Chapter 10. Respiration in Organisms

Very Short Q&A:

Q1: Bacteria and fungi can respire _____.

Ans: Anaerobically

Q2: Name a single celled fungus and respires anaerobically to produce alcohol.

Ans: Yeast

Q3: Anaerobic respiration takes place in our skeletal muscles and produce _____

a. methyl alcohol
b. ethyl alcohol
c. glucose
d. none of these

Ans: ethyl alcohol

Q4: What is anaerobic respiration?

Ans: The respiration which takes place in the absence of oxygen is called anaerobic respiration.

Q5: 5. Name the gas which is used by white blood cells to kill the invading bacteria. (a) Oxygen (b) Carbon dioxide (c)Nitrogen (d) Chlorine

Ans: Oxygen

Q6: What is the normal range of breathing rate per minute in an adult person?

Ans: 15 – 18

Q7: During heavy exercise we get cramps in the legs due to the accumulation of _____

Ans: Lactic acid

Q8: What is respiration?Each layer of soil differs in feel (texture), colour, depth and _____.

Ans: The process of oxidation of food to release energy from absorb food in living cells is called respiration.

Q9: In cockroach air enters the body through_____.

Ans: Spiracles

Q10: What will be the direction of diaphragm as we breathe in, and ribs move up or expand?

Ans: Upward

Q11: Where is diaphragm located in the human body?

Ans: Below the lungs.

Q12: Each bronchus enters the lungs and divides into small tubes bronchioles which end up in air sacs called alveoli. True/ False.

Ans: True

Q13: The walls of alveoli are supplied with thin blood vessels called_____

Ans: Capillaries

Q14: Name the respiratory organ of frogs.

Ans: Skin and lungs

Q15: Name the respiratory organ of earthworm.

Ans: Moist skin

Q16: How does exchange of gases take place in unicellular and smaller multicellular animals?

Ans: By diffusion

Q17: How does exchange of gases take place in insects?

Ans: Exchange of gases takes place in insect through spiracles into trachea.

Q18: During exhalation the ribs

a. move down and inwards
b. move upwards
c. move outwards
d. do not move at all

Ans: move down and inwards

Q19: Name the respiratory organ of birds.

Ans: Lungs.

Q20: Name the tiny pores present in the leaves of the plants for exchange of gases.

Ans: Stomata.

Q21: What is the end product of anaerobic respiration?

Ans: C02, alcohol and energy.

Q22: Name the chemical used to test the presence of CO2 in exhaled air.

Ans: Lime water

Q23: Yeast respire an aerobically to produce_____.

Ans: Alcoho

Q24: Chest cavity is surrounded by _____ of ribs.

Ans: 12 pair of ribs

Q25: State the name of wind pipe.

Ans: Trachea

Q26: Spiracle is the muscular sheet which separates the abdomen from the chest cavity. True/ False.

Ans: False

Q27: What is the percentage of oxygen in the inhaled air?

Ans: 21%

Q28: Breathing is a part of _____

Ans: Respiration.

Q29: What is the site of cellular respiration?

Ans: Mitochondria

Q30: Lenticels are present in which plant part for breathing

a. Root
b. Stem
c. Leaves
d. None of these.

Ans: Stem

Q31: During heavy exercise the breathing rate of a person slows down. True/ False.

Ans: False

Q32: The size of the chest cavity increases during inhalation. True/ False.

Ans: True

Q33: Which of the two is usually oxidised during respiration? Carbohydrate or fats?

Ans: Carbohydrate.

Q34: Which product in formed after anaerobic respiration in calf muscles?

Ans: Lactic acid

Q35: What is breathing rate?

Ans: The number of times a person breathes in a minute is termed as the breathing rate.

Q36: Ravi is sleeping; his rate of breathing will be slowest or higher?

Ans: Rate of breathing will be slow.

Q37: Swati is doing exercise; his rate of breathing will be slowest or higher?

Ans: Higher

Q38: Smoking damages _____.

Ans: Lungs

Q39: What is the percentage of carbon dioxide in inhaled air?

Ans: 0.04%

Q40: Gills in fishes are well supplied with blood vessels for exchange of gases. True/ False.

Ans: True

Short Q&A:

Q1: Why do we respire?

Ans: We respire to use the oxygen, to oxidise our food and release energy. This is similar like burning but a slower process. it also needs respiratory enzymes .Respiration is a slower process than burning and energy released can be stored for later use.

C6 H12 O6+ O2----------> H2O+ CO2+energy

Q2: Why we should eat regularly?

Ans: The food has stored energy which is released during respiration, thus we should eat regularly.

Q3: What happens to the air we breathe in?

Ans: The air we breathe in transported to every parts of body and ultimately it is transported to each cell, in the cells, oxygen in the air helps in the breakdown of food, this process of breakdown of food in the cell with the release of energy is called cellular respiration.

Q4: Explain cellular respiration

Ans: The air we breathe in transported to every parts of body and ultimately it is transported to each cell, in the cells, oxygen in the air helps in the breakdown of food, this process of breakdown of food in the cell with the release of energy is called cellular respiration. Cellular respiration occurs in the cells of all organisms.

Q5: Differentiate between aerobic and anaerobic respiration.

Ans:

Aerobic respiration	Anaerobic respiration
1. An aerobic respiration takes place using oxygen, inhaled in breathing. 2. In aerobic respiration , breakdown of glucose results in production of Carbon Dioxide, Water and Energy 3. An aerobic respiration uses respiratory organs such as lungs or gills	1. Whereas an anaerobic respiration requires no oxygen. 2. In anaerobic respiration, the breakdown of glucose first results in Lactic Acid and energy then lactic acid break down into carbon dioxide and water. 3. anaerobic respiration take place at cellular or muscular level

Q6: Explain similarities between aerobic and anaerobic respiration.

Ans:

- Both aerobic and anaerobic respiration are necessary for the survival of living organism.
- In both type of respiration, the food is broken and energy is released for the functioning of an organism.
- In both type of respiration, Carbon Dioxide, Water and Energy is produced finally

Q7: Why human breathing mechanism is called tidal breathing?

Ans: Human breathing mechanism is called tidal breathing because air comes in and out using the same path.

Q8: Humans use yeast every day. What is yeast?

Ans: If we want to make our own bread, we can buy yeast in the grocery store. This yeast consists of little brown grains. The little brown grains of yeast may not seem to be alive, but if we put them in water with sugar, the yeast will carry out cellular respiration and grow. We can grow yeast in a test tube filled with water and sealed with a balloon. Under anaerobic conditions, yeast carries out alcoholic fermentation, so it produces lactic acid and energy.

Q9: Explain respiration in yeast.

Ans: Yeast is single celled organism that respires anaerobically and during this process yield alcohol. Yeast get energy through anaerobic respiration, in the absence of oxygen,

glucose breaks down into oxygen and carbon dioxide, the equation for the reaction is as follow:

Glucose in absence of oxygen > alcohol + carbon dioxide + energy

Q10: Why does an athlete breathe faster and deeper than usual after finishing the race?

Ans: The food has stored energy, which is released during respiration. Therefore, all living organisms respire to get energy from food by breathing the air. During heavy exercise, fast running, cycling, walking for many hours or heavy weight lifting, the demand for energy is high. Therefore, to meet the extra demand of energy, an athlete breathes faster and deeper than usual after finishing the race.

Q11: Why do we often sneeze when we inhale a lot of dust-laden air?

Ans: When we inhale a lot of dust-laden air, the dust particles get trapped in the hair present in ournasal cavity. However, sometimes these particles may get past the hair in the nasal cavity. Then they irritate the lining of the cavity, as a result of which we sneeze. Sneezing expels these foreign particles from the inhaled air and a dust free, clean air enters our body.

Q12: Why mountaineers carry oxygen with them?

Ans: Mountaineers carry oxygen with them because the amount of air available to a person is less than that available on the ground.

Q13: Why we get muscle cramps after heavy exercise?

Ans: During heavy exercise the demand for energy is high. But the supply of oxygen to produce energy is limited. Then anaerobic respiration takes place in the muscle cells to fulfil the demand of energy.

Glucose in absence of oxygen > Lactic Acid + Energy The cramps occur only when the muscle cells respire anaerobically. The partial breakdown of glucose produces lactic acid. The accumulation of lactic acid causes muscle cramps.

Q14: Why we feel hungry after a physical activity?

Ans: During a physical activity we need more energy. Whenever a person needsextra energy he/she breathes faster. As a result, more oxygen is supplied to our cells. It speeds up the breakdown of food and more energy is released. Due to rapid breakdown of food we feel hungry.

Q15: Write short notes on inhalation.

Ans: The process of taking in of air rich in oxygen into the body is called 'inhalation'. During inhalation, ribs move up and outwards and diaphragm moves down. This movement increases space in our chest cavity and air rushes into the lungs. Exhalation is the process of giving out of air giving out of air rich in carbon dioxide is known as 'exhalation'. During exhalation, ribs move down and inwards while, diaphragm moves up to its former position. This movement reduces the size of our chest cavity and air is pushed out.

Q16: How does the exchange of gases occur in breathing?

Ans: When we inhale air it passes through our nostrils to nasal cavity. From nasal cavity the air reaches our lungs. The exhaled air follows same route to go out. Breathing in and out involves the movement of the diaphragm and the rib cage.

Q17: Write short notes on gills.

Ans: Gills in fish help them to use oxygen dissolved in water and thus, help them in breathing. Gills are projections of their skin. These are well supplied with blood vessels for exchange of gases.

Q18: How do the plants breathe in oxygen?

Ans: In plants each part can independently take in oxygen from air and give out carbon dioxide. Leaves of the plants have tiny pores called 'stomata' for exchange of oxygen and carbon dioxide. Roots take up air from the pores (air spaces) present between the soil particles.

Q19: Do the plants also respire?

Ans: Like all other organisms, plants also respire for their survival. They take oxygen from the air and give out carbon dioxide. In the cells oxygen is used to breakdown glucose into carbon dioxide and water as in other organisms.

Q20: How do we breathe?

Ans: We take in air through our nostrils, when we inhale air, it passes through our nostril into nasal cavity and from there it reaches our lungs through the wind pipe. Lungs are present in chest cavity which is surrounded by ribs on the sides; diaphragm forms the floor of chest cavity. Breathing involves the movement of diaphragm and the rib cage. During inhalation ribs move up and outwards and diaphragm moves down, because of this movement space in our chest cavity increases and air ruses into the lungs. During exhalation ribs move down and inward and diaphragm moves up to its former position, this reduces the size of chest cavity and air is pushed out of the lungs.

Q21: Explain all body parts involved in respiration.

Ans: We take in air through our nostrils, when we inhale air, it passes through our nostril into nasal cavity and from there it reaches our lungs through the wind pipe. Lungs are present in chest cavity which is surrounded by ribs on the sides; diaphragm forms the floor of chest cavity. Breathing involves the movement of diaphragm and the rib cage.

Q22: What happens when we inhale air? in exhaled air.

Ans: During inhalation ribs move up and outwards and diaphragm moves down, because of this movement space in our chest cavity increases and air ruses into the lungs.

Q23: What happens in the process of exhalation?

Ans: During exhalation ribs move down and inward and diaphragm moves up to its former position, this reduces the size of chest cavity and air is pushed out of the lungs.

Q24: Why we should cover our nose while sneezing?

Ans: We should cover our nose while sneezing, so that the foreign particles expelled during sneezing did not get inhaled by other persons.

Q25: What role does hair present in nasal cavity play in the process of respiration?

Ans: Air around us contains various unwanted particles like smoke, dust, pollens, etc. during inhalation of air these particles get trapped in the hair of nasal cavity and thus these hairs allow clean air to enter our body.

Q26: What is the total percentage of oxygen and carbon dioxide in inhaled air and exhaled air?

Ans: The percentage of oxygen and carbon dioxide in inhaled air is 21% and 0.04% respectively and the percentage of oxygen and carbon dioxide in exhaled air is 16.4% and 4.4% respectively.

Q27: Explain respiration in cockroach.

Ans: A cockroach has a small opening on the side of its body, these openings are called spiracles. Oxygen rich air rushes through spiracles into the tracheal tubes diffuses into the body tissue and reaches every cell of body. In the same way carbon dioxide from the cells goes into the tracheal tube and moves out through spiracles.

Q28: Explain respiration in insects

Ans: A cockroach has a small opening on the side of its body, these openings are called spiracles. Oxygen rich air rushes through spiracles into the tracheal tubes diffuses into the body tissue and reaches every cell of body. In the same way carbon dioxide from the cells goes into the tracheal tube and moves out through spiracles.

Q29: Explain respiration in earthworm.

Ans: Earthworm breathes through their skins, the skin of an earthworm feels moist and slimy on touching and gases can pass easily through them.

Q30: Explain respiration in water animals.

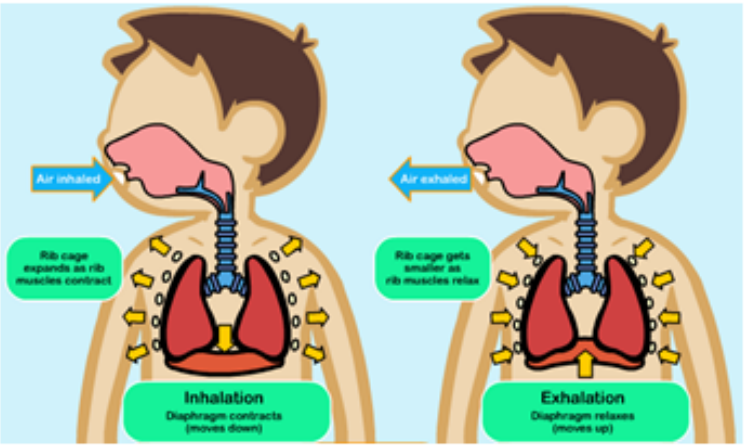
Ans: Water animals have gills that help them to use oxygen dissolved in water. Gills are projections of the skin which are well supplied with blood vessels for exchange of gases.

Q31: How respiration does occur in plants?

Ans: In plants the roots take in air present in soil, leaves have tiny pores called stomata that help in exchange of gases. The breakdown of glucose in the plant cells is similar to that in other living beings.

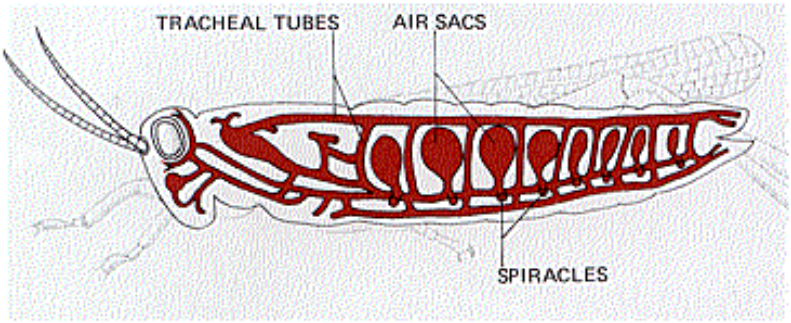
Q32: Draw a labelled diagram showing inhalation and exhalation process in human beings.

Ans:



Q33: Draw a labelled diagram of insect's tracheal system.

Ans:



Long Q&A:

Q1: Explain the two types of respiration.

Ans:

Aerobic respiration	Anaerobic respiration
1. An aerobic respiration takes place using oxygen, inhaled in breathing. 2. In aerobic respiration , breakdown of glucose results in production of Carbon Dioxide, Water and Energy 3. An aerobic respiration uses respiratory organs such as lungs or gills	1. Whereas an anaerobic respiration requires no oxygen. 2. In anaerobic respiration, the breakdown of glucose first results in Lactic Acid and energy then lactic acid break down into carbon dioxide and water. 3. anaerobic respiration take place at cellular or muscular level

- Both aerobic and anaerobic respiration are necessary for the survival of living organism.
- In both type of respiration, the food is broken and energy is released for the functioning of an organism.
- In both type of respiration, Carbon Dioxide, Water and Energy is produced finally

Q2: Explain the process of breathing in insects and fishes.

Ans:

A cockroach has a small opening on the side of its body, these openings are called spiracles. Oxygen rich air rushes through spiracles into the tracheal tubes diffuses into the body tissue and reaches every cell of body. In the same way carbon dioxide from the cells goes into the tracheal tube and moves out through spiracles.

Water animals have gills that help them to use oxygen dissolved in water. Gills are projections of the skin which are well supplied with blood vessels for exchange of gases.