
7.RESPPIRATION

TEACHING TASK

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1. Respiration is the process in which -

   A) energy is stored in the form of ADP

   B) energy is released and stored in the form of ATP

   C) energy is not released at all

   D) energy is used up

Key: B

Solution:"Respiration breaks down glucose and releases energy, which is then stored in ATP molecules. ATP is the energy currency of the cell.

2. Which of the following is the source of respiration -

   A) Stored food B) Fats C) Glucose D) Proteins

Key: C

Solution: Glucose is the immediate substrate used for respiration. Other foods must first be converted to glucose or similar molecules.

3. The form of energy used in respiration is -

   A) Chemical energy B) Electrical energy

   C) Mechanical energy D) Radiant energy

Key: A

Solution: Chemical energy stored in glucose is released and converted into ATP during respiration.

4. Which one is anabolic process?

   A) Respiration B) Digestion

   C) Photosynthesis D) Ascent of sap

Key: C

Solution: Photosynthesis is anabolic because it builds glucose molecules from carbon dioxide and water.

5. A catabolic process is -

   A) Absorption of minerals B) Ascent of sap

   C) Respiration D) Assimilation

Key: C

Solution: Respiration is catabolic because it breaks down glucose into simpler products, releasing energy.

6. What is wrong about respiration

A) It does not occur in cell

B) Oxidation occurs without the use of enzymes

C) Energy is released in one step quickly

D) All the above

Key: D

Solution:"All options are wrong because:
Respiration does occur inside cells.
Enzymes are required for oxidation steps.
Energy is not released in one big step but in a series of small step

7. In anaerobic respiration in plants:
   A) O_2 is taken in B) O_2 is given out
   C) CO_2 is taken in D) CO_2 is given out

Key: D

Solution: Plants release CO2 during anaerobic respiration (fermentation), where glucose is converted into ethanol + CO2.

8. Stomata open during day time because the guard cells:
   A) re thin walled
   B) are bean shaped
   C) have to help in gaseous exchange
   D) photosynthesize and produce osmotically active sugars or organic acids.

Key: D

Solution:"During daytime, guard cells make sugars through photosynthesis ? increase in osmotic pressure ? water enters ? guard cells swell ? stomata open.

9. Which one of the following is the link between glycolysis and Kreb's cycle?
   A) Phosphoenolpyruvic acid B) Fumaric acid
   C) Citric acid D) Acetyl Co-A

Key: D

Solution: Pyruvic acid formed in glycolysis is converted into Acetyl Co-A, which then enters the Krebs cycle. Therefore Acetyl Co-A is the connecting link.

10. Exchange of gasses occurs through
   A) Stomata B) Lenticels
   C) Root surface D) All the above

Key: D

Solution: Plants exchange gases through stomata in leaves, lenticels in stems, and general surface of roots. Hence all of these structures help in gaseous exchange.

11. Exchange of gasses invloves
   A) Osmosis B) Diffusion C) Imbibition D) Suction pressure

Key: B

Solution: Gases move from higher concentration to lower concentration, which is diffusion. Plants exchange oxygen and carbon dioxide mainly by diffusion.

12. They participate in respiration
   A)Colourlesscells B)Colouredcells
   C) Only green cells D) All living cells

Key: D

Solution: Respiration is a vital process occurring in all living cells, whether coloured or colourless, green or non-green. Every living cell needs energy.

13. Respiration is:
    A) breaking down of complex organic substances into simple substances
    B) transformation of potential energy into kinetic energy
    C) liberation of energy
    D) all of the above

Key: A

Solution: The Krebs cycle (citric acid cycle) occurs inside the mitochondria, specifically in the mitochondrial matrix.

14. Kreb's cycle takes place in:
    A) mitochondria B) chloroplast
    C) ribosome D)endoplasmic reticulum

Key: A

Solution: The Krebs cycle occurs inside mitochondria, specifically in the mitochondrial matrix.

15. Respiration takes place:
    A) in green parts of the plant only
    B) in all the living cells of the plants
    C) in living and dead cells of plants
    D) in those parts of the plant which are above the soil

Key: B

Solution: All living cells need energy, so respiration occurs in every living cell of the plant, not just green parts or only above soil.

16. Evolution of CO_2 is more than in take of oxygen when:
    A) fats are respired B) glucose is respired
    C) sucrose is respired D) organic acids are respired

Key: D

Solution: When organic acids are respired, the Respiratory Quotient (RQ) is more than 1, meaning CO2 produced is more than O2 consumed.

17. Respiratory structures in the insects are -
    A) Gills B) Skin C) Lungs D) Trachea

Key: D

Solution: Insects breathe through a network of air tubes called tracheae, not lungs, skin, or gills.

18. The narrowest and most numberous tubes of lungs are termed as -
    A) Bronchus B) Bronchioles C) Alveoli D) None of these

Key: B

Solution: Bronchioles are the smallest branches of the bronchial tree and are very numerous, ending in alveoli.

19. A normal man respires in a minute -
    A) 10-15 times B) 14-18 times C) 20-25 times D) 25-30 times

Key: B

Solution: Normal breathing rate of an adult at rest is 14–18 breaths per

minute.

20. In anaerobic respiration -

A) O_2 is given out B) CO_2 is given out

C) CO_2 is taken in D) O_2 is taken in

Key: B

Solution: Anaerobic respiration in organisms produces CO2 when glucose breaks down without oxygen (like fermentation).

21. The exchange of gases (O_2 and CO_2) in a mammal take place in -

A) Trachea B) Bronchi C) Bronchioles D) Alveoli

Key: D

Solution: Gas exchange occurs in the alveoli, where oxygen diffuses into blood and CO2 diffuses out.

22. During inspiration muscles of diaphragm-

A) Contracts B) Expands C) No effect D) Coiled like string

Key: A

Solution: The diaphragm contracts and moves downward during inhalation, increasing chest volume.

23. Expiration involves -

A) Relaxation of diaphragm and intercostal muscles

B) Contraction of diaphragm and intercostal muscles

C) Contraction of diaphragm muscles

D) Contraction of intercostal muscles

Key: A

Solution: During exhalation, the diaphragm and intercostal muscles relax, reducing chest cavity volume and pushing air out.

24. The structure which prevent the entry of food into respriatory tracts is -

A) Pharynx B) Larynx C) Glottis D) Epiglottis

Key: D

Solution: The epiglottis is a flap-like structure that closes the windpipe during swallowing, preventing food from entering the respiratory tract.

25. In fever breathing rate -

A) Increase B) Decrease C) Stop D) None

Key: A

Solution: During fever, body temperature increases, and the respiration rate also increases to meet higher metabolic demands.

26. Mammalian lungs are -

A) Hollow B) Solid and spongy

C) Spongy D) None

Key: C
Solution: Lungs in mammals are soft, elastic, and spongy structures that allow expansion and contraction during breathing.

27. Haemolgobin is -

A) Vitamin B) Skin pigment

C) Blood carrier D) Respiratory pigment

Key: D
Solution: Hemoglobin is a respiratory pigment found in red blood cells. It helps transport oxygen from lungs to tissues and carries some CO2 back.

28. If CO_2 concentration increases in blood then breathing will-

A) Increases B) Decreases C) Stop D) Remain unchanged

Key: A
Solution: High CO2 stimulates the respiratory center in the brain, causing breathing rate to increase to remove excess CO2.

29. In respiration, air passes through -

A) Pharynx, Nasal cavity, Larynx, Trachea, Bronchi, Bronchiole, Lungs

B) Nasal cavity, Pharynx, Larynx, Trachea, Bronchi, Bronchiole, Lungs

C) Larnyx, Nasal cavity, Pharynx, Trachea, Lungs

D) Larynx, Pharynx, Trachea, Lungs

Key: B
Solution: The correct airflow pathway is: Nasal cavity ? Pharynx ? Larynx ? Trachea ? Bronchi ? Bronchioles ? Lungs.

30. In which of the following animals,respiration occurs without respiratory organ ?

A) Frog B) Fish C) Cockroach D) Earthwarm

Key: D
Solution: Earthworms respire through their moist skin, without any specialized respiratory organs like lungs, gills, or tracheae.

31. Rate of respiration is directly affected by -

A) CO_2 concentration B) O_2 in trachea

C) Concentration of O_2 D) Diaphragm expansion

Key: C
Solution: The availability of oxygen directly influences the rate of respiration. More oxygen increases respiration efficiency.

32. The maximum bonding of haemoglobin is with -

A) Carbon monoxide B) Carbondioxide

C) Oxygen D) Ammonia

Key: A

Solution: Hemoglobin binds most strongly with carbon monoxide (forming carboxyhemoglobin), which prevents oxygen binding and is dangerous.

33. Most of the carbondioxide is carried in the blood as -

A) Bicarbonates B) Carbon monoxide

C) Carbonic acid D) Carbonates

Key: A

Solution: About 70% of CO2 is transported as bicarbonates (HCO3?) in the blood plasma.

34. The exchange of gases between the external air and the blood occurs in the

A) bronchus B) bronchiole C) trachea D) alveoli

Key: D

Solution: Gas exchange takes place in the alveoli, where oxygen enters the blood and carbon dioxide leaves it.

35. Anaerobic respiration is likely to occur in

A) Ants B) Earthworms C) Echinoderms D) Tapeworms

Key: A

Solution: Ants and other insects may undergo anaerobic respiration during intense activity or low oxygen conditions. Earthworms, echinoderms, and tapeworms generally rely on aerobic methods or diffusion.

36. In humans lungs, the lobes are

A) 2 in left and 3 in right lungs B) 3 in left and 2 in right lungs

C) 3 in each lung D) 2 in each lung

Key: A

Solution: Humans have two lungs, but they are not symmetrical.

• The right lung has 3 lobes (superior, middle, inferior).

• The left lung has 2 lobes (superior and inferior), because the heart occupies space on the left side (cardiac notch).

37. Oxygen is transported in vertebrates as

A) dissolved in plasma

B) combined with Haemoglobin

C) dissolved in cytoplasm of erythrocytes

D) absorbed over the RBC

Key: B

Solution: Around 97% of oxygen in vertebrates is transported by combining with hemoglobin inside RBCs to form oxyhemoglobin. Only a small amount is dissolved in plasma, so hemoglobin is the main carrier.

38. Respiration is controlled by -

A) cerebrum B) cerebellum

C) Medulla oblongata D) olfactory lobe

Key: C

Solution: The medulla oblongata (in the brainstem) has the respiratory center. It regulates:

• Breathing rate
• Breathing depth
• Response to CO2 concentration

39. Respiration by lungs is called as -

A) pulmonary respiration B) cutical respiration

C) bronchial respiration D) cutaneous respiration

Key: A

Solution: Respiration that occurs using lungs is known as pulmonary respiration (pulmo = lung).
Cuticular = through skin surface of insects
Bronchial = refers to bronchi but not complete respiration
Cutaneous = through skin (like frogs)

40. During expiration, the diaphragm becomes

A) oblique B) normal C) flattened D) dome- shaped

Key: D

Solution: During exhalation (expiration):

• The diaphragm relaxes
• Relaxed diaphragm curves upward and becomes dome-shaped

This reduces chest cavity volume and pushes air out of the lungs.

41. In human body, blood is oxygenated and purified in the -

A) liver B) kidneys C) heart D) lungs

Key: D

Solution: Lungs are the site where:

• Deoxygenated blood releases CO2
• Blood absorbs fresh oxygen

Thus, lungs oxygenate and purify the blood (remove CO2).

42. In mammals the body cavity is partitioned into thoracic and abdominal parts by

A) liver B) lungs C) ribs D) diaphragm

Key: D

Solution: The diaphragm is a muscular sheet that separates the thoracic cavity (with heart and lungs) from the abdominal cavity (with stomach, liver, intestines).

43. Which function is not performed by lungs?

A) Elimination of carbon dioxide B) Provision of oxygen

C) Purification of blood D) removal of nitrogenous waste

Key: D

Solution:
• Lungs give oxygen
• Remove carbon dioxide
• Help in purification of blood gases
But nitrogenous waste (urea) is removed by kidneys, not lungs.

44. The end product of anaerobic respiration is -

A) CO_2 B) H_2O C) ethyl alcohol D) A and C both

Key: D

Solution: In plants and yeast, anaerobic respiration produces ethyl alcohol (ethanol) and CO2.“So both A and C are correct end products.

45. Amount of which of the following components in air does not change in process of respiration

A) Oxygen B) Carbon dioxide

C) Nitrogen D) Water Vapour

Key: C

Solution: Nitrogen makes up 78% of the air and is not used or released during respiration.“Oxygen decreases, CO2 and water vapour increase, but nitrogen remains unchanged.

46. Given below are some statements.

A) The oxygen dependent respiration is called aerobic respiration.

B) The requirement of water for photosynthesis is not essential.

C) Gymnosperms such as pines are the vascular plants which produce seeds but no fruits.

D) Root hairs provide increased surface area for gas exchange and absorption of water in plants. Which one of the following alternatives is correct ?

A) a is true, b is false B) b is true, c is false

C) b is true, c is false D) d is true, a is false

Key: A

Solution:

A is true – Aerobic respiration requires oxygen.

B is false – Water is essential for photosynthesis; it provides hydrogen for making glucose.

C is true – Gymnosperms like pine produce naked seeds and do not form fruits.

D is true – Root hairs increase surface area mainly for absorption of water and minerals; they do not play a major role in gas exchange.

47. Glottis is a passage for

A) food B) air C) both of these D) none of these

Key: B

Solution: The glottis is the opening of the windpipe (larynx). It allows air to pass into the respiratory system, not food.

48. The common phase between aerobic and anaerobic respiration is called

A) glycolysis B) Kreb's cycle C) tricarboxylic acid cycle D) none of these
Key: A
Solution: Both aerobic and anaerobic respiration start with glycolysis, where glucose is broken into pyruvate.

49. Breathing rate in man is controlled by a part of the brain called
A) thalamus B) hypothalamus C) medulla oblongata D) cerebellum
Key: C
Solution: The medulla oblongata controls involuntary actions like breathing rate and heartbeat.