

BIOLOGY

BOOKS - AAKASH SERIES

RESPIRATION IN PLANTS

Exercise I Introduction Do Plants Breathe

1. Respiration differs from the process of combustion in the fact that

- A. All the energy stored in glucose is released at once
- B. All the energy stored in glucose is gradually released
- C. Comparatively large quantity of energy is produced

D. Only carbohydrates act as the combustion substance

Answer: B



Watch Video Solution

2. Respiratory enzymes are mostly located in

A. mitochondrial matrix

B. Perimitochondrial space

C. Cristae

D. Outer membrane

Answer: A



Watch Video Solution

3. Dark respiration occurs in

- A. light
- B. dark
- C. light & dark both
- D. none of these

Answer: C



Watch Video Solution

4. Gaseous exchange in woody plants occurs through

- A. Stomata , Hydathodes

B. Hydathodes , Cuticle

C. Lenticels , Stomata

D. Cuticle

Answer: C



Watch Video Solution

5. In an annual plant, exchange of gases takes place mainly through

A. Leaf scars

B. Lenticels

C. Stomata

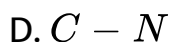
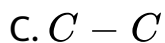
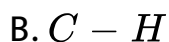
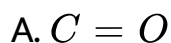
D. Woody stem

Answer: C



Watch Video Solution

6. Which bonds are broken down by oxidation in a respiratory substrate?



Answer: C



Watch Video Solution

7. Type of oxidation in respiration is by

- A. Addition of hydrogen to glucose
- B. Removal of only protons from glucose
- C. Removal of only electrons from glucose
- D. Removal of hydrogen from glucose

Answer: D



Watch Video Solution

8. Respiration is completely absent in

- A. Bacteriophage
- B. Cyanobacteria

C. Chlorella

D. Spirulina

Answer: A



Watch Video Solution

9. Old trees obtain O_2 through

A. Stomata

B. Lenticels

C. Leaf scars

D. All the above

Answer: D



[Watch Video Solution](#)

10. The mechanism of breakdown of food materials within the cells to release energy is called

- A. Cellular digestion
- B. Cellular photosynthesis
- C. Cellular respiration
- D. Cell division

Answer: C



[Watch Video Solution](#)

11. The compounds that are oxidised during the respiration process are known as

- A. Food molecules
- B. Respiratory substrates
- C. Inorganic molecules
- D. Organic compounds

Answer: B



Watch Video Solution

12. Which of the following exhibits the highest rate of respiration?

A. Growing shoot apex

B. Germinating seed

C. Root tip

D. Leaf bud

Answer: B



Watch Video Solution

13. Mitochondria are called powerhouses of the cell. Which of the following observations support this statement?

A. Mitochondria synthesize ATP

B. Mitochondria have a double membrane

- C. The enzymes of the Krebs' cycle and the cytochromes are found in mitochondria
- D. Mitochondria are found in almost all plant and animal cells

Answer: A



Watch Video Solution

14. Enzymes that catalyse the substrate level phosphorylation reactions in Glycolysis belong to

- A. Oxido reductases
- B. Transferases
- C. Hydrolases

D. Ligases

Answer: B



Watch Video Solution

15. The enzyme that catalyses phosphorylation of the substrate without using ATP molecule is

- A. Glyceraldehyde 3-phosphate dehydrogenase
- B. Glucose 6-phosphotransferase
- C. Phosphofructokinase
- D. Pyruvatedikinese

Answer: A



Watch Video Solution



[Watch Video Solution](#)

16. A three carbon sugar of Glycolysis is

- A. 3 Phosphoglyceric acid
- B. Pyruvic acid
- C. Glyceraldehyde 3-phosphate
- D. 1-3 disphosphoglyceric acid

Answer: C



[Watch Video Solution](#)

17. The net gain in EMP path way is

A. $2NADH + H^+$ and $4ATP$

B. $2NADH + H^+$ and $2ATP$

C. $1NADH + H^+$ and $2ATP$

D. $1NADH + H^+$ and $1ATP$

Answer: B



Watch Video Solution

18. Glycolysis occurs in

A. Matrix of mitochondria

B. Inner membrane of mitochondria

C. Cytoplasm

D. Ribosomes

Answer: C



Watch Video Solution

19. Glycolysis is

- A. Oxidative process
- B. Reductive process
- C. Physical process
- D. Anabolic process

Answer: A



Watch Video Solution

20. Enzymatic machinery required for partial breakdown of glucose into two molecules of pyruvic acid without the involvement of oxygen is present in

- A. Aerobic prokaryotes only
- B. Anaerobic prokaryotes only
- C. Anaerobic prokaryotes and eukaryotes only
- D. All aerobic and anaerobic organisms

Answer: D



Watch Video Solution

21. Two important steps of aerobic respiration namely oxidative decarboxylation and oxidative phosphorylation

occurs respectively in

- A. Cytoplasm and mitochondrial cristae
- B. Mitochondrial matrix and mitochondrial cristae
- C. Mitochondrial cristae and cytoplasm
- D. Mitochondrial matrix and cytoplasm

Answer: B



Watch Video Solution

22. In glycolysis two redox-equivalents are removed from

- A. GAP
- B. DHAP

C. PEP

D. 1, 3-Bis PGA

Answer: A



Watch Video Solution

23. The ratio of carbons found in lactic acid and ethanol respectively

A. 1 : 1

B. 3 : 1

C. 2 : 3

D. 3 : 2

Answer: D



Watch Video Solution

24. Both respiration and photosynthesis require the following

- A. Sunlight
- B. Chlorophyll
- C. Glucose
- D. Cytochromes

Answer: D



Watch Video Solution

25. Phosphorylation of glucose during glycolysis is catalysed by

- A. Phosphoglucomutase
- B. Phosphoglucoisomerase
- C. Hexokinase
- D. Phosphorylase

Answer: C



Watch Video Solution

26. Pyruvic acid, the key product of glycolysis can have many metabolic fates. Under aerobic condition it forms

A. lactic acid

B. $CO_2 + H_2O$

C. acetyl $CoA + CO_2$

D. ethanol + CO_2

Answer: C



Watch Video Solution

Exercise I Fermentation

1. Alcohol is produced during the process of

A. Photosynthesis

B. Aerobic respiration

C. Anaerobic respiration

D. None of these

Answer: C



Watch Video Solution

2. $NADH^+ H^+$ is utilized in this reaction during alcoholic fermentation

A. Conversion of Pyruvic acid to Acetaldehyde

B. Conversion of GAP to Bisphosphoglyceric acid

C. Conversion of Acetaldehyde to Ethyl alcohol

D. Conversion of Pyruvic acid to Acetyl CO-A

Answer: C



Watch Video Solution

3. The only enzyme that catalyses the reduction of substrate in the biochemical reactions of Anaerobic respiration is

- A. Pyruvate decarboxylase
- B. Glyceraldehyde phosphate dehydrogenase
- C. Alcohol dehydrogenase
- D. Enolase

Answer: C



Watch Video Solution

4. In Alcoholic fermentation of Glucose, the net gain of $NADH_2$ is

- A. One
- B. zero
- C. three
- D. Four

Answer: B



Watch Video Solution

5. Fermentation is

- A. Complete oxidation of carbohydrates

B. Incomplete oxidation of carbohydrates

C. Anaerobic respiration

D. None of the above

Answer: B



Watch Video Solution

6. Enzyme catalysing reduction of acetaldehyde in fermentation is

A. amylase

B. diastase

C. alcohol dehydrogenase

D. decarboxylase

Answer: C



Watch Video Solution

7. The enzymes that convert pyruvic acid into ethanol are

- A. Carboxylase
- B. Dehydrogenase
- C. Decarboxylase and dehydrogenase
- D. Oxidases and decarboxylase

Answer: C



Watch Video Solution

8. When respiratory substrate is cereal/ starch/ sprouting potato tuber, then RQ value is

- A. 0
- B. unity
- C. > 1
- D. < 1

Answer: B



Watch Video Solution

9. In anaerobic condition, producing alcohol value of RQ will be

A. 1

B. 2

C. infinity

D. 0

Answer: C



Watch Video Solution

10. How much of the energy of a glucose molecule is released in anaerobic respiration ending with fermentation?

A. Around 15%

B. 0.02

C. Less than 7%

D. 7.6 k.cal

Answer: C



Watch Video Solution

11. Source of hydrogen for the reduction of acetaldehyde into ethyl alcohol in anaerobic respiration is

A. $FADH_2$

B. $NADPH_2$

C. $NADH_2$

D. TPP

Answer: C



Watch Video Solution



Watch Video Solution

12. End product of anaerobic respiration is

A. Fructose and Water

B. Glucose and CO_2

C. Alcohol and CO_2

D. Water and CO_2

Answer: C



Watch Video Solution

13. Partial oxidation and the break down of glucose to Pyruvic acid without the help of oxygen is called

- A. Fermentation
- B. Anaerobic respiration
- C. Glycolysis
- D. Combustion

Answer: C



Watch Video Solution

14. Dough kept overnight in warm weather becomes soft and spongy because of

- A. Absorption of carbondioxide from atmosphere
- B. Fermentation
- C. Cohesion

D. Osmosis

Answer: B



Watch Video Solution

15. In hurdle race, which of the following is accumulated in the leg muscle?

A. ATP

B. Glycolate

C. Lactate

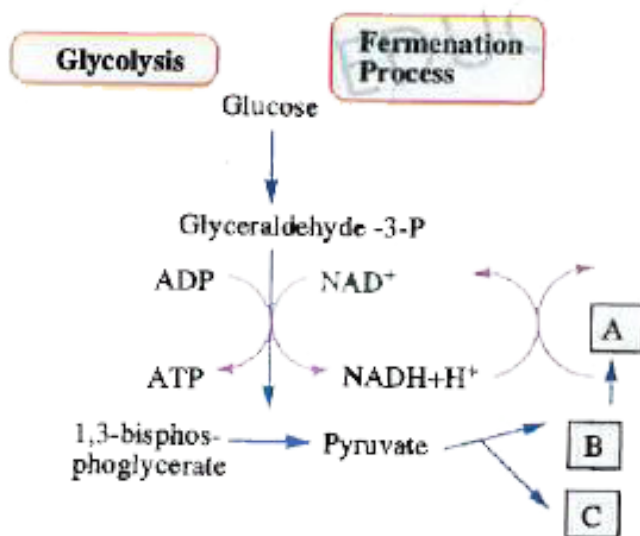
D. Ethyl alcohol

Answer: C



Watch Video Solution

16. Choose the correct combination of labelling the molecules involved in the pathway of anaerobic respiration in yeast.



A. A-Ethanol, B- CO_2 , C-Acetaldehyde

B. A- CO_2 , B-Ethanol, C-Acetaldehyde

C. A- CO_2 , B-Acetaldehyde, C-Ethanol

D. A-Ethanol, B-Acetaldehyde, C- CO_2 .

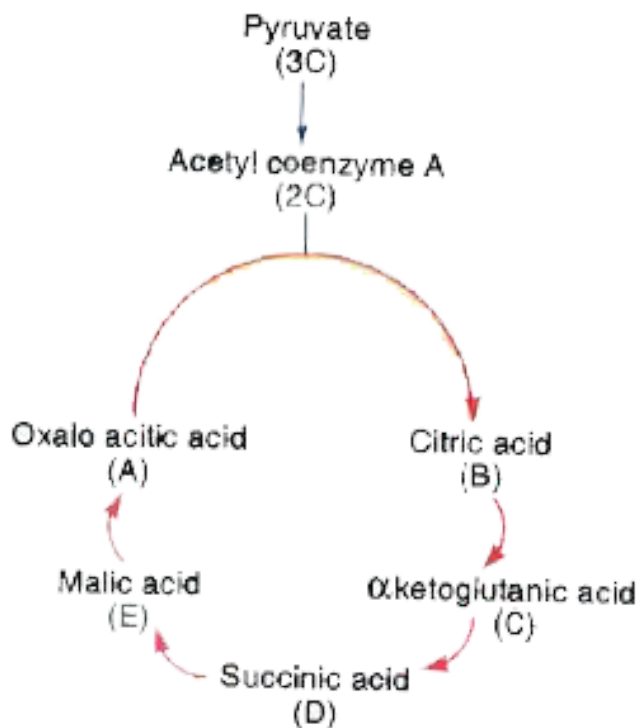
Answer: D



Watch Video Solution

17. Choose the correct combination of labeling the number of carbon compounds in the substrate molecules, involved

in the citric acid cycle



A. (A) 4C, (B) 6C, (C) 5C, (D) 4C, (E) 4C

B. (A) 6C, (B) 5C, (C) 4C, (D) 3C, (E) 2C

C. (A) 2C, (B) 3C, (C) 4C, (D) 5C, (E) 6C

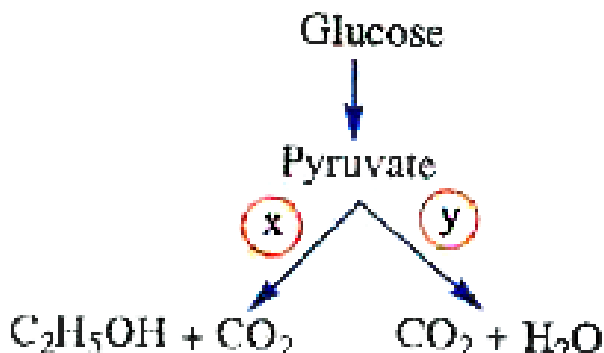
D. (A) 4C, (B) 6C, (C) 4C, (D) 4C, (E) 4C

Answer: A



Watch Video Solution

18. Name the type of respiration labeled x in the given diagram



- A. Aerobic
- B. Anaerobic
- C. Krebs cycle
- D. None of these

Answer: B



[Watch Video Solution](#)

Exercise I Aerobic Respiration Ets Bs Amphibolic

1. The incomplete breakdown of sugars in anaerobic respiration results in the formation of

- A. Water and carbon dioxide
- B. Alcohol and carbon dioxide
- C. Fructose and water
- D. Glucose and carbon dioxide

Answer: A



[Watch Video Solution](#)

2. Which of the following reactions takes place in the matrix of the cell Organelle, that is referred to as 'Power house of the cell'

- A. Hydration of Fumaric acid
- B. Oxidation of Glycolic acid
- C. Dehydrogenation of Glyceraldehyde 3-phosphate
- D. Decarboxylation of Malic acid

Answer: D



Watch Video Solution

3. Catalytic action of a multienzyme complex, involving six different co-factors, is needed for the formation of

- A. Acetyl phosphate
- B. Acetyl Co. A
- C. Pyruvic acid
- D. α -Ketoglutaric acid

Answer: B



Watch Video Solution

4. Though mitochondria are absent in the prokaryotes, Krebs cycle occurs in

- A. Cytoplasm
- B. Nucleoid
- C. Ribosome

D. Plasma Membrane

Answer: B



Watch Video Solution

5. The dicarboxylic acid required for the formation of first Tricarboxylic acid of Krebs cycle

A. a Ketoglutaric acid

B. Oxalosuccinic acid

C. Malic acid

D. Oxaloacetic acid

Answer: D



Watch Video Solution



Watch Video Solution

6. Product of first biological oxidation in Krebs cycle is

Isocitric acid

Oxalosuccinic acid

α -Ketoglutaric acid

Succinic acid

A. Isocitric acid

B. Oxalosuccinic acid

C. α -Ketoglutaric acid

D. Succinic acid

Answer: B



Watch Video Solution

7. When one molecule of Glucose is completely oxidized in aerobic respiration, how many molecules of carbon dioxide are released in tricarboxylic acid cycle?

- A. one
- B. Six
- C. Three
- D. Four

Answer: D



Watch Video Solution

8. Calculate the number of ATP produced for one Glyceraldehyde 3-phosphate molecule by the end of aerobic respiration through Electron transport only

A. 20

B. 14

C. 15

D. 19

Answer: D



Watch Video Solution

9. The substrate for final decarboxylation reaction of aerobic respiration is

- A. Oxalosuccinic acid
- B. Succinyl Co. A
- C. Pyruvic acid
- D. α -Kctoglutaric acid

Answer: D



Watch Video Solution

10. Number of ATP generated in ETS on oxidation of reduced Co-enzymes produced in cytosol for one glucose molecule is

- A. 4 ATP
- B. 36 ATP
- C. 32 ATP

D. 6 ATP

Answer: A



Watch Video Solution

11. Number of ATP molecules formed through oxidative decarboxylation reactions when one Glucose molecule is oxidized in aerobic respiration

A. 11

B. 19

C. 15

D. 12

Answer: D



Watch Video Solution

12. The correct sequence of electron carriers (Cytochromes)

in Respiratory electron transport system is

a, a_3, b, c and c_1

b, c, c_1 and a_3

b, c_1, c, a and a_3

a_3, a, c, c_1 and b

A. a, a_3, b, c and c_1

B. b, c, c_1, a and a_3

C. b, c_1, c, a and a_3

D. a_3, a, c, c_1 and b

Answer: C



[Watch Video Solution](#)

13. ATP is a

- A. Purine
- B. Nucleotide
- C. Nucleoside
- D. Nucleosome

Answer: B



[Watch Video Solution](#)

14. Non-mitochondrial aerobic respiration occurs in

A. Viruses

B. Bacteria

C. Cyanobacteria

D. 2 and 3

Answer: D



Watch Video Solution

15. The ATP output of aerobic respiration is more than that of anaerobic respiration per one glucose molecule by

A. 18 times

B. 2 times

C. 4 times

D. 8 times

Answer: A



Watch Video Solution

16. The number of oxidations, substrate level phosphorylations respectively in HDP pathway are

A. 1, 1

B. 2, 1

C. 1, 2

D. 2, 2

Answer: C



Watch Video Solution



Watch Video Solution

17. Pick out the correct statement from following

- A. In glycolysis, hydration is followed by dephosphorylation
- B. In link reaction, $2CO_2$ are removed from each pyruvic acid
- C. One turn of Krebs cycle requires $3NAD^+$ and 1 FAD
- D. In Krebs cycle, dehydration is immediately followed by oxidation

Answer: C



Watch Video Solution

18. Aerobic respiration is more advantageous because it

- A. Does not require sunlight
- B. Produces oxygen as a waste product
- C. Does not require molecular oxygen and hydrogen
- D. Release more energy from an equal amount of nutrients

Answer: A



Watch Video Solution

19. Hydrogen joins oxygen at the end of

Glycolysis

Electron transport system

Krebs cycle

All of these

A. Glycolysis

B. Electron transport system

C. Krebs cycle

D. All of these

Answer: B



Watch Video Solution

20. Main source of ATP in a cell is by oxidative phosphorylation is

- A. Glycolysis
- B. ETS
- C. Krebs cycle
- D. Pyruvate oxidation

Answer: B



Watch Video Solution

21. Krebs cycle produces

- A. ATP
- B. UTP
- C. CTP
- D. TTP

Answer: A



Watch Video Solution

22. Oxidative phosphorylation occurs during electron transfer in

A. Chloroplasts

B. Mitochondria

C. Ribosomes

D. Glyoxisomes

Answer: B



Watch Video Solution

23. Which of the following is phosphorylating unit?

A. Microsome

B. Peroxisome

C. Oxysome

D. Lomasome

Answer: C



Watch Video Solution

24. In cellular respiration, oxygen is used as the final receptor of

Nitrogen

Iron

Carbon

Hydrogen

A. Nitrogen

B. Iron

C. Carbon

D. Hydrogen

Answer: D



Watch Video Solution

25. During respiration, pyruvic acid is

A. Broken down into a two-carbon fragment and carbon dioxide

- B. A result of protein breakdown
- C. Formed only when oxygen is available
- D. One of the product of Krebs cycle

Answer: A



Watch Video Solution

26. Chemiosmotic hypothesis is based on

- A. Membrane potential
- B. Proton gradient
- C. Accumulation of K^+ ions
- D. Accumulation of Na^+ ions

Answer: B



Watch Video Solution

27. One molecule of glucose requires 2 ATP to get phosphorylated to form Fructose 1-6 Biphosphate in glycolysis. How many ATP are used in the same process if the substrate is fructose ?

A. 1

B. 2

C. 4

D. 3

Answer: A



[Watch Video Solution](#)

28. Total number of ATP produced when one molecule of G3P, participates in aerobic respiration is

- A. 6
- B. 10
- C. 2
- D. 8

Answer: D



[Watch Video Solution](#)

29. In which of the following steps NADH can be produced?

Glucose \rightarrow fructose

Citric acid \rightarrow isocitric acid

Pyruvic acid \rightarrow Acetyl CO~A

OAA \rightarrow citric acid

A. Glucose \rightarrow fructose

B. Citric acid \rightarrow isocitric acid

C. Pyruvic acid \rightarrow Acetyl *CO~A*

D. OAA \rightarrow citric acid

Answer: C



Watch Video Solution

30. Amphibolic cycle that occurs only in aerobic condition is

- A. EMP pathway
- B. Glycolysis
- C. Krebs cycle
- D. E-D pathway

Answer: C



Watch Video Solution

31. During respiration, pyruvic acid is

- A. transported from cytosol to mitochondria
- B. produced in Krebs cycle

C. formed if fat is used

D. produced only in aerobic condition

Answer: A



Watch Video Solution

32. in how many steps CO_2 is released in aerobic respiration of pyruvic acid

A. 1

B. 2

C. 3

D. 6

Answer: C



Watch Video Solution

33. Instant source of energy/most common respiratory substrate is

- A. glucose
- B. fructose
- C. sucrose
- D. all

Answer: A



Watch Video Solution

34. Krebs' cycle starts with the formation of a six carbon compound by reaction between

- A. OAA and puruvic acid
- B. OAA and Acetyl CO-A
- C. Pyruvic acid and Acetyl CO-A
- D. OAA and citrate synthetase

Answer: B



Watch Video Solution

35. Reduced coenzyme $NADPH(H^+)$ is produced in respiration during

- A. glycolysis
- B. Krebs cycle
- C. Anaerobic respiration
- D. fermentation by yeast

Answer: B



Watch Video Solution

36. The importance of glycolysis is that

- A. It degrades glucose to generate ATP
- B. It provides building material for the synthesis of cellular components
- C. both correct

D. It occurs in mitochondria

Answer: C



Watch Video Solution

37. Conversion of α -ketoglutaric acid into succinyl co-A is a step of

A. EMP pathway

B. TCA cycle

C. HMP pathway

D. ED pathway

Answer: B



Watch Video Solution



Watch Video Solution

38. When $FADH_2 / FMNH_2$ is oxidised through ETS

- A. Produces 2 ATP
- B. Consumes 1 / $2O_2$
- C. Both 1 and 2
- D. Uses one water molecule

Answer: C



Watch Video Solution

39. One molecule of pyruvic acid produces ____ molecules of CO_2 in mitochondrion

A. 3

B. 2

C. 4

D. 6

Answer: A



Watch Video Solution

40. Mineral elements in ATP are

A. N, P

B. N, Mg, Fe

C. N, S

D. Mg, S

Answer: A



Watch Video Solution

41. In ETS, electrons moves from

A. NADH to O_2

B. FADH to O_2

C. H_2O to O_2

D. 1 and 2

Answer: D



Watch Video Solution

42. Upon oxidation of 1 molecule of pyruvic acid in mitochondrial respiration the molecules of ATP generated are

A. 38

B. 30

C. 8

D. 15

Answer: D



Watch Video Solution

43. More energy is stored in per unit weight of

A. carbohydrate

B. fat

C. protein

D. glucose

Answer: B



Watch Video Solution

44. How much energy is released in anaerobic respiration by the incomplete oxidation of 1 molecule of glucose?

A. 52 Kcal

B. 56 Kcal

C. 15 Kcal

D. 16 Kcal

Answer: B



Watch Video Solution

45. Which is not a protein in ETC?

A. Ubiquinone

B. Cytochrome

C. Cytochrome oxidase

D. None of these

Answer: A



Watch Video Solution

46. Net number of water molecules produced per molecule of glucose during aerobic respiration is

- A. 6
- B. 10
- C. 8
- D. 12

Answer: C



Watch Video Solution

47. Flow of electrons in ETS is

A. Cytochrome \rightarrow CoQ

B. CoQ \rightarrow Cytochrome

C. Cytochrome \rightarrow FMN

D. Cytochrome $\rightarrow F_0F_1$

Answer: B



Watch Video Solution

48. Fructose 1, 6-Bisphosphate splits into DHAP and GAP.

These two are

A. Four carbon sugars

B. Three carbon sugars

C. Five carbon sugars

D. hexoses

Answer: B



Watch Video Solution

49. Which step is called gateway step/link reaction in aerobic respiration?

- A. Glycolysis
- B. Formation of acetyl CO-A
- C. Citric acid formation
- D. ETS Terminal oxidation

Answer: B



Watch Video Solution



Watch Video Solution

50. In Krebs cycle

A. Acetyl coenzyme A undergoes 4 oxidations and 2 decarboxylations

B. Pyruvic acid undergoes 4 oxidations and 2 decarboxylations

C. TCA undergoes 4 oxidations and 4 de-carboxylations

D. OAA undergoes 4 oxidations and two decarboxylations

Answer: B



Watch Video Solution

51. Correct sequence of events in Krebs' cycle is

A. Acetyl CoA \rightarrow citrate \rightarrow pyruvate α -ketoglutarate

\rightarrow succinate \rightarrow malate \rightarrow fumarate \rightarrow OAA

B. Acetyl CoA \rightarrow citric acid \rightarrow α - ketoglutaric acid \rightarrow

succinic acid \rightarrow fumaric acid \rightarrow malic acid \rightarrow OAA

C. Acetyl CoA \rightarrow citric acid \rightarrow malic acid α -

ketoglutaric acid α -succinic acid \rightarrow OAA

D. All are wrong

Answer: B



Watch Video Solution

52. Which of the following aerobic respiratory substrates have the same yield of ATP

A. Glucose, Glucose 6P, Fructose 6P

B. 3PGA, 2PGA, PEP

C. Pyruvic acid, Acetyl Co.A, Citric acid

D. Isocitric acid, Oxalosuccinic acid, α -Ketoglutaric acid

Answer: B



Watch Video Solution

53. Krebs cycle is involved during the oxidation of

A. Proteins and fats only

- B. Carbohydrates and fats only
- C. Carbohydrates only
- D. Carbohydrates, fats and proteins

Answer: D



Watch Video Solution

54. The substrate for final decarboxylation reaction of aerobic respiration is

- A. α ketoglutaric dehydrogenase
- B. Succinic dehydrogenase
- C. Succinic thiokinase
- D. Citric synthetase

Answer: C



Watch Video Solution

55. Total number of ATP produced when one molecule of G3P, participates in aerobic respiration is

A. 18

B. 14

C. 17

D. 16

Answer: B



Watch Video Solution

56. Energy formed at F_1 particle is obtained from

- A. H^+ accumulated in the outer space
- B. H^+ moving through the F_0
- C. H^+ moving out through different complexes
- D. H^+ formed due to oxidation of $NADH + H^+$

Answer: B



Watch Video Solution

57. Cyt. a and a_3 are the components of

- A. Complex IV
- B. Complex II

C. Complex III

D. Complex I

Answer: A



Watch Video Solution

58. Which one of the following is the competitive inhibitor of succinic dehydrogenase, which participates in Kreb's cycle?

A. Malonate

B. Oxaloacetate

C. α -ketoglutarate

D. Malate

Answer: A



Watch Video Solution

59. Smallest rotatory biomachine found in aerobes is

A. $F_0 - F_1$ particle

B. Complex - I

C. Complex - II

D. UQ

Answer: A



Watch Video Solution

60. The ultimate electron acceptor of respiration in an aerobic organism is

A. cytochrome

B. oxygen

C. hydrogen

D. glucose

Answer: B



Watch Video Solution

61. Electron Transport System (ETS) is located in mitochondrial

- A. outer membrane
- B. inter membrane space
- C. inner membrane
- D. matrix

Answer: C



Watch Video Solution

62. End product of oxidative phosphorylation is

- A. NADH
- B. Oxygen
- C. ADP
- D. $ATP + H_2O$

Answer: D



Watch Video Solution

63. Match the following and choose the correct option from those given below.

Column A

A. Molecular oxygen

B. Electron acceptor

C. Pyruvate dehydrogenase

D. Decarboxylation

Column B

i. α – Ketoglutaric acid

ii. Hydrogen acceptor

iii. Cytochrome C

iv. Acetyl CoA

A. A-ii, B-iii, C-iv, D-i

B. A-iii, B-iv, C-ii, D-i

C. A-ii, B-i, C-iii, D-iv

D. A-iv, B-iii, C-i, D-ii

Answer: A



Watch Video Solution

Exercise I Respiratory Quotient

1. During starvation, RQ value will be

- A. 0
- B. less than unity
- C. more than unity
- D. unity

Answer: B



Watch Video Solution

2. RQ is measured by

- A. Auxanometer
- B. Ganong's potometer
- C. Ganong's Respirometer
- D. Drawin's Porometer

Answer: C



Watch Video Solution

3. Number of CO_2 molecules liberated if one molecules of tripalmitin is a respiratory substrate

A. 51

B. 20

C. 49

D. 72.5

Answer: A



Watch Video Solution

4. Higher respiratory quotient is in which among the following?

A. Fats

B. Protein

C. Carbohydrates

D. Organic acids

Answer: D



Watch Video Solution

5. R.Q. Value is an infinity during

Aerobic respiration of carbohydrates as substrate

Aerobic respiration of proteins as substrate

Aerobic respiration of fats as substrate

Anaerobic respiration of carbohydrates as substrate

A. Aerobic respiration of carbohydrates as substrate

B. Aerobic respiration of proteins as substrate

C. Aerobic respiration of fats as substrate

D. Anaerobic respiration of carbohydrates as substrate

Answer: D



Watch Video Solution

6. RQ value in succulent xerophytes (Bryophyllum) is

A. One

B. More than one

C. Less than One

D. Zero

Answer: D



Watch Video Solution

7. The respiratory quotient during cellular respiration would depend on the

- A. Nature of enzymes involved
- B. Nature of the substrate
- C. Amount of carbondioxide released
- D. Amount of oxygen utilized

Answer: B



Watch Video Solution

8. Ratio of CO_2 produced in aerobic and anaerobic respiration is

A. 3:1

B. 2:1

C. 4:1

D. 1:1

Answer: A



Watch Video Solution

9. Respiration and photosynthesis both have one thing in common

A. ATP

B. Chlorophyll

C. Glucose

D. Cytochrome

Answer: D



Watch Video Solution

10. Chemoautotrophic bacteria resemble the photosynthetic bacteria in

- A. Oxidising inorganic compounds for synthesizing ATP
- B. causing photolysis of H_2O to get H
- C. synthesizing carbohydrate through Calvin cycle
- D. synthesize assimilatory power

Answer: C





[Watch Video Solution](#)

11. Increased rate of respiration during ripening of fruits is known as

- A. Climacteric respiration
- B. Salt respiration
- C. Anionic respiration
- D. Photo respiration

Answer: A



[Watch Video Solution](#)

12. The tissue of highest respiratory activity is

A. Meristems

B. Ground tissue

C. Phloem

D. Mechanical tissue

Answer: A



Watch Video Solution

13. The net gain of ATP molecules in glycolysis during aerobic respiration is

A. 18

B. 12

C. 4

D. 20

Answer: A



Watch Video Solution

14. The final e^- acceptors of alcoholic fermentation and aerobic respiration respectively are

- A. Pyruvate and Oxygen
- B. Acetyl Co. A and Oxygen
- C. Acetaldehyde and Cyt- a_3
- D. Acetaldehyde and Oxygen

Answer: D



Watch Video Solution



[Watch Video Solution](#)

15. The rate of respiration is measured by

- A. Respirometer
- B. Ganongs potometer
- C. Auxanometer
- D. Spectro photometer

Answer: A



[Watch Video Solution](#)

16. In plants respiration is greater in

- A. Root apices
- B. Shoot apices
- C. Vegetative and floral buds
- D. All the above parts

Answer: D



Watch Video Solution

17. The overall goal of glycolysis, Krebs cycle and the electron transport system is the formation of

- A. ATP in small stepwise units
- B. ATP in one large oxidation reaction
- C. Sugars

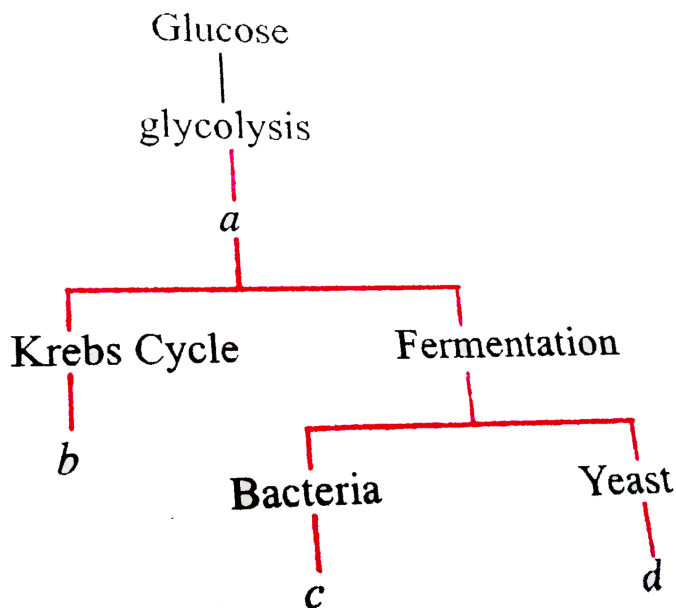
D. Nucleic acids

Answer: A



Watch Video Solution

18. Identify the products a, b, c, and d and find out the correct option.



- A. A-Carbon dioxide and water, B-Pyruvic acid, C-Ethyl alcohol and carbon dioxide, D-Lactic acid
- B. A-Pyruvic acid. B-Carbon dioxide and water, C-Lactic acid, D-Ethyl alcohol and carbon dioxide
- C. A-Pyruvic acid, B- Carbon dioxide and water, C-Ethyl alcohol and carbon dioxide, D-Lactic acid
- D. A-Pyruvic acid, B-Ethyl alcohol and carbon dioxide, C-Lactic acid, D-Carbon dioxide and water

Answer: B



Watch Video Solution

1. Choose the incorrect option for why plants can get along without respiratory organs as plants, unlike animals, have no specialized organs for gaseous exchange.

- A. Respiration rate is faster than animals in roots, stems and leaves
- B. O_2 released during photosynthesis is utilized for respiration
- C. Loose packing of parenchyma cells in leaves, stems and roots facilitates respiration
- D. There is very little transport of gases from one plant part to another.

Answer: A



[Watch Video Solution](#)

2. In floating respiration substrate used is/are

- A. Carbohydrates only
- B. Fat and carbohydrate
- C. Fat and Protein
- D. Carbohydrate and protein

Answer: B



[Watch Video Solution](#)

3. Facultative anaerobes

- A. Cannot use oxygen for growth and are even harmed by it
- B. Cannot use oxygen for growth, but tolerate the presence of it
- C. Are aerobes which can grow without oxygen
- D. Die when given aerobic condition

Answer: C



Watch Video Solution

4. Maximum energy can be obtained from oxidation of which respiratory substrate

A. Fat

B. proteins

C. Carbohydrates

D. Organic acid

Answer: A



Watch Video Solution

5. Concentration of alcohol in a sugar solution inoculated with yeast after which yeast gets killed is

A. 0.13

B. 0.25

C. 0.3

D. 0.2

Answer: A



Watch Video Solution

6. Cramps are formed during vigorous exercise, it is due to production of ____ in muscles.

A. Acetyl coenzyme A

B. Ethyl alcohol

C. Lactic acid

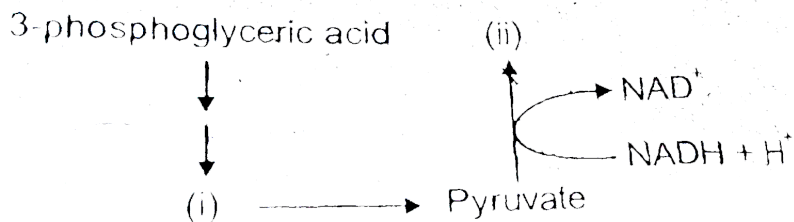
D. Acetic acid

Answer: C



Watch Video Solution

7. Identify the product marked by (i) & (ii) in the following pathway



- A. i) 2-phosphoglycerate (ii) Acetyl CoA
- B. i) Phosphoenol pyruvate ii) Ethyl alcohol
- C. i) Phosphoenol pyruvate ii) Citric acid
- D. i) Phosphoenol pyruvate ii) Acetyl CoA

Answer: B



Watch Video Solution

8. Pasteurization is a process, which means heating of drinks. It is carried out, at the temperature and for how much duration?

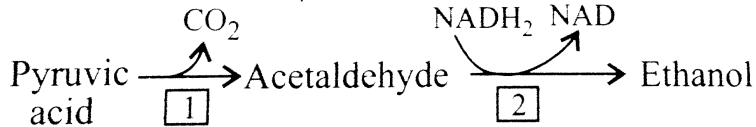
- A. $70^{\circ}C$ and 60 minutes
- B. $80^{\circ}C$ and 30 minutes
- C. $120^{\circ}C$ and 60 minutes
- D. $60 - 70^{\circ}$ and 30 minutes

Answer: D



Watch Video Solution

9. Identify the enzymes 1 and 2 in the given reaction and select the correct option.



A. Ethanol dehydrogenase

Pyruvate decarboxylase

B. Ethanol decarboxylase

Pyruvate dehydrogenase

C. Pyruvate decarboxylase

Ethanol dehydrogenase

D. Pyruvate dehydrogenase

Ethanol dehydrogenase

Answer: C



Watch Video Solution

10. Select the wrong statement with respect to glycolysis

- A. It occurs outside mitochondria
- B. It is an anaerobic phase
- C. Glucose undergoes partial oxidation to form 2 molecules of pyruvic acid
- D. Glucose is phosphorylated to glucose-6-phosphate by isomerase enzyme

Answer: D



Watch Video Solution

11. Which of the following steps during glycolysis is associated with utilisation of ATP?

A. Glucose \rightarrow Glucose -6-phosphate

B. Fructose-6-phosphate \rightarrow fructose- 1,6-biphosphate

C. PEP \rightarrow Pyruvic acid

D. Both 1 and 2

Answer: D



Watch Video Solution

12. Which of the following conversions involve ATP synthesis during glucolysis?

A. Glucose \rightarrow Glucose -6-phosphate

B. Fructose-6-phosphate \rightarrow Fructose- 1,6-biphosphate

C. 1,3-bisphosphoglyceric acid (BPGA) \rightarrow 3-phosphoglyceric acid (PGA)

D. All of these

Answer: C



Watch Video Solution

13. Fate of pyruvic acid during aerobic respiration is

A. Lactic acid fermentation

B. Acloholic fermentation

C. oxidative decarboxylation

D. Oxidative phosphorylation

Answer: C

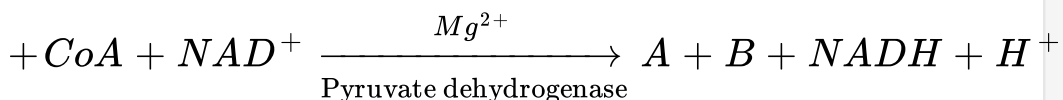


Watch Video Solution

14. Identify A and B in the given reaction.

Pyruvic

acid



- A. $\begin{matrix} A & B \\ PEP & CO_2 \end{matrix}$
- B. $\begin{matrix} A & B \\ \text{Acetyl CoA} & CO_2 \end{matrix}$
- C. $\begin{matrix} A & B \\ CO_2 & H_2O \end{matrix}$
- D. $\begin{matrix} A & B \\ \text{Acetyl CoA} & H_2O \end{matrix}$

Answer: B



Watch Video Solution

15. Substrate level phosphorylation occurs during which step of Kreb's cycle?

A. Succinyl - CoA \rightarrow Succinic acid

B. Isocitric acid \rightarrow Oxalosuccinic acid

C. Oxalosuccinic acid \rightarrow α - Ketoglutaric acid

D. Malic acid \rightarrow OAA

Answer: A



Watch Video Solution

16. The first 5C dicarboxylic acid in Krebs' cycle which is used in nitrogen metabolism is

- A. OAA
- B. citric acid
- C. α -Ketoglutaric acid
- D. acetyl coenzyme A

Answer: C



Watch Video Solution

17. Krebs' cycle is also called metabolic sink as it is a common pathway for

- A. Carbohydrates, fats and proteins (amino acids)
- B. Carbohydrates and fats only
- C. Carbohydrates and organic acids only
- D. Proteins and fats only

Answer: A



Watch Video Solution

18. Seeds respire in

- A. Presence of O_2
- B. presence of CO_2
- C. absence of O_2
- D. both 1 and 3

Answer: D



Watch Video Solution

19. Phosphorylation of glucose during glycolysis is catalysed by

- A. Phosphoglucomutase
- B. Phosphoglucoisomerase
- C. Hexokinase
- D. Phosphorylase

Answer: C



Watch Video Solution

20. Electron Transport System (ETS) is located in mitochondrial

- A. outer membrane
- B. inter membrane space
- C. inner membrane
- D. matrix

Answer: C



Watch Video Solution

21. What is obtained as the end product of oxidative phosphorylation?

A. NADH

B. Oxygen

C. ADP

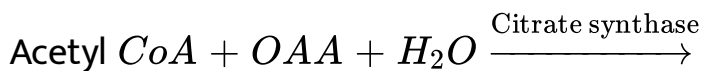
D. $ATP + H_2O$

Answer: D



Watch Video Solution

22. Consider the first reaction of TCA cycle.



$(A) + \text{CoA}.$

What is true about compound A?

A. First product of TCA cycle

B. Tricarboxylic acid and six carbon compound

C. It undergoes reorganization in the presence of enzyme aconitase to form cis-aconitate

D. All of these

Answer: D



Watch Video Solution

23. As per chemiosmotic coupling hypothesis, in mitochondria, protons accumulate in the

A. outer membrane

B. inner membrane

C. intermembrane space

D. matrix

Answer: C



Watch Video Solution

24. Which of these are respiratory poisons or inhibitor of ETC?

A. Cyanides

B. Antimycin A

C. Carbon monoxide

D. All of these

Answer: D



Watch Video Solution

[Watch Video Solution](#)

25. How many ATP molecules will be generated in a plant system during complete oxidation of 40 molecules of glucose?

- A. 180
- B. 360
- C. 1440
- D. 3040

Answer: C

[Watch Video Solution](#)

26. Select the wrong statement

- A. When tripalmitin is used as a substrate in respiration, the R.Q. is 0.7
- B. The intermediate compound which links glycolysis with Krebs' cycle is malic acid
- C. One glucose molecule yields a net gain of 36ATP
- D. One glucose molecule yields a net gain of 2ATP molecules during glycolysis

Answer: B



Watch Video Solution

Exercise Iii

1. Which statement is wrong for Kreb's cycle?

A. There are three points in the cycle where NAD^+ is reduced to $NADH + H^+$

B. There is one point in the cycle where FAD^+ is reduced to $FADH_2$

C. During conversion of succinyl CoA succinic acid, a molecule of GTP is synthesized

D. The cycle starts with condensation of acetyl group acetyl CoA^0 with pyruvic acid yield citric acid

Answer: D



2. The chemiosmotic coupling hypothesis of oxidative phosphorylation process that adenosine triphosphate (ATP) is formed because

A. a proton gradient forms across the inner mitochondrial membrane

B. there is a change in the permeability of the inner mitochondrial membrane towards adenosine diphosphate (ADP)

C. high energy bonds are formed in mitochondrial proteins

D. ADP is pumped out of the matrix into the intermembrane space

Answer: A



Watch Video Solution

3. In which one of the following processes CO_2 is not released?

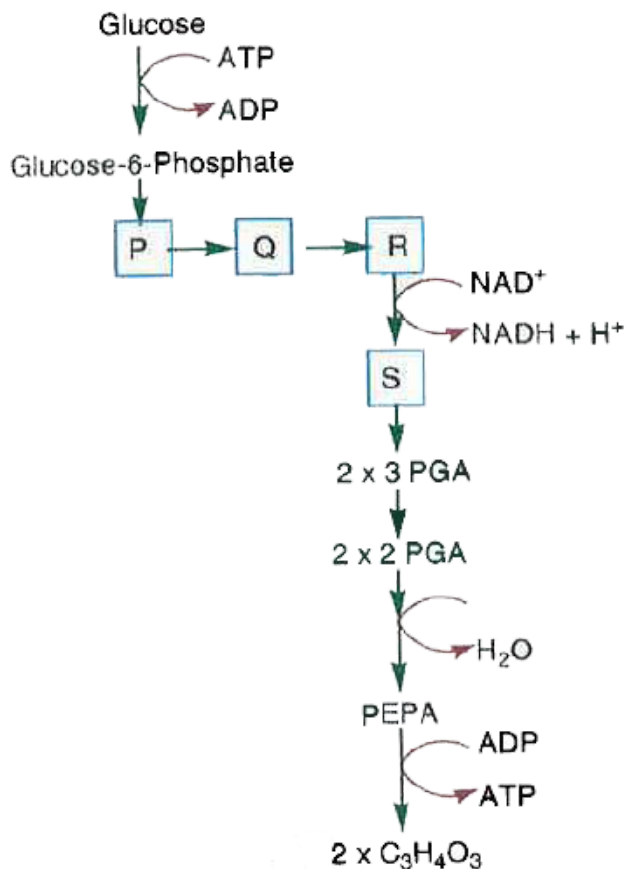
- A. Aerobic respiration in plants
- B. Aerobic respiration in animals
- C. Alcoholic fermentation
- D. Lactate fermentation

Answer: D



Watch Video Solution

4. Refer the figure and answer the question.



Choose the correct names of P, Q, R and S.

- | | | | | |
|----|------------|------------|-------------|-----------|
| | <i>P</i> | <i>Q</i> | <i>R</i> | <i>S</i> |
| A. | 1,3 diPGA | 3PGA | Fr. 1,6 diP | Fr.6P |
| | <i>P</i> | <i>Q</i> | <i>R</i> | <i>S</i> |
| B. | 3PGA | 1.3diPGA | Fr.1,6 diP | Fr.6P |
| | <i>P</i> | <i>Q</i> | <i>R</i> | <i>S</i> |
| C. | Fr.1,6 diP | Fr. 6P | 3PGA | 1,3 diPGA |
| | <i>P</i> | <i>Q</i> | <i>R</i> | <i>S</i> |
| D. | Fr6P | Fr.1.6 diP | 3PGA | 1,3 diPGA |

Answer: D



Watch Video Solution

5. The energy releasing metabolic process in which substrate is oxidised without an external electron acceptor is called

A. Glycolysis

B. Fermentaiton

C. Aerobic respiration

D. Photorespiration

Answer: B



Watch Video Solution

6. Which one of the following is the competitive inhibitor of succinic dehydrogenase, which participates in Krebs cycle?

A. Malonate

B. Oxaloacetate

C. α - ketoglutarate

D. Malate

Answer: A



Watch Video Solution

7. Which one of the following parts is wrongly matched?

- A. Methanogens - Gobar gas
- B. Yeast - Ethanol
- C. Streptomyces - Antibiotic
- D. Coliforms - Vinegar

Answer: D



Watch Video Solution

8. The overall goal of glycolysis, Krebs cycle and the electron transport system is the formation of

- A. ATP in small stepwise units
- B. ATP in one large oxidation reaction
- C. Sugars
- D. Nucleic acids

Answer: A



Watch Video Solution

9. All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial

membranes in eukaryotes and in cytosol in prokaryotes. This enzyme is

- A. Lactate dehydrogenase
- B. Isocitrate dehydrogenase
- C. Malate dehydrogenase
- D. Succinate dehydrogenase

Answer: D



Watch Video Solution