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CLASS 10 • BIOLOGY

Chapter 10

Gaseous Exchange

Solved MCQs with Detailed Explanations



85

Solved MCQs

5

Topic Sections



Answers Highlighted

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SECTION 1 • 10 MCQs

Introduction & Gaseous Exchange in Plants



Q1 What is the primary purpose of cellular respiration in organisms?

A To release carbon dioxide

B To produce ATP from food



C To absorb water

D To produce oxygen

✓ Correct Answer: B

Explanation: Cellular respiration is the metabolic process where the C-H bonds in food are broken down through oxidation-reduction reactions to release energy, which is then transformed into ATP (Adenosine Triphosphate), the energy currency of the cell. The other options are either byproducts or unrelated processes.

Q2 In which type of respiration is oxygen utilized for the complete oxidation of food material?

A Anaerobic respiration

B Aerobic respiration



C Fermentation

D Photosynthesis

✓ Correct Answer: B

Explanation: Aerobic respiration specifically requires oxygen to completely oxidize food materials, producing carbon dioxide, water, and a large amount of ATP. Anaerobic respiration occurs without oxygen.

Q3 The term "gaseous exchange" specifically refers to:

A The process of breathing in and out

B Taking in oxygen and giving out carbon dioxide ✓

C The production of ATP

D The movement of air in the lungs

✓ Correct Answer: B

Explanation: Gaseous exchange is the biological term for the diffusion of gases across a respiratory surface—specifically, taking in oxygen for cellular respiration and expelling the carbon dioxide produced as a waste product.

Q4 Which of the following statements correctly differentiates breathing from respiration?

A Breathing is a chemical process, while respiration is physical.

B Respiration only involves the mechanical process of gas exchange.

C Breathing is a mechanical process, while respiration involves both mechanical and bio-chemical processes. ✓

D Breathing produces ATP, while respiration does not.

✓ Correct Answer: C

Explanation: Breathing is simply the physical, mechanical act of moving air in and out of the body. Respiration is a broader term that includes breathing as well as the bio-chemical processes (cellular respiration) that occur inside cells to produce energy.

Q5 Plants exchange gases with their environment primarily through which structures in the leaves and young stems?

A Lenticels

B Stomata



C Cuticle

D Roots

✓ Correct Answer: B

Explanation: Stomata are microscopic pores found mainly in the epidermis of leaves and young stems. They serve as the primary gateways for the exchange of gases (oxygen and carbon dioxide) and water vapor.

Q6 In woody stems and mature roots, the entire surface is covered by bark. How do gases exchange in these parts?

A Through the stomata

B Through the cuticle

C Through lenticels



D Gases cannot exchange in woody stems

✓ Correct Answer: C

Explanation: The bark is impervious to gases and water. However, lenticels are specialized pores in the bark layer that allow air to pass through, facilitating gas exchange in woody stems and mature roots.

Q7 During the daytime, what happens to the oxygen produced by photosynthesis in a leaf cell?

A It is entirely released into the atmosphere.

B It is utilized in cellular respiration. ✓

C It is converted into carbon dioxide.

D It is stored in the vacuole.

✓ Correct Answer: B

Explanation: During the day, photosynthesis and respiration occur side-by-side in leaf cells. The oxygen produced as a byproduct of photosynthesis is immediately utilized by the cell for its own cellular respiration, rather than just being released.

Q8 How do aquatic plants obtain oxygen for their respiration?

A From the atmosphere through stomata

B From the oxygen dissolved in water ✓

C By breaking down water molecules

D Through lenticels on their stems

✓ Correct Answer: B

Explanation: Aquatic plants are submerged in water, so they cannot access atmospheric oxygen directly. Instead, they absorb the oxygen that is dissolved in the surrounding water and release carbon dioxide back into the water.

Q9 Which of the following is TRUE regarding gaseous exchange in plants at night?

- A** Photosynthesis occurs, producing oxygen.
- B** Only respiration occurs, taking in oxygen and releasing carbon dioxide. ✓
- C** Stomata remain completely closed to prevent water loss.
- D** Lenticels take over the entire process from stomata.

✓ Correct Answer: B

Explanation: At night, there is no sunlight for photosynthesis. Therefore, leaf cells exclusively carry out respiration, absorbing oxygen from the environment and releasing carbon dioxide through the stomata.

Q10 In a leaf cross-section, the inner cells (mesophyll) have air spaces among them. What is the primary function of these air spaces?

- A** To provide structural support
- B** To store water
- C** To facilitate the exchange of gases ✓
- D** To transport nutrients

✓ Correct Answer: C

Explanation: The interconnected air spaces between mesophyll cells act as a reservoir and pathway for gases, allowing oxygen to reach the cells and carbon dioxide to diffuse out towards the stomata.

SECTION 2 • 10 MCQs

2

Gaseous Exchange in Humans (The Air Passageway)



Q11

Which part of the human respiratory system is responsible for filtering, moistening, and warming the incoming air?

A Pharynx

B Nasal cavity



C Larynx

D Trachea

✓ Correct Answer: B

Explanation: The nasal cavity is lined with fine hairs and mucus. The hairs trap dust particles, while the mucus moistens the air and blood capillaries beneath the epithelium warm it to body temperature.

Q12

What is the function of the epiglottis?

A To produce sound

B To warm the air

C To guard the glottis and prevent food from entering the larynx



D To filter dust particles

✓ Correct Answer: C

Explanation: The epiglottis is a flap of tissue that acts like a lid over the glottis (the opening to the larynx). During swallowing, it closes to ensure food goes down the esophagus instead of into the windpipe.

Q13 The pharynx is a common passage for:

A Air and blood

B Food and water

C Food and air ✓

D Air and mucus

✓ **Correct Answer: C**

Explanation: The pharynx (throat) is a muscular passage located behind the nasal and oral cavities. It serves as a shared pathway for both the respiratory system (air) and the digestive system (food).

Q14 Why does the trachea not collapse when there is no air in it?

A It is made of solid bone

B It is supported by C-shaped cartilaginous rings ✓

C It is filled with fluid

D It is surrounded by the diaphragm

✓ **Correct Answer: B**

Explanation: The trachea (windpipe) is reinforced by C-shaped rings of cartilage. These rings provide structural support, preventing the airway from collapsing or closing shut, even when air pressure inside is low.

Q15 The larynx is also known as the:

A Windpipe

B Voice box



C Throat

D Air sac

✓ **Correct Answer: B**

Explanation: The larynx is commonly called the voice box because it contains the vocal cords. When air passes through these fibrous bands, they vibrate to produce sound.

Q16 What are the fine tubes called that the bronchi divide into within the lungs?

A Alveolar ducts

B Bronchioles



C Trachea

D Capillaries

✓ **Correct Answer: B**

Explanation: The primary bronchi branch into smaller and smaller tubes called bronchioles. As they narrow, they lose their cartilaginous support and eventually end in the alveolar ducts.

Q17 Where does the actual exchange of gases take place in the human respiratory system?

A Bronchi

B Trachea

C Alveoli



D Bronchioles

✓ Correct Answer: C

Explanation: The alveoli are tiny, sac-like structures at the end of the respiratory tree. Their thin walls and extensive capillary network make them the primary site for the diffusion of oxygen into the blood and carbon dioxide out of the blood.

Q18 Which feature of the alveoli makes them highly efficient for gaseous exchange?

A Thick, muscular walls

B Very thin walls surrounded by a dense network of capillaries



C C-shaped cartilaginous rings

D A lining of cilia and mucus

✓ Correct Answer: B

Explanation: Alveoli are tiny sac-like structures with extremely thin walls, surrounded by an extensive network of blood capillaries. This short diffusion distance and large surface area allow oxygen to pass quickly into the blood and carbon dioxide to pass out.

Q19 The walls of the trachea and bronchi are lined with ciliated and glandular cells. What is the role of the cilia?

A To produce mucus

B To moisten the air

C To beat upwards and move mucus with trapped particles out of the airway ✓

D To exchange gases

✓ Correct Answer: C

Explanation: The glandular cells secrete mucus to trap dust and bacteria. The cilia are tiny hair-like structures that continuously beat in an upward motion, sweeping the dirty mucus towards the pharynx to be swallowed or coughed out.

Q20 Which structure prevents the trachea from collapsing?

A Diaphragm

B C-shaped cartilaginous rings ✓

C Pleural membranes

D Epiglottis

✓ Correct Answer: B

Explanation: The trachea is supported by C-shaped rings of cartilage. The open part of the "C" faces the esophagus, allowing it to expand when swallowing food, while the cartilaginous part prevents the airway from collapsing.

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SECTION 3 • 15 MCQs

The Lungs & Mechanism of Breathing

**Q21** How many lobes does the right lung have?**A** One**B** Two**C** Three**D** Four

✓ Correct Answer: C

Explanation: The right lung is slightly larger than the left and is divided into three lobes (superior, middle, and inferior). The left lung has only two lobes to accommodate the heart.

Q22 What is the function of the fluid between the pleural membranes?**A** To exchange gases**B** To provide lubrication for free expanding and contracting of the lungs**C** To protect against bacteria**D** To produce surfactants

✓ Correct Answer: B

Explanation: The inner and outer pleural membranes enclose a fluid-filled space. This fluid acts as a lubricant, reducing friction between the lungs and the chest wall as they expand and contract during breathing.

Q23 During inhalation (inspiration), what happens to the diaphragm and rib muscles?

A Diaphragm relaxes and moves up; ribs move down.

B Diaphragm contracts and moves down; ribs move up and out. ✓

C Diaphragm contracts and moves up; ribs move down.

D Diaphragm relaxes and moves down; ribs move up.

✓ Correct Answer: B

Explanation: During inhalation, the diaphragm contracts and flattens (moves down). Simultaneously, the intercostal muscles contract, raising the ribs up and out. This increases the volume of the thoracic cavity.

Q24 What causes air to rush into the lungs during inhalation?

A Active pumping by the lungs

B A decrease in air pressure inside the lungs ✓

C An increase in air pressure inside the lungs

D The closing of the epiglottis

✓ Correct Answer: B

Explanation: When the thoracic cavity expands, the pressure inside the lungs decreases below atmospheric pressure. Air naturally rushes in from the outside to equalize the pressure.

Q25 During exhalation (expiration), the diaphragm:

- A** Contracts and flattens
- B** Relaxes and gets its dome shape ✓
- C** Moves downward
- D** Remains completely still

✓ Correct Answer: B

Explanation: During exhalation, the diaphragm relaxes and returns to its original dome shape. This reduces the space in the chest cavity, increasing pressure on the lungs and pushing air out.

Q26 What is the normal breathing rate for a human at rest?

- A** 5-10 times per minute
- B** 16-20 times per minute ✓
- C** 30-40 times per minute
- D** 50-60 times per minute

✓ Correct Answer: B

Explanation: Under normal, resting circumstances, a healthy human breathes approximately 16 to 20 times per minute.

Q27 Which part of the brain controls the rate of breathing?

A Cerebellum

B Medulla oblongata (Respiratory centre) ✓

C Hypothalamus

D Pituitary gland

✓ Correct Answer: B

Explanation: The respiratory centre located in the medulla oblongata of the brainstem controls the rate of breathing. It is highly sensitive to the concentration of carbon dioxide in the blood.

Q28 What stimulates the respiratory centre to increase the breathing rate during exercise?

A Decreased oxygen in the blood

B Increased carbon dioxide concentration in the blood ✓

C Increased nitrogen in the blood

D Decreased body temperature

✓ Correct Answer: B

Explanation: During exercise, muscles produce more carbon dioxide. The respiratory centre detects this increased concentration of carbon dioxide in the blood and sends signals to increase the breathing rate to expel it.

Q29 According to Table 10.1, what is the percentage of oxygen in expired air?

A 21%

B 16% ✓

C 4%

D 79%

✓ **Correct Answer: B**

Explanation: Inspired air contains about 21% oxygen, but the body absorbs some of it. Therefore, expired air contains a reduced amount of oxygen, approximately 16%.

Q30 What happens to the water vapor content in expired air compared to inspired air?

A It decreases

B It remains exactly the same

C It becomes saturated ✓

D It is completely absent

✓ **Correct Answer: C**

Explanation: As air passes through the moist respiratory passages, it picks up water vapor. By the time it is exhaled, the air is saturated with water vapor, regardless of the humidity of the inspired air.

Q31 In the bell jar model demonstrating breathing, what does the rubber sheet represent?

A The lungs

B The diaphragm ✓

C The trachea

D The ribs

✓ Correct Answer: B

Explanation: In the bell jar model, the rubber sheet at the bottom acts as the diaphragm. Pulling it down demonstrates inhalation, and letting it return demonstrates exhalation.

Q32 When the rubber sheet in the bell jar model is pulled down, what happens to the balloons?

A They deflate

B They inflate ✓

C They remain the same

D They burst

✓ Correct Answer: B

Explanation: Pulling the rubber sheet down increases the volume inside the jar, decreasing the pressure. Air rushes in through the Y-tube to equalize the pressure, causing the balloons (representing the lungs) to inflate.

Q33 Which gas in exhaled air is detected by limewater in the limewater experiment?

A Oxygen

B Nitrogen

C Carbon dioxide



D Water vapor

✓ Correct Answer: C

Explanation: Limewater is a test for carbon dioxide. When exhaled air (which contains 4% CO₂) is bubbled through limewater, it turns milky/cloudy, proving the presence of carbon dioxide.

Q34 Why does the limewater in Flask 2 turn more cloudy than Flask 1 in the CO₂ experiment?

A Flask 2 receives inspired air

B Flask 2 receives exhaled air, which contains more CO₂



C Flask 1 contains more limewater

D Flask 1 has a leak

✓ Correct Answer: B

Explanation: The experimental setup usually involves inhaling through Flask 1 (testing inspired air) and exhaling through Flask 2 (testing expired air). Since expired air has a much higher concentration of carbon dioxide, it reacts more strongly with the limewater in Flask 2.

Q35 What does the lowering of the water level in the plastic bottle experiment indicate?

A The volume of air exhaled from the lungs 

B The amount of oxygen inhaled

C The breathing rate

D The amount of water vapor in the lungs

✓ **Correct Answer: A**

Explanation: In this practical, exhaled air displaces the water in the inverted bottle. The volume of water that leaves the bottle is equal to the volume of air exhaled from the lungs, measuring lung capacity.

4

SECTION 4 • 15 MCQs

Respiratory Disorders & Smoking



Q36 What is the primary cause of Bronchitis?

A Allergens like pollen

B Viruses, bacteria, or exposure to chemical irritants (e.g., tobacco smoke) 

C A genetic mutation

D Lack of exercise

✓ **Correct Answer: B**

Explanation: Bronchitis is an inflammation of the bronchi. It is typically caused by viral or bacterial infections, or by breathing in irritants like tobacco smoke, which lead to excessive mucus secretion and swelling.

Q37 Which of the following is a symptom of chronic bronchitis?

A A persistent cough lasting for months



B Sudden weight gain

C Increased oxygen levels in the blood

D Decreased mucus production

✓ **Correct Answer: A**

Explanation: Chronic bronchitis is defined by a persistent, productive cough lasting for at least three months a year for two consecutive years. It involves long-term inflammation and excessive mucus.

Q38 Emphysema is characterized by:

A Inflammation of the alveoli

B Destruction of the walls of the alveoli



C Infection of the lungs by bacteria

D Narrowing of the bronchi

✓ **Correct Answer: B**

Explanation: Emphysema is a chronic lung disease where the delicate walls of the alveoli are destroyed. This results in larger, less efficient air sacs with a reduced surface area for gas exchange.

Q39 Why do patients with emphysema feel short of breath?

- A** Because their lungs produce too much mucus
- B** Because the alveolar surface area for gas exchange is reduced ✓
- C** Because their diaphragm is paralyzed
- D** Because they have too much oxygen in their blood

✓ Correct Answer: B

Explanation: The destruction of alveolar walls in emphysema significantly decreases the total surface area available for oxygen and carbon dioxide exchange. This makes it difficult to oxygenate the blood, leading to shortness of breath.

Q40 Which bacterium is the most common cause of pneumonia?

- A** Mycobacterium tuberculosis
- B** Streptococcus pneumoniae ✓
- C** Influenza virus
- D** Staphylococcus aureus

✓ Correct Answer: B

Explanation: The text explicitly states that the most common cause of pneumonia is the bacterium *Streptococcus pneumoniae*. Viral and fungal infections can also cause it, but this bacterium is the primary culprit.

Q41 What happens to the alveoli during a pneumonia infection?

- A** They shrink and collapse
- B** They become filled with fluid and pus ✓
- C** They turn into large sacs
- D** They produce excess surfactant

✓ Correct Answer: B

Explanation: When pneumonia-causing organisms enter the alveoli, they multiply and cause inflammation. The alveoli become filled with fluid and pus, which impairs the exchange of oxygen and carbon dioxide.

Q42 Asthma is a form of:

- A** Bacterial infection
- B** Viral infection
- C** Allergy ✓
- D** Genetic disorder

✓ Correct Answer: C

Explanation: Asthma is described as a form of allergy. It involves an exaggerated immune response to allergens (like dust, smoke, pollen), causing inflammation, mucus production, and narrowing of the airways.

Q43 What are the common symptoms of asthma?

A Coughing up blood and weight loss

B Shortness of breath, wheezing, and chest tightness



C High fever and chills

D Swelling of the legs

✓ Correct Answer: B

Explanation: Asthma causes the airways to constrict and become inflamed. This leads to classic symptoms like difficulty breathing (shortness of breath), a whistling sound when breathing out (wheezing), and a feeling of tightness in the chest.

Q44 What is the most common cause of lung cancer?

A Air pollution

B Smoking



C Genetic inheritance

D Viral infections

✓ Correct Answer: B

Explanation: The text clearly states that smoking is the main cause of lung cancer. Cigarette smoke contains over 50 known carcinogens that damage lung tissue and lead to uncontrolled cell division.

Q45 What are carcinogens?

- A** Cancer-causing substances ✓
- B** Substances that reduce inflammation
- C** Substances that promote healthy cell division
- D** Antibiotics

✓ Correct Answer: A

Explanation: Carcinogens are any substances or agents that can cause cancer. The text mentions that cigarette smoke contains over 50 known carcinogens.

Q46 What is "passive smoking"?

- A** Smoking only occasionally
- B** Inhaling smoke from another person's smoking ✓
- C** Smoking without inhaling
- D** Using smokeless tobacco

✓ Correct Answer: B

Explanation: Passive smoking (or second-hand smoke) refers to the inhalation of smoke from other people's cigarettes, cigars, or pipes. The text notes that this is also a cause of lung cancer.

Q47 How does carbon monoxide in tobacco smoke affect the body?

- A** It increases the oxygen-carrying capacity of hemoglobin.
- B** It lessens the oxygen-carrying capacity of hemoglobin. ✓
- C** It destroys the alveoli.
- D** It causes blood platelets to decrease.

✓ Correct Answer: B

Explanation: Carbon monoxide binds to hemoglobin much more readily than oxygen does. This reduces the amount of oxygen that hemoglobin can carry, leading to oxygen deprivation in tissues.

Q48 What effect does smoking have on blood platelets?

- A** It decreases their number, causing bleeding.
- B** It increases their production, making blood more viscous and leading to arteriosclerosis. ✓
- C** It has no effect on platelets.
- D** It makes platelets smaller and more efficient.

✓ Correct Answer: B

Explanation: Chemicals in tobacco smoke increase the production of blood platelets. When platelets are more numerous than normal, they make the blood viscous (thicker), which can lead to the formation of plaques and arteriosclerosis.

Q49 How much more likely are smokers to develop tuberculosis compared to non-smokers?

A Equally likely

B Two to four times more likely ✓

C Ten times more likely

D Fifty percent less likely

✓ **Correct Answer: B**

Explanation: Smoking weakens the respiratory system's defenses. The text states that smoking increases the risk of developing tuberculosis by two to four times.

Q50 What is the primary goal in the prevention of lung cancer?

A Increasing exercise

B Eating a healthy diet

C Eliminating tobacco smoking ✓

D Taking vitamins

✓ **Correct Answer: C**

Explanation: Because smoking is the primary cause of lung cancer, the most effective prevention strategy is to eliminate tobacco smoking entirely. The WHO has called for governments to stop tobacco advertising to achieve this.

5

SECTION 5 • 35 MCQs

Comprehensive Review



Q51 Where does the respiratory centre, which controls breathing, reside?

A In the lungs

B In the heart

C In the brain



D In the diaphragm

✓ Correct Answer: C

Explanation: The respiratory centre is located in the brain (specifically the medulla oblongata). It monitors blood gas levels and sends nerve impulses to the respiratory muscles to regulate breathing rate.

Q52 What is the approximate length of the trachea?

A 5 cm

B 12 cm



C 20 cm

D 30 cm

✓ Correct Answer: B

Explanation: The text specifies that the trachea (windpipe) is about 12 cm long and lies in front of the esophagus.

Q53 Which structure is present between the pharynx and the trachea?

A Larynx



B Bronchi

C Alveoli

D Diaphragm

✓ Correct Answer: A

Explanation: The larynx (voice box) is located between the pharynx (throat) and the trachea (windpipe). Air passes through the larynx on its way to the lungs.

Q54 What prevents the trachea from collapsing?

A The epiglottis

B C-shaped cartilaginous rings



C The vocal cords

D The diaphragm

✓ Correct Answer: B

Explanation: The trachea is supported by C-shaped rings of cartilage. These rings provide structural integrity, preventing the airway from collapsing or closing shut, even when air pressure inside is low.

Q55 What is the function of the pleural fluid?

A To exchange gases

B To provide lubrication for the lungs



C To produce sound

D To filter dust

✓ **Correct Answer: B**

Explanation: The pleural fluid is found between the inner and outer pleural membranes surrounding the lungs. Its main function is to lubricate the surfaces, allowing the lungs to expand and contract smoothly during breathing.

Q56 Which of the following is NOT a symptom of bronchitis?

A Cough

B Mild wheezing

C Weight gain



D Shortness of breath

✓ **Correct Answer: C**

Explanation: Symptoms of bronchitis include cough, mild wheezing, fever, chills, and shortness of breath. Weight gain is not listed as a symptom; in fact, severe respiratory diseases often lead to weight loss due to the increased energy required for breathing.

Q57 Emphysema results in:

- A** Larger air sacs with more surface area
- B** Larger air sacs with less surface area ✓
- C** Smaller, more numerous air sacs
- D** Complete blockage of the bronchi

✓ Correct Answer: B

Explanation: The destruction of alveolar walls causes the small alveoli to merge into larger, irregular air sacs. This reduces the total surface area available for gas exchange, making breathing inefficient.

Q58 What happens to the lungs of an emphysema patient after exhalation?

- A** They return to their original shape perfectly.
- B** They do not come back to their original shape, trapping air. ✓
- C** They collapse completely.
- D** They fill with fluid.

✓ Correct Answer: B

Explanation: Due to the breakdown of lung tissue and loss of elasticity, the lungs of an emphysema patient cannot recoil properly after exhalation. Air becomes trapped in the lungs, preventing fresh air from entering.

Q59 Which of the following is a treatment for pneumonia?

A Inhalers

B Antibiotics 

C Surgery

D Chemotherapy

✓ Correct Answer: B

Explanation: Since pneumonia is most commonly caused by bacteria (*Streptococcus pneumoniae*), it is treated with antibiotics. Vaccines are also available for prevention.

Q60 What causes the bronchioles to constrict in an asthma attack?

A Exposure to allergens 

B Bacterial infection

C Lack of oxygen

D High blood pressure

✓ Correct Answer: A

Explanation: In asthma patients, the bronchi and bronchioles are sensitive to allergens (e.g., dust, smoke, pollen). Exposure to these triggers an immediate constriction of the airways, making breathing difficult.

Q61 What is the primary cause of lung cancer?

A Genetic factors

B Smoking 

C Air pollution

D Viral infections

✓ Correct Answer: B

Explanation: The text explicitly states that smoking is the main cause of lung cancer. Cigarette smoke contains over 50 known carcinogens.

Q62 How many deaths worldwide are attributed to lung cancer annually?

A More than 1.3 million ✓

B 500,000

C 100,000

D 5 million

✓ Correct Answer: A

Explanation: The text highlights that lung cancer is responsible for more than 1.3 million deaths worldwide annually, making it the most common cause of cancer-related deaths.

Q63 What is the effect of nicotine on the body?

A It is a harmless chemical.

B It is a powerful poison that damages arteries and brain tissues. ✓

C It helps improve memory.

D It reduces blood pressure.

✓ Correct Answer: B

Explanation: Nicotine is a potent poison (formerly used as an insecticide). When inhaled, it reaches the circulatory system, hardening arteries and damaging brain tissues.

Q64 How does smoking affect the teeth?

- A** It whitens them.
- B** It weakens and stains them, leading to higher tooth loss. ✓
- C** It has no effect on teeth.
- D** It strengthens the enamel.

✓ Correct Answer: B

Explanation: Smoking is responsible for weakening and staining the teeth. The text notes that tooth loss is 2 to 3 times higher in smokers than in non-smokers.

Q65 Which day is celebrated as "World No Tobacco Day"?

- A** 31st May ✓
- B** 5th June
- C** 1st December
- D** 22nd April

✓ Correct Answer: A

Explanation: The World No Tobacco Day is celebrated on the 31st of May every year to raise awareness about the harmful effects of tobacco use.

Q66 What is the function of the vocal cords?

- ☐ A To filter air
- ☒ B To produce sound through vibration
- ☐ C To warm the air
- ☐ D To prevent food from entering the trachea

✓ Correct Answer: B

Explanation: The vocal cords are two pairs of fibrous bands stretched across the larynx. When air passes through them, they vibrate, producing sounds.

Q67 What kind of blood does the pulmonary artery carry to the lungs?

- ☐ A Oxygenated blood
- ☒ B Deoxygenated blood
- ☐ C A mixture of both
- ☐ D Blood without hemoglobin

✓ Correct Answer: B

Explanation: The pulmonary artery is unique because it is the only artery that carries deoxygenated blood. It transports blood from the heart to the lungs for oxygenation.

Q68 Where does the exchange of gases between the blood and the alveoli occur?

A In the bronchi

B Across the capillary walls surrounding the alveoli



C In the trachea

D In the pleural cavity

✓ **Correct Answer: B**

Explanation: The alveoli are surrounded by a network of capillaries. The thin walls of the alveoli and capillaries allow oxygen to diffuse into the blood and carbon dioxide to diffuse out.

Q69 What is the approximate percentage of carbon dioxide in expired air?

A 0.04%

B 4%



C 16%

D 21%

✓ **Correct Answer: B**

Explanation: Inspired air contains about 0.04% carbon dioxide, but cellular respiration produces more. Therefore, expired air contains a much higher concentration, approximately 4%.

Q70 What happens to the rib muscles during exhalation?

A They contract, raising the ribs.

B They relax, bringing the ribs back to their original position. ✓

C They remain fully contracted.

D They spasm.

✓ **Correct Answer: B**

Explanation: During exhalation (expiration), the external intercostal muscles relax. This allows the ribs to move down and inward, decreasing the volume of the thoracic cavity.

Q71 How does the body respond to an increased concentration of carbon dioxide in the blood during exercise?

A The heart rate decreases.

B The respiratory centre sends messages to increase the breathing rate. ✓

C The diaphragm stops moving.

D The body produces less carbon dioxide.

✓ **Correct Answer: B**

Explanation: The respiratory centre in the brain is highly sensitive to CO₂ levels. When CO₂ increases (e.g., during exercise), it signals the respiratory muscles to work faster and harder to expel the excess CO₂ and take in more oxygen.

Q72 Which of the following is NOT a part of the upper respiratory tract?

A Nasal cavity

B Pharynx

C Larynx

D Alveoli



✓ Correct Answer: D

Explanation: The upper respiratory tract includes the nose, nasal cavity, pharynx, and larynx. The alveoli are located deep within the lungs and are part of the lower respiratory tract.

Q73 What is the function of the mucus in the nasal cavity?

A To produce sound

B To moisten the air and trap dust particles



C To exchange gases

D To cool the air

✓ Correct Answer: B

Explanation: The nasal cavity is lined with mucus-secreting cells. The mucus serves to moisten the incoming air and trap dust, bacteria, and other particles, preventing them from reaching the lungs.

Q74 Which structure connects the nasal cavity to the pharynx?

A Nostrils

B Internal nostrils ✓

C Glottis

D Epiglottis

✓ Correct Answer: B

Explanation: The nasal cavity opens into the pharynx by means of two small openings called internal nostrils.

Q75 In the context of the bell jar model, what does the Y-shaped glass tube represent?

A The lungs

B The trachea and bronchi ✓

C The diaphragm

D The ribs

✓ Correct Answer: B

Explanation: The Y-shaped tube represents the trachea splitting into the two primary bronchi, which then lead to the lungs (balloons).

Q76 What is the primary function of the epiglottis?

- A** To produce sound
- B** To prevent food from entering the trachea during swallowing 
- C** To warm and moisten the air
- D** To filter dust

✓ Correct Answer: B

Explanation: The epiglottis acts as a flap that covers the glottis (opening to the larynx) during swallowing, directing food and liquid into the esophagus instead of the airway.

Q77 Which of the following statements about the right lung is true?

- A** It is smaller than the left lung.
- B** It has two lobes.
- C** It has three lobes. 
- D** It does not contain alveoli.

✓ Correct Answer: C

Explanation: The right lung is larger and broader than the left lung. It is divided into three lobes (superior, middle, and inferior), while the left lung has only two lobes.

Q78 What happens to the pressure inside the lungs during inhalation?

A It increases.

B It decreases. ✓

C It remains constant.

D It fluctuates rapidly.

✓ Correct Answer: B

Explanation: During inhalation, the expansion of the thoracic cavity causes the volume of the lungs to increase. According to Boyle's law, as volume increases, pressure decreases. This drop in pressure allows outside air to rush in.

Q79 Which of the following is a symptom of emphysema?

A Weight gain

B Recurrent respiratory infections ✓

C Decreased heart rate

D Excessive mucus production

✓ Correct Answer: B

Explanation: Symptoms of emphysema include shortness of breath, fatigue, recurrent respiratory infections, and weight loss. The destruction of lung tissue makes patients more susceptible to infections.

Q80 What is the significance of the C-shaped cartilage rings in the trachea?

A They allow the trachea to expand and contract with breathing.

B They prevent the trachea from collapsing while allowing the esophagus to expand during swallowing. ✓

C They produce mucus.

D They trap dust particles.

✓ Correct Answer: B

Explanation: The C-shaped rings provide rigid support to keep the airway open. The open side of the "C" faces the esophagus, allowing it to bulge into that space when swallowing a large bolus of food, preventing choking.

Q81 How does the body get rid of carbon dioxide produced during cellular respiration?

A Through the digestive system

B Through the urinary system

C Through the respiratory system ✓

D Through the skin

✓ Correct Answer: C

Explanation: Carbon dioxide is a waste product of cellular respiration. It is transported by the blood to the lungs, where it is expelled from the body during exhalation through the respiratory system.

Q82 What is the main difference between inspired and expired air regarding dust particles?

A Inspired air has more dust particles.

B Expired air has more dust particles.

C Both have equal amounts.

D Inspired air has variable dust, while expired air has almost none. ✓

✓ Correct Answer: D

Explanation: Inspired air contains varying amounts of dust depending on the environment. However, as it passes through the respiratory tract, the mucus and cilia trap most of the dust particles. Therefore, expired air is almost completely free of dust.

Q83 What is the primary cause of pneumonia?

A Virus

B Fungus

C Bacterium *Streptococcus pneumoniae* ✓

D Allergens

✓ Correct Answer: C

Explanation: While viral and fungal infections can cause pneumonia, the text identifies the bacterium *Streptococcus pneumoniae* as the most common cause.

Q84 What happens to the oxygen level in the blood of a patient with severe emphysema?

- A** It increases significantly.
- B** It remains normal.
- C** It may get so low that it causes serious complications. ✓
- D** It fluctuates between high and low.

✓ Correct Answer: C

Explanation: Due to the reduced surface area for gas exchange in emphysema, the blood cannot pick up enough oxygen. This can lead to dangerously low oxygen levels (hypoxemia), causing severe complications for vital organs.

Q85 Why are vaccines important in the context of pneumonia?

- A** They cure viral pneumonia.
- B** They prevent pneumonia caused by *S. pneumoniae*. ✓
- C** They treat all respiratory disorders.
- D** They eliminate the need for antibiotics.

✓ Correct Answer: B

Explanation: The text mentions that vaccines are available to prevent pneumonia specifically caused by the bacterium *Streptococcus pneumoniae*, offering a proactive approach to managing the disease.



Keep Learning, Keep Rising!

You have completed all 85 solved MCQs of
Chapter 10: Gaseous Exchange

Revise the explanations, not just the answers.

Re-attempt the MCQs you missed after 2 days.

Draw the respiratory system and label it from memory.

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