**Pakistan School , Kingdom of Bahrain**

**E- Support and Learning Material / Session 2020-2021**

**Subject: Biology Grade : 10**

**Book: Biology Grade 10 PLD Publishers FIRST TERM**

***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.**

**Q.1. Define cellular respiration.**

Ans. It is a set of metabolic reactions and processes that take place in the cells of organisms to convert biochemical energy from nutrients into adenosine triphosphate (ATP) and then release waste products.

**Q.2. Define the term breathing.**

**Ans.** It is the mechanical or physical process of exchange of gases.

**Q.3. How would you differentiate between a stoma and a lenticel?**

**Ans.** A stoma (plural stomata) is a tiny opening or pore that is used for gas exchange. They are mostly found on the under surface of plant leaves. Lenticels are pores present in the layer of barks of woody plants. The lenticels allow air to pass through them.

**Q.4. How do the different parts of the plant body exchange gases with the environment?**

**Ans.** Plants have no organs or systems for the exchange of gases with the environment .Every cell of the plant body exchange gases with the environment by its own. There are following ways by which plants exchange gases.

1. The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata. The inner cells of leaves and stems also have air spaces which help in the exchange of gases.
2. In woody stems and mature roots the entire surface is covered by bark which is impervious to gases or water. There are certain pores In the layer of bark these are called lenticels. The lenticels allow air to pass through them.
3. Gases diffuses in and out of the general surface of the young roots the gases are found in the soil surrounding the roots.
4. The aquatic plants get the oxygen dissolved in water and release carbon dioxide in the water.(Figure 10.1 page 3)

**Q.5. What is respiratory system ? How many parts of human respiratory system?**

Ans. In humans and other animals the exchange of gases is carried out by the well defined and organized system called the respiratory system. It is divided in two parts

1. The passage way
2. Lungs

**Q.6. Trace the path of air from the nozzle cavity to the alveoli?**

* Nostrils
* Nasal cavity + oral cavity
* Pharynx
* Epiglottis
* Trachea
* Bronchi
* Lungs
* Bronchioles
* Alveoli

**Q.7 Write down the function of ciliated and glandular cells?**

**Ans.** Glandular cells secrete mucus which moistens the air and also traps any fine particles of dust or bacteria that have escaped from the nasal cavity the cilia beat with an upward motion so that the foreign particles along the mucus are sent to the oral cavity from where it may be either swallowed or coughed out

**Q.8. How sound is produced in human?**

**Ans**. The larynx is a box made of cartilage. It is also called the voice box.Two pairs of fibrous bands called vocal cords.The vocal cords vibrate when the air passes through them. This vibration produces sounds.

**Q.9. Describe the structure and function of human respiratory system.**

**Ans.** The human respiratory system consists of two parts.

1. The air passage way b. The lungs
2. The air passage way. The air passage way consists of the parts through which the out side air comes in the lungs and after the exchange of gases it goes out. It consist of following parts.

The nose encloses the nasal cavity. It opens to the outside through the openings called nostrils. The nasal cavity opens into the pharynx by means

Of two small openings called internal nostrils. Phyrynx is a muscular passage leads to the opening of the oesophagus and the larynx. Glottis is a narrow opening at the floor of pharynx which leads into larynx. The larynx is a box made of cartilage. It is also called voice box. Larynx continues to the trachea which is also called windpipe and is about 12cm long lies in front of the oesophagus. It contains the C shaped cartilaginous rings in its walls. These rings prevent the trachea from collapsing.

In chest cavity the trachea divides into two smaller tubes called bronchi. The bronchi also have cartilaginous plates in their walls .On entering into lungs each bronchus is divided into smaller branches called bronchioles. The bronchioles end as fine tubules called the alveolar ducts.

Each alveolar duct opens into a cluster of pouches called alveoli.Each alveolius is a sac like structure and is bound on the outside by a network of capillaries.Gaseous exchange takes place in alveoli. ( Fig.10.3 pg.5)

1. The lungs. There is a pair of lungs in the thoracic cavity.A thick muscular structure called diaphragm is present below the lungs. (Fig.10.4.pg. 7)

The left lung is slightly smaller and has two lobes and right lung is bigger with three lobes.They are spongy and elastic organs. The lungs also have blood vessels.Each lung is enclosed by two membranes calle the outer pleural membrane and the inner pleural membrane.The membranes enclose a fluid which provides lubrication for the free expanding and contracting of the lungs.

Q**.10. Is breathing movement is 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.11. 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 vapours | variable | Saturated |
| Amount of dust particles | variable | Almost none |
| Temperature | variable | Almost equal to body temperature |

**Q.12. 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).