

RESPIRATION

Key Concepts

- 14.1 Properties of respiratory surfaces
- 14.2 Human respiratory system
- 14.3 Lung volumes and capacities
- 14.4 Control of breathing
- 14.5 Mechanism of transport of gases
- 14.6 Respiratory pigments:
- 14.7 Respiratory disorders

EXERCISE

SECTION I: Multiple Choice Questions

Select the correct answer from the following choices.

1. When blood leaves the capillary bed most of the carbon dioxide is in the form of:
 - (a) carbonate ions
 - (b) bicarbonate ions
 - (c) hydrogen ions
 - (d) hydroxyl ions
2. When you inhale, the diaphragm?
 - (a) relaxes and moves upward
 - (b) relaxes and moves downward
 - (c) contracts and moves upward
 - (d) contracts and moves downward
3. With which other system do specialised respiratory systems most closely interface in exchanging gases between the cells and the environment?
 - (a) the skin
 - (b) the excretory system
 - (c) the circulatory system
 - (d) the muscular system
4. Which of the following is the respiratory surface in human respiratory system?
 - (a) larynx
 - (b) trachea
 - (c) bronchi
 - (d) alveoli

- 5. How is most of the oxygen transported in the blood?**
(a) dissolved in plasma (b) bound to haemoglobin
(c) as bicarbonate (d) dissolved in water
- 6. The lateral walls of the chest cavity of man are composed of the:**
(a) ribs
(b) intercostals muscles
(c) ribs, intercostals muscles
(d) ribs, intercostals muscles and diaphragm
- 7. Which of the following factors is the most effective in accelerating the rate of breathing in man?**
(a) a lack of oxygen in the blood
(b) a lack of oxygen in the tissues
(c) an excess of carbon dioxide in the lungs
(d) an excess of carbon dioxide in the blood
- 8. Which of the following changes will increase the bodys rate of carbon dioxide excretion into the alveoli?**
(a) holding the breath
(b) the breakdown of alveolar tissue as a result of disease
(c) a decrease in the partial pressure of carbon dioxide in the alveolar air
(d) a decrease in the pulmonary circulation
- 9. Breathing is an example of:**
(a) counter current exchange (b) cellular respiration
(c) ventilation (d) diffusion
- 10. Which event is not associated with the activity of expiration?**
(a) contraction of diaphragm (b) more dome like shape of diaphragm
(c) backward and downward movement of rib cage
(d) Relaxation of external intercostals muscles
- 11. Respiratory pigments:**
(a) combine reversibly with only oxygen
(b) all have four haem groups
(c) attach to the alveolar wall
(d) none of them
- 12. Which sequence most accurately describes the sequence of airflow in the human respiratory system?**
1. pharynx 2. Bronchus 3. Trachea 4. Larynx 5. Alveolus 6. Bronchiole
(a) 4, 1, 3, 2, 5, 6 (b) 1, 4, 3, 2, 5, 6
(c) 4, 1, 3, 2, 6, 5 (d) 1, 4, 3, 2, 6, 5
- 13. The amount of air moved in and out of the lungs with each normal resting breath is the:**

(c) tidal volume

(d) vital volume

14. Pulmonary emphysema:

(a) characterised by loss of elasticity of the alveolar walls

(b) results from bacterial infection

(c) results from bronchial constriction

(d) is uncommon in cigarette smokers

Answer

1	(b)	2	(d)	3	(c)	4	(d)	5	(b)
6	(c)	7	(a)	8	(c)	9	(c)	10	(a)
11	(d)	12	(d)	13	(c)	14	(d)		

SECTION II: Short Questions

Give short answers of the following questions.

Q1. List any two properties of respiratory tract that help to trap dust particles and microbes in inhaled air.

Answer

- Haris:** present inside the nostrils
- Mucous membrane:** Inside the nose secretes a sticky substance called mucus.
- Cilia:** Originate from internal lining of nasal cavity filter the air and prevent the entry of foreign particles such as micro-organisms, dust and particulate matter inside the respiratory system.

Q2. List the properties of respiratory surface.

Answer

Properties of Respiratory Surfaces

The area where gaseous exchange with the environment actually takes place is called the respiratory surface. Gaseous exchange takes place in all organisms by the physical process of diffusion. For effective diffusion the respiratory surface must have the following properties.

- It must be permeable, so that gases can pass through it.
- It must be thin for efficient diffusion, because diffusion is only efficient over distance of 1 mm or less.
- It should possess a large surface area so that sufficient amounts of gases are able to be exchanged according to the organism's need.
- It should possess a good blood supply.
- There should be a good ventilation mechanism to maintain a steep diffusion gradient across the respiratory surface.

Q3. What organs constitute the respiratory system?

Answer

Respiratory system provides fundamental ability to breath. This system consists of: