pH?*
137. *What is the relationship between plasma CO<sub>2</sub> and CSF pH?*
138. *How does a decrease in CSF pH affect respiration rate and depth?*
139. *How does an increase in CSF pH affect respiration rate and depth?*
140. *How does a decrease in plasma pH affect respiration rate and depth?*
141. *How does an increase in plasma pH affect respiration rate and depth?*
142. *What nerves link peripheral chemoreceptors to medullary respiratory centers?*
143. *When do arterial PO<sub>2</sub> levels become significant respiratory stimuli?*
144. *How does hyperventilation affect plasma PCO<sub>2</sub>, plasma H<sup>+</sup>, plasma pH, CSF H<sup>+</sup> and CSF pH?*
145. *What is plasma alkalosis?*
146. *What is respiratory alkalosis?*
147. *How does hypoventilation affect plasma PCO<sub>2</sub>, plasma H<sup>+</sup>, plasma pH, CSF H<sup>+</sup> and CSF pH?*
148. *What is plasma acidosis?*
149. *What is respiratory acidosis?*
150. *What are the causes of metabolic alkalosis? How will the respiratory system attempt to compensate for metabolic alkalosis?*

151. *What are the causes of metabolic acidosis? How will the respiratory system attempt to compensate for metabolic acidosis?*