

## Short Answer Type Question-1

**Q.1. Write about two phases of aerobic respiration.**

**Ans. The two phases of aerobic respiration are:**

External respiration and Internal respiration.

**(i) External respiration:** It is simply the intake of oxygen from the surrounding medium (air or water) and giving out of carbon dioxide into that surrounding medium.

**(ii) Internal respiration :** This involves three steps:

- (a) uptake of oxygen by tissue cells,
- (b) oxidation of food inside of the cells by oxidising enzymes,
- (c) elimination of carbon dioxide from tissues.

**Q. 2. Explain the role of intercostal muscles in respiration.**

**Ans. (i)** The contraction of the external intercostal muscles and diaphragm increases the volume of the thoracic cavity and lowers the pressure in the lungs.

**(ii)** To fill up this gap, the fresh air rushes to the lungs resulting in the inspiration.

**(iii)** The relaxation of the diaphragm and the intercostal muscles returns the diaphragm and sternum to their normal positions and decreases the volume of the thoracic cavity and subsequently, pressure in the lungs increases.

**(iv)** To equalise this pressure, the air from the lungs rushes out through the respiratory passage to bring out expiration.

**Q. 3. State the route of foul air from the lungs to the outside ?**

**Ans.** The route followed by foul air from the lungs to outside is as follows:

Alveoli → Alveolar duct Bronchioles → Bronchi → Trachea → Larynx → Glottis → Pharynx → Internal nares → Nasal chambers → External nares → Atmosphere.

**Q. 4. How does air play a vital role in the production of voice ? On what factors the quality of sound depends ?**

**Ans.** Sound is produced by the vocal cords. When expired air is passed through the true vocal cords under pressure from the lungs, the vocal cords are set into vibration which results in the production of sound.

**Factors:** The pitch of a sound is determined by the tension on the vocal cords-the greater the tension, the higher the pitch. The quality of voice depends on the resonators above the larynx, namely the pharynx, mouth and paranasal sinuses.

**Q. 5. Inspiratory muscles and expiratory muscles play very important role in respiratory process. (DDE 2017)**

**Ans.** The contraction of the external inter costal muscles and diaphragm leads to increase in volume of thoracic cavity. An increase in pulmonary volume decreases the intra-pulmonary pressure to less than atmospheric pressure. Thus forcing air into the lungs from outside. This is inspiration. Relaxation of the diaphragm and the inter-costal muscles returns the diaphragm and the sternum to their normal positions and reduce the thoracic volume and thereby the pulmonary volume. This lead to an increase in intra-pulmonary pressure in comparison to the atmospheric pressure. This causes expiration.

**Q. 6. What are the two factors that contribute towards the dissociation of oxyhaemoglobin in the arterial blood to release molecular oxygen in an active tissue?**

**Ans.** The two factors that contributes towards the dissociation of oxyhaemoglobin in the arterial blood to release molecular oxygen in an active tissue are,

- (i) Lower concentration of  $pO_2$  and
- (ii) Higher concentration of  $pCO_2$ .

**Q. 7. What is partial pressure ? how does it help in gaseous exchange during respiration ?**

**Ans.** The pressure exerted by an individual gas in a mixture of gases is called partial pressure. It is directly proportional to its concentration in a mixture It is expressed as  $PO_2$ ,  $PCO_2$ , etc. A gas diffuses across a membrane from the side where its partial pressure is higher to the side where it is lower. In lungs,  $PO_2$  is higher in alveolar air than in blood capillaries, so  $O_2$  diffuses from lungs into the blood. Sometime  $PCO_2$  is higher in blood than in alveoli and hence it diffuses out.

**Q. 8. Give two symptoms of bad cold.**

- Ans.** (i) Inflammation of mucous membrane in Rhinitis.
- (ii) Enlargement of tonsils.

**Q. 9. Write the difference between carbamino- haemoglobin and oxyhaemoglobin.**

**Ans. Carbamino-haemoglobin :** Carbon dioxide when enters the erythrocytes combines with globin, part of deoxy haemoglobin There by carbamino-haemoglobin forming.

**Oxyhaemoglobin :** Oxygen diffuses into erythrocytes and combines with the iron ions of haemoglobin and forms oxyhaemoglobin