** Pakistan School, Kingdom of Bahrain**

 **E. Support and learning material/ Session 2020-2021**

**Subject. Biology Grade. 10th**

**Book. Bio 10 PLD Publishers Term. 1st**

***NOTE: FOR SSC CLASSES PRESCRIBED TEXTBOOKS ARE THE MAIN SOURCE OF INFORMATION. FOLLOW THE TEXTBOOK ACCORDING TO ONLINE LECTURES. SAMPLE NOTES ARE PROVIDED FOR YOUR ASSISSTANCE.***

**Unit. 01. Gaseous Exchange.**

**Topic 03. The mechanism of breathing**

**Q.1.Is breathing an involuntary movement?**

Ans. It is involuntary to a large extent. However we can control the rate the rate of breathing but not for a long time.

**Q.2.Describe the comparison between the inspired and expired air.**

**Ans.**

|  |  |  |
| --- | --- | --- |
| **Features** | **Inspired air** | **Expired air** |
| Amount of oxygen | 21% | 16% |
| Amount of carbon dioxide | 0.04% | 4% |
| Amount of nitrogen | 79% | 79% |
| Amount of water vapors | variable | Saturated |
| Amount of dust particles | variable | Almost none |
| Temperature | variable | Almost equal to body temperature |

**Q.3. Describe the mechanism of breathing.**

Ans. There are two phases breathing.

1. **Inspiration or Inhalation**: During inspiration the rib muscles contract and ribs are raised. At the same time the dome shaped diaphragm contracts and is lowered. These movements increase the area of thoracic cavity, which reduces the pressure on the lings as the result lungs expand & the air pressure within them also decreases. The air from outside rushes into the lungs to equalize the pressure on both sides.
2. **Expiration or Exhalation**: After the gaseous exchange in the lungs, the impure air is expelled out in exhalation. The rib muscles relax, bringing the ribs back to the original position. The diaphragm muscles also relax, and it gets its raised dome shape. This reduces the space in the chest cavity and increases the pressure on the lungs. The lungs contract and the air is expelled out the lungs. (fig 10.5 & 10.6).

 **Topic 04. Respiratory disorders**

**RESPIRATORY DISORDERS**

**Q.5.What are main respiratory disorders of human?**

Ans. Some of the important respiratory disorders of human are given below.

1. Bronchitis
2. Emphysema
3. Pneumonia
4. Asthma
5. Lung cancer

 **Q 6. What is lung cancer?**

Ans. Lung cancer is a disease of uncontrolled cell divisions in the tissues of the lung. The cells continue to divide without any control and form tumors.

 **Q.7.How does the tobacco smoke damage the respiratory system?**

Ans. Smoking is harmful due to chemicals in cigarettes and smoke. It is the main cause of lung cancer. Cigarette smoke contains over 50 known carcinogens.

**Q. 8 State the symptoms, causes and treatments of bronchitis, emphysema, and pneumonia.**

Ans. **A. Bronchitis.**

**Causes.** It is the inflammation of the bronchi or bronchioles. It is caused by viruses, bacteria or exposure to chemical irritants. There are two major types of bronchitis. Acute and chronic bronchitis.

**Symptoms.** Symptoms of bronchitis includes a cough, mild wheezing, fever chills and shortness of breath.

**Treatment**. Drink fluids but avoid caffeine and alcohol. Take antibiotics as prescribed by dr. and get plenty of rest.

**B. Emphysema.**

**Causes**. It is the destruction of the walls of the alveoli. As lung tissue breaks down the lungs do not come back to their original shape after exhalation and air cannot be pushed out and is trapped in the lungs.

**Symptoms**. Symptoms include shortness of breath, fatigue, recurrent respiratory infections and weight loss

**Treatment**. Corticosteroid drugs inhaled as aerosol sprays reduce inflammation.

**C. Pneumonia.**

**Causes**. It is also infection of lungs, if this infections affect both lungs, it is called double pneumonia .It is caused by a bacterium Streptococcus pneumonia .Some viral and fungal infections may also lead to pneumonia.

**Symptoms**. Symptoms of pneumonia includes cold with high fever, shivering and a cough with sputum production .Patient may become short of breath with change in skin colour due to poor oxygenation of blood.

**Treatment**. Vaccines are available to prevent the pneumonia. Antibiotics are also available.

**Q.9.How does the tobacco smoke damage the respiratory system?**

Ans. Smoking is harmful due to the chemicals in cigarettes and smoke.

Smoking is the main cause of lungs cancer. Cigarette smoke affects the body from head to toes. It also leads to cancerous in kidneys, oral cavity, larynx, breast, bladder and pancreas etc. Smoking also affects the circulatory system.

Smoking is also main cause of heart attack due to arteriosclerosis. Smoking is also responsible for weakening and staining of teeth. Tooth loss is 2 to 3 times higher in smokers than in non-smokers.

**ASSESSMENT**

**MULTIPLE CHOICE QUESTIONS**

1. **The process of gaseus exchange involves**
2. Breakdown of C-H Bonds to yeild energy
3. Physical movements that take air in and out of body
4. Getting oxygen from the air and removing carbon dioxide
5. Transport of oxygen by the blood to different parts of the body
6. **Most of the gaseous exchnge in a leaf occurs through:**

A. Stomata B. General Surface

C. Cuticle D. Lenticels

1. **How many bronchi are there in the air passageway ?**

A. One B. Two

C. Many D. None

1. **Where does the gaseous exchange occur in humans ?**

A. Pharynx B. Trachea

C. Bronchi D. Alveoli

1. **Which structure actively helps in taking the air out of lungs ?**

A. Nasal Cavity B. Bronchus

C. Bronchiole D. Diaphragm

1. **The primary chemical stimulus for breathing is the concentration of:**

A. Carbondioxide in blood B. Oxygen in blood

C. Carbondioxide in muscles D. Oxygen in muscles

1. **Point out the FALSE statement about respiration:**

A. Gases can easily pass through the walls of the alveoli

B. Gas exchange in lungs is very efficent because lungs provide large surface area

C. In emphysema the walls of alveoli break and there is more surface area

D. Dust particles can damage the lungs by irritating the inner alveoli surface

1. **A disease involving the breakdown of air sacs of the lungs is:**

A. Pneumonia B. Bronchitis

C. Asthma D. Emphysema

1. **Which process does NOT occur in the nasal cavity ?**

A. Trapping of large dust particles B. Humidification of the inhaled air

C. Warming of the inhaled air D. Exchange of gases

1. **What type of blood vessels surround the alveoli**

A. Artery B. Arteriole

 C. Capillary D. Vein