

Breathing and Exchange of Gases

Assertion Reason Questions

Given below are two statements labelled as Assertion (A) and Reason (R). Select the most appropriate answer from the options given below:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true and R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true..

1. Assertion (A): Emphysema is caused by dust accumulation in lungs.

Reason (R): It causes a shortening of breath and decreases respiratory surface.

Ans. (d) A is false but R is true.

Explanation: Emphysema occurs most often in people who smoke, but also in people who regularly breathe in irritants. It resulted in decrease in respiratory surface due to damage of alveolar walls.

2. Assertion (A): Alveoli act as primary site for respiratory exchange.

Reason (R): The respiratory exchange depends upon the concentration and pressure gradient of gases.

Ans. (a) Both A and R are true and R is the correct explanation of A.

Explanation: In alveoli, gases are exchanged through simple diffusion. The gases move from high concentration and pressure gradient to low concentration and pressure gradient.

3. Assertion (A): Residual volume is retained air in the lungs.

Reason (R): After forceful expiration, some volume of air remains inside the lung.

Ans. (a) Both A and R are true and R is the correct explanation of A.

Explanation: The air volume retained within the lungs after the forceful expiration is residual volume.

4. Assertion (A): The gaseous transportation is dependent on solubility of gases.

Reason (R): CO₂ is more soluble than O₂ in an aqueous solution.

Ans. (a) Both A and R are true and R is the correct explanation of A.

Explanation: CO_2 is 20-25 times more soluble than O_2 . It is more easily transported through plasma and blood than oxygen.

5. Assertion (A): Symptoms of emphysema develops when a person living on a plane ascends and stay on a mountain.

Reason (R): Air pressure and partial pressure of oxygen fall with the rise in altitude.

Ans. (a) Both A and R are true and R is the correct explanation of A.

Explanation: Emphysema is a lung disorder that causes shortness of breath. Air sacs in the lungs are damaged when a person is suffering from emphysema. The causes of this disease are smoking, air pollutants. etc.,
In higher altitudes, the O_2 level falls due to which a person can suffer from shortness of breathe.