

Date \_\_\_\_\_

Name \_\_\_\_\_ Student No. \_\_\_\_\_

Teacher \_\_\_\_\_ School \_\_\_\_\_

**Biology 12****~~Section Assignment 3.4~~ Unit 10**

Remember to submit the following with this assignment:

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Part A: Respiratory System	3.4A	32
Part B: Breathing	3.4B	34
Part C: Internal and External Respiration	3.4C	40

### Section Assignment 3.4 Part A Respiratory System

Select the best answer for each of the following questions.

1. The vocal cords are found in which structure?
  - A. larynx
  - B. bronchi
  - C. pharynx
  - D. epiglottis
2. Alveoli are well-suited to their function because they:
  - A. possess cilia
  - B. have thick, muscular walls
  - C. are richly supplied with capillaries
  - D. are controlled by the autonomic nervous system
3. The correct sequence through which air passes during inhalation is:
  - A. bronchi, bronchioles, alveoli, trachea
  - B. bronchioles, bronchi, trachea, alveoli
  - C. trachea, bronchi, alveoli, bronchioles
  - D. trachea, bronchi, bronchioles, alveoli
4. Cilia in the trachea:
  - A. remove debris
  - B. produce mucus
  - C. move by peristalsis
  - D. increases the surface area
5. The trachea is held open by:
  - A. cartilage
  - B. vocal cords
  - C. a lipoprotein layer
  - D. a pleural membrane

6. Where does oxygen diffuse into the blood?

- A. alveoli
- B. trachea
- C. bronchioles
- D. pleural membranes

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7. Mucus is moved along the respiratory tract by:

- A. cilia
- B. flagella
- C. peristalsis
- D. active transport

8. A function of the larynx is to:

- A. produce sound
- B. facilitate gas exchange
- C. prevent the lungs from collapsing
- D. increase the volume of the thoracic cavity

9. Which of the following structures is lined by cilia?

- A. larynx
- B. alveoli
- C. trachea
- D. pleural membranes

10. Which of the following contains structures that vibrate to produce sound?

- A. larynx
- B. trachea
- C. epiglottis
- D. pleural membranes

11. Which of the following lines the chest cavity?
- A. cilia
  - B. alveoli
  - C. diaphragm
  - D. pleural membranes
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12. In the respiratory system, which structure would have the greatest surface area to volume ratio?
- A. alveoli
  - B. trachea
  - C. bronchi
  - D. bronchiole
13. Which of the following trap particles and move them up the trachea?
- A. villi and mucus
  - B. mucus and cilia
  - C. alveoli and villi
  - D. cilia and alveoli
14. Which of the following surrounds the lungs and the thoracic cavity and functions to reduce friction during inhalation and exhalation?
- A. cilia
  - B. alveoli
  - C. diaphragm
  - D. pleural membranes
15. What structure prevents food from entering the trachea?
- A. pharynx
  - B. epiglottis
  - C. diaphragm
  - D. bronchioles

16. What structure has rings of cartilage?

- A. trachea
- B. epiglottis
- C. diaphragm
- D. bronchioles

**Marks**

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### Section Assignment 3.4 Part B

#### Breathing

Select the best answer for each of the following questions.

1. A puncture of the pleural membranes could lead to:
  - A. increased thoracic cavity pressure
  - ~~B. decreased stimulation of carotid bodies~~
  - C. decreased contractions of the diaphragm
  - D. increased concentration of oxyhemoglobin in the blood
2. Which of the following is a controlling factor for increasing the breathing rate?
  - A. high pH at the medulla oblongata
  - B. high levels of carbon dioxide in the carotid artery
  - C. low levels of glucose in the coronary artery
  - D. low concentration of bicarbonate ions in the aorta
3. Damage to the medulla oblongata may result in:
  - A. hearing loss
  - B. impaired growth
  - C. breathing difficulty
  - D. loss of coordination
4. The process of inhaling is accomplished in part by:
  - A. relaxation of the diaphragm
  - B. contraction of the rib muscles
  - C. a decrease in the volume of the thoracic cavity
  - D. an increase in the pressure of the thoracic cavity
5. Air pressure is reduced inside the thoracic cavity when:
  - A. the rib muscles relax
  - B. the diaphragm moves up
  - C. the rib cage moves up and out
  - D. the pleural membranes collapse

6. The diaphragm assists breathing by:
- A. moving the ribs up
  - B. stimulating the lungs to absorb oxygen
  - C. changing the volume of the thoracic cavity
  - D. allowing the lungs to move freely in the thoracic cavity
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7. What is the correct sequence of structures through which an oxygen molecule passes from the nostrils to the alveolus?
- A. larynx, right bronchus, trachea, bronchioles
  - B. right bronchus, larynx, bronchioles, trachea
  - C. larynx, trachea, right bronchus, bronchioles
  - D. trachea, larynx, bronchioles, right bronchus
8. An increase in the rate of contractions of the diaphragm and rib muscles would indicate:
- A. decreased hydrogen ion concentration
  - B. decreased reduced hemoglobin in the blood
  - C. increased concentration of bicarbonate ion in the blood
  - D. increased concentration of oxyhemoglobin in the blood
9. Inhalation results from:
- A. contraction of the diaphragm
  - B. movement of the pleural membranes
  - C. decreased carbon dioxide in the blood
  - D. relaxation of the rib (intercostal) muscles
10. During exhalation of air, the:
- A. alveoli contract
  - B. diaphragm relaxes
  - C. rib muscles contract
  - D. thoracic cavity increases in volume

11. During inhalation:
- A. the diaphragm contracts and the rib muscles relax
  - B. the diaphragm relaxes and the rib muscles contract
  - C. air pressure in the lungs increases and outside air rushes in
  - D. air pressure in the lungs decreases and outside air rushes in
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12. Which part of the brain initiates the resumption of breathing when someone holds their breath?
- A. cerebellum
  - B. hypothalamus
  - C. corpus callosum
  - D. medulla oblongata
13. What occurs when the diaphragm relaxes and becomes dome shaped?
- A. The rib muscles relax, thoracic cavity volume increases, and exhalation occurs.
  - B. The rib muscles relax, thoracic cavity volume decreases, and exhalation occurs.
  - C. The rib muscles contract, thoracic cavity volume increases, and inhalation occurs.
  - D. The rib muscles contract, thoracic cavity volume decreases, and inhalation occurs.
14. During exhalation, what structure does air pass through immediately after leaving the bronchioles?
- A. the alveoli
  - B. the bronchi
  - C. the trachea
  - D. the pharynx
15. Which of the following events occurs during inhalation?
- A. The rib muscles relax.
  - B. The diaphragm flattens.
  - C. The thoracic volume decreases.
  - D. The rib cage moves down and in.



16. High blood concentrations of which substance increases the rate and depth of breathing?

- A. acetylcholine
- B. hydrogen ions
- C. oxyhemoglobin
- D. carbonic anhydrase

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17. What condition initiates exhalation?

- A. high oxygen levels in the blood
- B. low air pressure in the thoracic cavity
- C. low carbon dioxide levels in the blood
- D. increased stimulation of the stretch receptors of the alveoli

**Marks**

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### Section Assignment 3.4 Part C

## Internal and External Respiration

Select the best answer for each of the following questions.

1. Internal respiration is defined as:
  - A. exchange of gases between blood and air
  - ~~B. production of ATP, carbon dioxide, and water in cells~~
  - C. exchange of gases between blood and tissues
  - D. entrance and exit of air into and out of the lungs
2. Oxygen-poor blood becomes oxygen-rich blood at the:
  - A. alveoli
  - B. trachea
  - C. bronchi
  - D. bronchioles
3. Which of the following reactions is considered a part of external respiration?
  - A. oxygen + hemoglobin  $\rightarrow$  oxyhemoglobin
  - B. carbon dioxide + hemoglobin  $\rightarrow$  carbaminohemoglobin
  - C. oxygen + water  $\rightarrow$  hydrogen peroxide
  - D. carbon dioxide + water  $\rightarrow$  carbonic acid
4. Carbonic anhydrase catalyzes a reaction between:
  - A. water + hydrogen
  - B. water + hemoglobin
  - C. water + carbon dioxide
  - D. hydrogen + hemoglobin
5. Hemoglobin releases oxygen at the tissues if:
  - A. temperature decreases and the blood is more acidic
  - B. temperature decreases and the blood is more basic
  - C. temperature increases and the blood is more acidic
  - D. temperature increases and the blood is more basic

6. Which of the following is the site of external respiration?

- A. alveoli
- B. bronchioles
- C. mitochondria
- D. muscle tissue

7. Which of the following is not carried by hemoglobin?

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- A. oxygen
- B. sodium ions
- C. hydrogen ions
- D. carbon dioxide

8. Most hemoglobin becomes reduced inside a(n):

- A. artery
- B. venule
- C. arteriole
- D. capillary

9. The product of the reaction between Hb and oxygen is:

- A. bicarbonate
- B. hemoglobin
- C. oxyhemoglobin
- D. carbaminohemoglobin

10. Carbaminohemoglobin is formed in the:

- A. large intestine by E. coli
- B. alveolus when excess oxygen is present
- C. capillary for the transport of carbon dioxide
- D. nephron from the breakdown of amino acids

11. Internal respiration is the exchange of:

- A. glucose and hydrogen ions between the air and the blood
- B. oxygen and carbon dioxide between the air and the blood
- C. glucose and hydrogen ions between the blood and the tissue fluid
- D. oxygen and carbon dioxide between the blood and tissue fluid

12. Which of the following has the highest concentration of both bicarbonate ions and reduced hemoglobin?
- A. an iliac vein
  - B. a carotid artery
  - C. a coronary artery
  - D. a pulmonary vein
- 
13. Which of the following would cause a decrease in the pH of the blood during internal respiration?
- A. running for ten minutes
  - B. digestion of an acidic food
  - C. taking in several deep breaths
  - D. prolonged period of inactivity
14. Most of the carbon dioxide produced by the tissues is carried back to the lungs as:
- A. bicarbonate ions
  - B. reduced hemoglobin
  - C. carbaminohemoglobin
  - D. as gas dissolved in plasma
15. Blood entering the systemic circulation carries high concentrations of:
- A. oxyhemoglobin
  - B. bicarbonate ions
  - C. reduced hemoglobin
  - D. carbaminohemoglobin
16. Which of the following events causes the pH of the blood to increase?
- A. reduced hemoglobin is produced
  - B. oxygen combines with hemoglobin
  - C. carbon dioxide combines with water
  - D. bicarbonate and hydrogen ions are produced

17. During external respiration, the concentration of which of the following increases in the blood?

- A. ATP
  - B. hemoglobin
  - C. oxyhemoglobin
  - D. reduced hemoglobin
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18. Which substance is transported as reduced hemoglobin in the blood?

- A. water
- B. oxygen
- C. hydrogen ion
- D. carbon dioxide

19. A small amount of carbon dioxide is transported in the pulmonary artery as:

- A. bicarbonate ion
- B. carbonic anhydrase
- C. reduced hemoglobin
- D. carbaminohemoglobin

20. What occurs at the alveoli and pulmonary capillaries?

- A. internal respiration
- B. external respiration
- C. the binding of hydrogen ion to hemoglobin
- D. the release of oxygen from hemoglobin

**Marks**

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