

Gaseous Exchange

Q1: Define Cellular respiration.

Ans: The process in which C-H bonds in the food are broken by oxidation and energy is released in the form of ATP is called Cellular respiration.

Q2: What is the difference between Respiration and Breathing?

Ans:

Respiration	Breathing
Respiration is a process which takes place in two steps. i) Mechanical process ii) Bio Chemical process In mechanical process breathing takes place Oxygen is taken in and CO ₂ is given out. In Biochemical process cellular respiration takes place in which C-H bond of the food are broken and energy is released in the form of ATP.	Breathing is the bio mechanical part of Respiration. In Breathing oxygen is taken in and Carbon dioxide is given out. No Chemical reaction occurs. Process of breathing consist of two parts inhalation and exhalation.

Q3: Differentiate between Stomata and Lenticels.

Ans:

Stomata	Lenticels
i) These are the small pores on the surface of leaf whose opening and closing is controlled by guard cells.	i) These are the small pores present in the layer of bark of woody plants. ii) Gaseous exchange takes place through lenticles.

ii) Stomata are involved in gaseous exchange and transpiration.	
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Q4: Write a short note on gaseous exchange in plants.

Ans: Plants exchange gases with environment through stomata (small pores present in leaf) and lenticles (small pores present in the bark). In unicellular plants gaseous exchange occurs through diffusion.

In Night plants release carbon dioxide and in day time plants release oxygen.

Q5: What is the difference between daytime respiration and respiration of night in plants?

Ans:

Plant use oxygen and give out carbon dioxide during respiration.

Plants use carbon dioxide in photosynthesis and give out oxygen.

In Day time carbon dioxide produced during respiration used in photosynthesis.

In Night time there is no photosynthesis (as it occurs in sunlight) so carbon dioxide is released in air.

Q6: How does the gaseous exchange occurs in leaves and young stems?

Ans: In leaves the gaseous exchange occurs by Stomata. In young stems there are lenticels which are used in gaseous exchange.

Q7: What are air spaces in plants?

Ans: The inner cells of leaves like mesophyll and stems have empty spaces among them which are called air spaces. Air spaces help in exchange of gases.

Q8: What are Alveolar ducts and Alveoli?

Ans: In Air passage the bronchi continue dividing into lungs until they make bronchioles that lose the cartilages as they become narrower the bronchioles end as fine tubules called the alveolar ducts.

Alveoli: Each Alveolar duct opens into a cluster of pouches called Alveoli. Alveoli contain blood capillaries used for gaseous exchange during breathing.

Q9: What are functions of hair and mucous in the nose?

Ans: Hair and mucous in nasal cavity of nose filter the dust particles from the air. The mucous also moistens and warms the incoming air and keeps its temperature nearly equal to body.

Q10: What is Epiglottis and write its function?

Ans: In the buccal cavity, in pharynx there are two ways one is toward stomach and other toward larynx. The opening towards larynx is called glottis. Epiglottis is a flap of tissues which covers the glottis during swallowing so that food particles should not enter in lungs.

Q11: What is the role of Pharynx in Respiration?

Ans: In the buccal cavity, in pharynx there are two ways one is toward stomach and other toward larynx. The opening towards larynx is called glottis. Epiglottis is a flap of tissues which covers the glottis during swallowing so that food particles should not enter in lungs.

Q12: What is the difference between bronchus and Bronchioles?

Ans: Bronchus: On entering the chest cavity the trachea divides into two smaller tubes called Bronchi single called bronchus

Bronchioles: The bronchi continue dividing in the lungs until they make several fine tubes called bronchioles.

Q13: Differentiate between Larynx and Trachea.

Ans: Trachea: Trachea is made of cartilage. It is next part of larynx and is about 12 cm long. Larynx continues to Trachea. It is called wind pipe and contain C Shape cartilage which prevent Trachea from collapsing even if there is no air in it.

Larynx: The larynx is a box, made of cartilage it is present between pharynx and trachea. Larynx is called the voice box because it has vocal cords which vibrates and produce sound.

Q14: Write the importance of Trachea in the Respiratory system.

Ans: Trachea is made of cartilage. It is next part of larynx and is about 12 cm long. Larynx continues to Trachea. It is called wind pipe and contain C Shape cartilage which prevent Trachea from collapsing even if there is no air in it.

Q15: What is voice box? Where is it present?

Ans: The larynx is a box, made of cartilage it is present between pharynx and trachea. Larynx is called the voice box because it has vocal cords which vibrates and produce sound.

Q16: What are intercostal muscles?

Ans: The Chest wall is made up of 12 pairs of ribs and the rib muscles called intercostal muscles.

Q17: Write two functions of nasal cavity.

Ans: The nose encloses the nasal cavity. The nasal cavity is divided into two portions by a wall. Each portion is lined by fine hairs and mucous.

- i) The fine hairs in nasal cavity filter the dust particles from the air.

- ii) Mucous in nasal cavity moistens and warms the incoming air and keeps its temperature nearly equal to that of the body.

Q18: Differentiate between nasal cavity and nostrils?

Nasal Cavity	Nostrils
The nose encloses the nasal cavity. The nasal cavity is divided into two portions by a wall. Each portion is lined by fine hairs and mucous.	Nasal cavity open to the exterior through opening called as external nostrils. Nasal Cavity opens to the interior through two small openings into pharynx called as internal nostrils.

Q19: Write the path of Air from the Nasal Cavity to Alveoli.

Ans: Air passage in Human Respiratory system:

Nose → Pharynx → Larynx → Trachea → Chest cavity →
Bronchi → Bronchioles → Alveolar ducts → Alveoli →
Capillaries

Q20: What is diaphragm?

Ans: It is a thick muscular structure present below the lungs.

Q21: What is meant by oxygenated Blood?

Ans: The blood coming from lungs and have high amount of oxygen is called oxygenated blood.

Q22: What is the role of pleural membranes and pleural fluid in lungs?

Ans: Each lung is enclosed by two membranes called outer and inner pleural membrane. The membrane enclose a fluid called pleural fluid which provides lubrication for the free expanding and contracting of the lungs.

Q23: What are lungs?

Ans: All the alveoli on one side constitute a lung. There is pair of lungs in the thoracic cavity. They are spongy and elastic organs. The lungs also have blood vessels that are the branches of pulmonary arteries and veins.

Q24: What is inspiration? How does it occur?

Ans: The air from outside of the rushes into the lungs is called inspiration or inhalation.

During inspiration, the ribs muscles contract and ribs are raised. At the same time the dome-shaped diaphragm contracts and lowered. This increases the area of chest cavity and air rushes into lungs from outside.

Q25: What is Expiration or Exhalation? How does it occur?

Ans: Expiration is the process in which the impure air is expelled out .

In this process ribs muscles expands resulting dome-shaped diaphragm raised thus reducing the area of chest cavity and increases the pressure on lungs. The lungs contract and air is expelled out of them.

Q26: What is meant by aerobic respiration?

Ans: Aerobic respiration is the type of respiration in which oxygen is used. In this process the complete oxidation of food material take place.

Q27: How does breathing rate is controlled in human?

Ans: The rate of breathing is controlled by respiratory center in brain. The respiratory center is sensitive to the concentration of Carbon dioxide in the blood.

Q28: Write the amount of oxygen in inspired and expired air during breathing?

Ans: We inspired 21% oxygen from air and expired 16% oxygen in air during breathing.

Q29: What is meant by Bronchitis?

Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretion of mucous into the tubes, leading to the swelling of tubular walls and narrowing of tubes.

Q30: Write down the types and symptoms of Bronchitis.

Ans: There are two types of bronchitis.

Acute Bronchitis

Chronic Bronchitis

Symptoms of Bronchitis: Its symptoms include cough, mild wheezing fever, chills and shortness of breath especially when doing hard job.

Q31: Differentiate between Acute and Chronic Bronchitis.

Ans:

Acute Bronchitis	Chronic Bronchitis
Acute bronchitis usually lasts about for two weeks. In this disease patient recovers with permanent damaging of bronchi or bronchioles. It can be in any age.	In Chronic bronchitis, the bronchi develop chronic inflammation. This type of bronchitis usually remains 3 months to 2 years. It mostly occurs in older people.

Q32: What is pneumonia? Write its symptoms.

Ans: Pneumonia is the infection of lungs. If this infection affects both lungs it is called double pneumonia.

Symptoms: The symptoms of pneumonia include a cold that is followed by high fever, shivering and a cough with sputum production patient may become short of breath. The patients color may change and become dusky or purplish. It is due to poor oxygenation of blood.

Q33: What can cause of pneumonia?

Ans: The most common cause of pneumonia is a bacterium streptococcus pneumoniae. Some viral and fungal infections may also lead to pneumonia.

Q34: What is meant by Emphysema?

Ans: In emphysema the walls of alveoli destroy. It results in larger sacs but with less surface area for gaseous exchange. As lung tissue breaks down the lungs do not come back to their original shape after exhalation so air cannot be pushed out and is trapped in the lungs.

Symptoms: Its symptoms include shortness of breath, fatigue recurrent respiratory infections and weight loss.

Q35: Write a short note on lung cancer.

Ans: Lung cancer is a disease of uncontrolled cell division in the tissues of the lungs. The cells continue to divide with any control and form tumors.

Symptoms: The most common symptoms are shortness of breath, coughing and weight loss.

Causes: The main cause of lung cancer includes smoking, ionizing radiation and viral infections.

Q36: Write a short note on Asthma.

Ans: Asthma is a form of allergy in which there is inflammation of bronchi, more mucous production and narrowing the airways.

Symptoms: The of asthma vary from person to person. The major symptoms include shortness of breath especially at the time of hard work and exercise.

Wheezing and whistling sound when breath out.

Cough and chest tightness.

Causes: In asthma patients the bronchi and bronchioles become sensitive to allergy causing factors. E.g., dust, smoke, perfumes pollens etc. When exposed to any such allergens the sensitive airways show immediate and excessive response of constriction. In this condition the patient feels difficulty in breathing.

Q37: How is Asthma treated?

Ans: The chemicals with ability to dilate the bronchi and bronchioles are used in the treatment of asthma. Such medicines are given in the form of inhalers.

Q38: Write two bad effects of smoking.

Ans: i) Risk of lungs cancer increase because of smoking.

ii.) Smoking increase the risk of tuberculosis by two to four times.

iii.) Smoking is responsible for weakening and staining of teeth.

Q39: What is passive smoking and how it is harmful?

Ans: Passive smoking means the inhalation of smoke from another's smoking. The smoke from the burning end of cigarette is more dangerous than the smoke from the filter end.

Q40: What is Nicotine?

Ans: Nicotine is a powerful poison and was widely used as an insecticide in the past. When inhaled through tobacco smoking, it reaches our circulatory system and not only hardens the walls of the arteries and also make them narrow.

Q41: Why does blood become thick due to smoking?

Ans: Smoking also has effects on the circulatory system. The carbon monoxide present in tobacco smoke lessens the oxygen-carrying capacity of hemoglobin. Many other chemicals in smoke increase the production of blood chemicals in smoke increase the production of blood platelets, which make blood thick.

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