BIOLOGY

NEET & AIIMS

RESPIRATION IN PLANTS

Example

1. What is the fate of energy that is obtained from respiration ?

Watch Video Solution

2. Name the structure/organs in plants that are used for gaseous exchange

Watch Video Solution

3. Name the products that are formed by the action of aldolase on Fructose-1,6-bisphosphate in glycolysis.

Watch Video Solution

4. How many ATP molecules are obtained as net gain during anaerobic respiration of one glucose.

Watch Video Solution

5. What is the fate of pyruvic acid during aerobic and anerobic respiration ?

Watch Video Solution

6. Write down the name of cytochromes-present in complex IV.

Watch Video Solution

7. How fats undergo the process of respiration ?

Watch Video Solution

Try Yourself

1. Name the energy currency of the cell.

Watch Video Solution

2. Read the following statements.

(i) Usually proteins are oxidised to release energy inside the cell

(ii) Obligate anaerobes are affected by the presence of oxygen.

A. Both (i) & (ii) are correct

B. Only (ii) is correct

C. Only (i) is correct

D. Both (i) & (ii) are incorrect

Answer: B

Watch Video Solution

3. Dehydration step of glycolysis is catalysed by which enzyme ?

Watch Video Solution

4. During glycolysis, enzyme involed in phosphorylation of hexose sugar is

A. Kinase

B. Mutase

C. Enolase

D. Dehydrogenase

Answer: A

Watch Video Solution

5. Continuous supply of which organic acid is required to run Krebs cycle uninterruptedly ?

A. Succinyl CoA

B. Malic acid

C. Oxalosuccinic acid

D. Oxaloacetic acid

Answer: D

Watch Video Solution

6. Which of the following enzyme of Krebs cycle is found attached to inner mitochondrial membrane ?

A. Succinate dehydrogenase

B. Malic dehydrogenase

C. Isocitrate dehydrogenase

D. Citrate synthetase

Answer: A

Watch Video Solution

7. Name the process of anaerobic respiration where CO_2 is released and give one example of organism which shows this type of respiration

Watch Video Solution

8. How many $FADH_2$ molecules will be produced from two molecules of glucose in aerobic respiration ?

Watch Video Solution

9. What is the other name of complex V ? Also write its function.

Watch Video Solution

10. How many ATP molecules are synthesised by NADH and $FADH_2$ in aerobic respiration ?

Watch Video Solution

11. Find out the organic molecule which has RQ equal to unity

A. Protein

B. Fat

C. Carbohydrate

D. Malic acid

Answer: C

Watch Video Solution

12. Which has more respiratory quotient protein or fat ?

Watch Video Solution

Exercise

1. The term protoplasmic respiration is used for the respiration of

A. Organic acids

B. Fats

C. Carbohydrates

D. Proteins

Answer: D

Watch Video Solution

2. _____ is a _____ that acts as the energy currency of the cell.

A. DNA, nucleotide

B. ATP, nucleotide

C. GTP, nucleoside

D. RNA, nucleotide

Answer: B

Watch Video Solution

3. What is the site of glycolysis ?

A. Nucleoplasm

B. Peroxisome

C. Glyoxisome

D. Cytoplasm

Answer: D

Watch Video Solution

4. In EMP, hexose sugar splits into two molecules of triose sugar by the catalytic activity of

A. Phosphofructokinase

B. Aldolase

C. Dehydrogenase

D. Transphosphorylase

Answer: B

Watch Video Solution

5. Enzyme required to catalyse the last step of glycolysis is

A. Pyruvate dehydrogenase

B. Pyruvate kinase

C. Enolase

D. Phosphopyruvate dihinase

Answer: B

Watch Video Solution

6. Fermentation was first discovered by

A. Louis Pasteur

B. Buchner

C. Dutrochet

D. Gay Lussac

Answer: D

Watch Video Solution

7. Yeast poison themselves to death when the concentration of _____ reaches about 13%.

A. Lactate

B. Butyrate

C. Alcohol

D. Pyruvate

Answer: C

Watch Video Solution

8. Pyruvate to lactic acid conversion by the action of lactic acid bacteria requires an enzyme which is

A. Pyruvate decarboxylase

B. Lactic acid decarboxylase

C. Lactic acid dehyrogenase

D. Alochol dehydrogenase

Answer: C

Watch Video Solution

9. In muscles during exercise, when oxygen is inadequate for cellular respiration pyruvic acid is reduced to

A. Acetyl coenzyme A

B. Ethyl alcohol

C. Lactic acid

D. Acetic acid

Answer: C

Watch Video Solution

10. Net gain of ATP molecules of each molecule of glucose in fermentation is

A. 8

B. 10

C. 4

D. 2

Answer: D

Watch Video Solution

11. Which of the following is high energy molecule produced by oxidative decarboxylation in aerobic respiration but is neither the intermediate of TCA nor EMP ?

A. $NADH + H^+$

B. ATP

C. Acetyl CoA

D. Succinyl CoA

Answer: C

Watch Video Solution

12. First oxidative decarboxylation in aerobic respiration occurs during the conversion of

A. Oxalosuccinic acid to iso citric acid

B. Pyruvic acid to acetyl CoA

C. α-ketoglutaric acid to succinyl CoA

D. Fumaric acid to malic acid

Answer: B

Watch Video Solution

13. Continuous supply of which carboxylic acid is required to run Krebs cycle uninterruptedly ?

A. Succinyl CoA

B. Malic acid

C. Oxalosuccinic acid

D. Oxaloacetic acid

Answer: D

Watch Video Solution

14. How many TCA cyles are required during the complete oxidation of one sucrose molecule ?

A. 4

B. 2

C. 1

D. 3

Answer: A

Watch Video Solution

15. Which of the following enzyme of Krebs cycle is found attached to inner mitochondrial membrane ?

A. Succinate dehydrogenase

B. Malic dehydrogenase

C. Isocitrate dehydrogenase

D. Citrate synthetase

Answer: A

Watch Video Solution

16. NADH is oxidised to NAD^+ in

A. Aerobic respiration

B. EMP pathway

C. Fermentation

D. More than one option is correct

Answer: D

Watch Video Solution

17. F_0 part of ATP synthase (Complex-V) is

A. Integral membrane protein complex acts as a site of ATP synthesis

B. Peripheral membrane protein complex acts as a site of protein synthesis

C. Integral membrane protein complex acts as a site of protein synthesis

D. Complex molecule made up of phospholipids

Answer: C

Watch Video Solution

18. α-ketogultaric acid is raw material for the synthesis of

:

A. Carotenoids

B. Pyrimidines

C. Amino acids

D. Alkaloids

Answer: C

Watch Video Solution

19. The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called

A. Respiratory ratio

B. Respiratory quotient

C. Respiratory extinction value

D. Both (1) & (2)

Answer: D

20. Select the correct statement w.r.t RQ.

A. Its value is 0.9 for tripalmitin

B. Its value is 0.7 for organic acids

C. It depends upon the type of respiratory-substrate

D. In floating respiration, RQ is always > 1

Answer: C

Watch Video Solution

Assignment Section A

1. Breakdwon of complex molecules to yield energy takes place in

A. Cytoplasm and mitochondria

B. Chloroplast

C. Cytoplasm and plastids

D. Mitochondria and chloroplast

Answer: A

Watch Video Solution

2. Respiration involves breaking of _____ bonds of complex compounds through oxidation within the cells, leading to release of considerable amount of energy.

A. C-C

B. C-O

C. C-H

D. Both (2) & (3)

Answer: A

Watch Video Solution

3. Read the following statements and choose the correct option :

A. Respiration is purely a catabolic process

B. Reduction of food results in the release of energy

C. Chemical energy is broken down during respiration to release energy

D. Fungi can make their own food and derive the energy by respiration

Answer: C

Watch Video Solution

4. Respiration is seen in

A. Non green cells only

B. None green cells in light only

C. All living cells in light only

D. All cells, except the photosynthetic cells during day

Answer: C

Watch Video Solution

5. The compounds that are subjected to biological oxidation are called _____ in which ___ is the most common.

A. Respiratory substrate, carbohydrate

B. Respiratory substance, protein

C. Respiratory organic substances, fats

D. Respiratory substrate, protein

Answer: A

Watch Video Solution

6. Which of the following substances can undergo oxidation and release energy ?

A. Inorganic acids

B. Organic food

C. Organic acid

D. Both (2) & (3)

Answer: D

Watch Video Solution

7. 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

8. In floating respiration substrate used is/are

A. Carbohydrate only

B. Fat and carbohydrate

C. Fat and protein

D. Carbohydrate and protein

Answer: B

Watch Video Solution

9. Those organism which cannot use oxygen for growth and are even harmed by its presence, are known as

A. Obligate aerobes

B. Aerotolerant anaerobes

C. Facultative anaerobes

D. Obligate anaerobes

Answer: D

10. 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

11. What are the products of aerobic respiration ?

A. O_2, H_2O and energy

B. CO_2 and energy only

C. CO_2, H_2O and energy

D. H_2O and CO_2 only

Answer: C

Watch Video Solution

12. 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

13. Common pathways of aerobic and anaerobic respiration is

A. EMP pathway

B. Tricarboxylic acid cycle

C. Acetyl CoA formation

D. Citric acid cycle

Answer: A

Watch Video Solution

14. Which of the following pathway was given by Embden, Meyerhof and Parnas ?

A. Glycolysis

B. Acetyl CoA formation step

C. Krebs cycle

D. Pentose phosphate pathway

Answer: A

Watch Video Solution

15. Glycolysis occurs in

A. All living cells

B. Only eukaryotic cells

C. Nerve cells

D. Only muscle cells

Answer: A

Watch Video Solution

16. All are true about glycolysis, except

A. Oxygen independent pathway

B. It produces one pyruvic acid molecule from each glucose

C. It occurs in the cytoplasm of cell

D. It can operate by using both glucose and fructose

Answer: B

Watch Video Solution

17. In EMP, hexose sugar splits into two molecules of triose sugar by the cataiytic activity of

A. Phosphofructokinase

B. Aldolase

C. Dehydrogenase

D. Transphosphorytase

Answer: B

Watch Video Solution

18. interconversion of glyceraldehyde-3-phosphate and dihydroxyacetone phosphate is catalysed by which enzyme ?

A. Phosphotriose isomerase

B. Phosphoexose isomerase

C. Phosphoglyceromutase

D. Triose kinase

Answer: A

Watch Video Solution

19. Reducing power $NADH + H^+$ is produced during conversion step of glycolysis.

A. 3-phosphoglyceric acid to 2-phosphoglycerate

B. Glyceraldehyde-3-phosphate to 1,3-bisphosphoglyceric acid

C. 2-phosphoglycerate to phosphoenol pyruvate

D. Phosphoenol pyruvate to pyruvic acid

Answer: B

Watch Video Solution

20. Which enzyme of glycolysis is also called as pacemaker enzyme ?

A. Hexokinase

B. Enolase

C. Phosphofructokinase

D. Pyruvate kinase

Answer: C

Watch Video Solution

21. Choose correct option w.r.t. anaerobic respiration

A. The first oxidation step occurs in mitochondria

B. All reactions occur in the cytoplasm

C. They require oxygen only at one step

D. First step of reaction occur in cytoplasm then in mitochondria

Answer: B

Watch Video Solution

22. Products of anaerobic respiration are

A. Ethyl alcochol and lactic acid only

B. Ethyl alochol and CO_2 and metabolic H_2O

C. Ethyl alochol, metabolic H_2O, CO_2 and lactic acid

D. Ethyl alcohol, CO_2 or lactic acid

Answer: D

Watch Video Solution

23. End product of anaerobic respiration is

A. Phosphoglyceric acid

B. Pyruvic acid

C. Lactic acid

D. Glyceraldehyde phosphate

Answer: C

Watch Video Solution

Watch Video Solution

24. After glycolysis, first step of ethyl alochol fermentation requires

A. Dehydrogenation

B. Decarboxylation

C. FAD reduction

D. Mn^{+2} acceptance

Answer: B

Watch Video Solution

25. 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

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

A. Acetyl coenzyme A

B. Ethyl alcohol

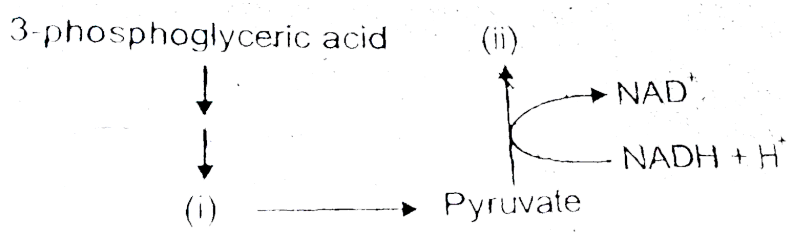
C. Lactic acid

D. Acetic acid

Answer: C

Watch Video Solution

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



A. (i) 2-phosphogylcerate, (ii) Acetyl CoA

B. (i) Phosphoenol pyruvate, (ii) Ethyl alochol

C. (i) Phosphoenol pyruvate, (ii) Citric acid

D. (i) Phosphoenol pyruvate, (ii) Acetyl CoA

Answer: B

Watch Video Solution

28. During cellular respiration, number of ATP used during conversion of glucose into glyceraldehyde-3-phosphate is

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

29. Which enzyme is required for the following conversion ?

Pyruvic acid $+CoA+NAD^{+} \rightarrow \text{Acetyl}CoA+CO_2+NADH+H^{+}$

A. Pyruvate dehydrogenase

B. Phosphoglucomutase

C. Pyruvate oxidase

D. Pyruvate carboxylase

Answer: A

Watch Video Solution

30. Number of acetyl CoA formed from one molecule of glucose is

A. 1

B. 2

C. 4

D. 6

Answer: B

Watch Video Solution

31. Connecting link between glycolysis and TCA cycle is

A. Link reaction

B. EMP pathway

C. ETC

D. Citric acid cycle

Answer: A

Watch Video Solution

Watch Video Solution

32. How many carbon atoms are present in Acetyl CoA ?

A. 2

B. 6

C. 4

D. 3

Answer: A

Watch Video Solution

33. Which of the following product is formed by Krebs cycle ?

A. Acetyl CoA

B. ADP

C. ATP

D. NAD^+

Answer: C

Watch Video Solution

34. Citric acid is formed in Krebs cycle by the combination of oxaloacetate with

A. OAA

B. Acetyl CoA

C. Malic acid

D. Pyruvic acid

Answer: B

Watch Video Solution

35. The enzymes of Krebs cycle where $NADH + H^+$ are produced are

A. Isocitrate dehydrogenase, succinate dehydrogenase and malic dehydrogenase

B. Succinate thiokinase, succinate dehydrogenase and aconitase

C. Isocitrate dehydrogenase, α-ketoglutaric dehydrogenase, malic dehydrogenase

D. Isocitrate dehydrogenase, α-ketoglutaric dehydrogenase and succinate dehydrogenase

Answer: C

Watch Video Solution

36. How many molecules of CO_2 are released during two turns of Krebs cycle ?

A. 2

B. 6

C. 4

D. 3

Answer: C

Watch Video Solution

37. What is the net gain in a Krebs cycle ?

A. $1FADH_2, 2NADH_2 \text{and } 1ATP$

B. $2FADH_2, 2NADH_2 \text{and } 2ATP$

C. $1FADH_2, 3NADH_2 \text{ and } 1ATP$

D. $1FADH_2, 6NADH_2 \text{ and } 2ATP$

Answer: C

Watch Video Solution

38. Succinate dehydrogenase catalyzes the formation of

A. $FADH_2 \rightarrow FAD$

B. $FAD \rightarrow FADH_2$

C. $NAD \rightarrow NADH + H^+$

D. $NADH + H^+ \rightarrow FADH_2$

Answer: B

Watch Video Solution

39. Where does ETS occur in our body ?

A. Cytoplasm

B. Mitochondrial matrix

C. Inner mitochondrial membrane

D. Outer mitochondrial membrane

Answer: C

Watch Video Solution

40. How many complexes are involved in electron transport in mitochondria ?

A. 1

B. 2

C. 4

D. 5

Answer: C

Watch Video Solution

41. Complex which transfers electrons of $FADH_2$ to ETS is

A. I

B. II

C. III

D. IV

Answer: B

Watch Video Solution

42. Last acceptor of electrons is _____ in ETS which give electrons to oxygen.

A. Cyt c_1

B. Cyt c

C. Cyt $a - a_3$

D. Cyt bc_1

Answer: C

Watch Video Solution

43. Ubiquinone receives reducing equivalents from

A. NAD^+

B. $FADH_2$

C. $NADH + H^+$

D. Both (2) & (3)

Answer: D

Watch Video Solution

44. Mobile electron carrier in ETS in mitochondrial membrane is

A. Complex I

B. Cyt c

C. Cyt $a - a_3$

D. Cyt bc_1

Answer: B

Watch Video Solution

45. Protons for the formation of ATP first pass from

A. F_0 part

B. F_1 head piece

C. Cyt c

D. Complex II

Answer: A

Watch Video Solution

46. How many ATP molecules are formed by oxidative phosphorylation from NADH produced during single Krebs cycle ?

A. 6

B. 18

C. 30

D. 9

Answer: D

Watch Video Solution

47. The efficiency of aerobic respiration is approximately

A. 0.5

B. 0.45

C. 0.9

D. 0.3

Answer: B

Watch Video Solution

48. Total energy obtained from 38 ATP is _____kJ.

A. 1298

B. 1398

C. 1292

D. 1392

Answer: C

Watch Video Solution

49. Intermediate common to proteins and carbohydrate oxidation is

A. Pyruvate

B. Glycerol

C. Oxaloacetate

D. Succinate

Answer: A

Watch Video Solution

50. Which of these has R.Q. value more than one ?

A. Fat

B. Protein

C. Carbohydrate

D. Organic acid

Answer: D

Watch Video Solution

Assignment Section B

1. Which of the given enzymes of glycolysis is required at the beginning of process ?

A. Hexokinase

B. Aldolase

C. Isomerase

D. Mutase

Answer: A

Watch Video Solution

2. Conversion of fructose-6 phosphate to fructose-1-6-bisphosphate in respiration requires

A. Hexokinase

B. Enolase

C. Phosphofructokinase

D. Pyruvate kinase

Answer: C

Watch Video Solution

3. Select the statement which is not related to fermentation

A. It accounts for only a partial breakdown of glucose

B. It gives only 2ATP as net for glucose degradation upto pyruvic acid

C. NADH is oxidized slowly as compared to aerobic respiration

D. ETS gives 11ATP for each Krebs cycle

Answer: D

Watch Video Solution

4. First step of ethyl alochol fermentation requires

A. Dehydrogenation

B. Decarboxylation

C. FMN

D. Zn^{2+}

Answer: B

Watch Video Solution

Watch Video Solution

5. How many rodox equivalents are removed from two molecules of 3-PGAL ?

A. 3

B. 4

C. 1

D. 2

Answer: B

Watch Video Solution

6. Primary acceptor of TCA cycle is

A. OAA

B. Acetyl CoA

C. Citric acid

D. Pyruvic acid

Answer: A

Watch Video Solution

7. In TCA cycle, how many reduced co-enzymes are produced from one acetyl CoA ?

A. $3NADH_2, 1FADH_2$

B. $2NADH_2, 1FADH_2$

C. $3NADH_2, 2FADH_2$

D. $5NADH_2, 1FADH_2$

Answer: A

Watch Video Solution

8. 5C intermediate molecule in TCA cycle is

A. Citric acid

B. Succinyl CoA

C. α-ketoglutamic acid

D. Fumaric acid

Answer: C

Watch Video Solution

9. The number of total ATP generated in TCA cycle per acetyl CoA molecule is

A. 10

B. 12

C. 14

D. 24

Answer: B

Watch Video Solution

10. Substrate phosphorylation in TCA occurs when

A. Succinic acid changes to fumaric acid

B. Fumaric acid changes to malic acid

C. Succinyl CoA changes to succinic acid

D. Oxalosuccinic acid changes to α-ketoglutaric acid

Answer: C

Watch Video Solution

11. Mineral activator needed for the enzyme isocitrate dehydrogenase of TCA cycle is

A. Fe

B. Mg

C. Mn

D. Cu

Answer: C

Watch Video Solution

12. Fumarase enzyme converts

A. Succinic acid to malic acid

B. Succinic acid to fumaric acid

C. Fumaric acid to malic acid

D. Fumaric acid to citric acid

Answer: C

Watch Video Solution

13. Substrate level phosphorylation does not occur in which of the following reaction of aerobic respiration ?

A. 1,3-diPGA $\rightarrow$ 3-PGA

B. 3-PGA $\rightarrow$ 2-PGA

C. PEP $\rightarrow$ Pyruvate

D. Succinyl CoA $\rightarrow$ Succinic acid

Answer: B

Watch Video Solution

14. A Krebs cycle intermediate as raw material for chlorophyll production is synthesised after

A. Condensation

B. Substrate level phosphorylation

C. Hydration

D. Oxidative decarboxylation

Answer: D

Watch Video Solution

15. Select the correct statement w.r.t. Krebs cycle

A. Occurs in cytoplasm and mitochondria in the absence of O_2

B. Favoured by coenzyme $NADP^+$

C. Intermediate products contain four, five and six carbon atoms

D. Substrate molecule is a 3C compound

Answer: C

Watch Video Solution

16. Connecting link between respiration (TCA cycle) and protein synthesis is

A. Citric acid

B. α-ketoglutaric acid

C. Succinic acid

D. Fumaric acid

Answer: B

Watch Video Solution

17. The correct sequence in Krebs cycle is

A. Oxaloacetic acid $\rightarrow$ α-ketoglutaric acid $\rightarrow$ Isocitric acid

B. Oxaloacetic acid $\rightarrow$ Isocitric acid $\rightarrow$ α-ketoglutaric acid

C. α ketoglutaric acid $\rightarrow$ Isocitric acid $\rightarrow$ Oxaloacetic acid

D. Isocitric acid $\rightarrow$ α ketoglutaric acid $\rightarrow$ Oxaloacetic acid

Answer: D

Watch Video Solution

18. ATPs generated by $1NADH_2$ and $1FADH_2$ are, respectively,

A. 3,2

B. 2,3

C. 3,5

D. 5,3

Answer: A

Watch Video Solution

19. The complex concerned with oxidative phosphorylation in inner mitochondral membrane is

A. Complex IV

B. Complex V

C. Complex III

D. Complex II

Answer: B

Watch Video Solution

20. Mobile electrons carriers in ETS in the mitochondrial membrane are

A. PQ, PC

B. CoQ, Cyt c

C. PQ, Cyt c

D. PC, CoQ

Answer: B

Watch Video Solution

21. Total number of ATP produced through ETS only from one molecule of 3-phosphoglycerate in aerobic respiration is

A. 14

B. 12

C. 15

D. 16

Answer: A

Watch Video Solution

22. Slow oxidation of NADH occurs in

A. Fermentation

B. Aerobic respiration

C. Dicarboxylic acid cycle

D. PPP

Answer: A

Watch Video Solution

Watch Video Solution

23. Which one of the following is incorrect statement for mitochondrial ETC and oxiative phosphorylation?

A. Enzyme complex I accepts electrons and H^+ from NADH and $FADH_2$

B. Passage of protons through the channel is coupled to the catalytic site of the F_1 for ATP production

C. Cytochrome-c is a mobile protein attached to outer surface of inner membrane

D. $6H^+$ passes thorugh F_0 from intermembrane space to the matrix down the electrochemical

proton gradient to produce 3ATP

Answer: A

Watch Video Solution

24. $NADH_2$ generated in glycolysis produces ATP in ETS in presence of O_2. In absence of O_2 this $NADH_2$ functions as

A. Oxidising agent

B. Phosphorylating agent

C. Reducing agent

D. Carboxylating agent

Answer: C

Watch Video Solution

25. A false statement regarding cytochrome c-oxidase complex is ETS in mitochondria is

A. Receives electrons directly from ubiquinone

B. Capable of reducing O_2

C. Extend across the thickness of inner mitochondrial membrane

D. Contains Fe & Cu both

Answer: A

Watch Video Solution

26. In prokaryotic cells, the number of ATPs genrated from one glucose molecule is

A. 36

B. 38

C. 34

D. 32

Answer: B

Watch Video Solution

27. Mark the incorrect statement.

A. Breaking of C-C bonds of complex organic molecules by oxidation cells leading to the release of a lot of energy is called cellular respiration

B. initial stage of cellular respiration takes place in cytoplasm

C. Incomplete oxidation of pyruvate by the stepwise removal of all the hydrogen atoms, leaving three molecules of CO_2

D. TCA cycle starts with the condensation of acetyl group with OAA and H_2O to yield citric acid

Answer: C

Watch Video Solution

28. Transfer of yeast cells from anaerobic to aerobic condition will

A. Decrease sugar brekdwon

B. Decrease CO_2 evolution

C. Increase CO_2 evolution

D. More than one option is correct

Answer: D

Watch Video Solution

29. Inhibition of sugar breakdown due to the presence of O_2 under aerobic condition is called

A. Pasteur effect

B. Warburg effect

C. Crabtree effect

D. Kutusky effect

Answer: A

Watch Video Solution

30. Common molecule formed from all food stuffs during aerobic respiration is

A. Glucose

B. PGAL

C. Pyruvic acid

D. Acetyl CoA

Answer: D

Watch Video Solution

31. From the oxidation of one molecule of palmitic acid (fatty acid), the number of ATP molecules gained are

A. 131

B. 129

C. 38

D. 142

Answer: B

Watch Video Solution

32. The value of RQ when the respiratory substance is poor in oxygen is

A. Zero

B. Infinity

C. Greater than one

D. Less than one

Answer: D

Watch Video Solution

33. Location of SDH enzyme of Krebs cycle in plants is

A. Plasma membrane

B. Inner mitochondrial membrane

C. Cytoplasm

D. Matrix

Answer: B

Watch Video Solution

34. Arrange the RQ value of following respiratory substrates in ascending order (a) $C_4H_6O_5$ $(b)C_6H_{12}O_6$

(c) $C_{18}H_{36}O_2$ (d) Succulents (night)

A. (c), (b), (d) & (a)

B. (d), (c), (b) & (a)

C. (b), (c), (a) & (d)

D. (c), (b), (a) & (d)

Answer: B

Watch Video Solution

35. In alcohol fermentation, _____ of energy in glucose is released and not all of it is trapped as high energy bonds of ATP.

A. Less than 1%

B. More than 10%

C. Less than 7%

D. More than 40%

Answer: C

Watch Video Solution

Assignment Section C

1. Which statement is wrong for Krebs' 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 rreduced to $FADH_2$

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

D. The cycle starts with condensation of acetyl group (acetyl CoA) with pyruvic acid to yield citric acid

Answer: D

Watch Video Solution

2. Which of the following biomolecules is common to respiration-mediated breakdown of fats, carbohydrates and proteins

A. Glucose-6-phosphate

B. Fructose 1,6-bisphosphate

C. Pyruvic acid

D. Acetyl CoA

Answer: D

3. Oxidative phosphorylation is

A. Formation of ATP by transfer of phosphate group from a substrate to ADP

B. Oxidation of phosphate group in ATP

C. Addition of phosphate group to ATP

D. Formation of ATP by energy releated from electrons removed during substrate oxidation

Answer: D

Watch Video Solution

4. Cytochromes are found in

A. Lysosomes

B. Matrix of mitochondria

C. Outer wall of mitochondria

D. Cristae of mitochondria

Answer: D

Watch Video Solution

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

A. Aerobic respiration in plants

B. Aerobic respiration in animals

C. Alocholic fermentation

D. Lactae fermentation

Answer: D

Watch Video Solution

6. Which of the metabolites is common to respiration mediated breakdown of fats, carbohydrates and proteins

?

A. Fructose 1,6-bisphosphate

B. Pyruvic acid

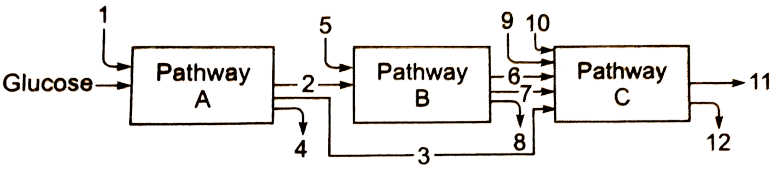
C. Acetyl CoA

D. Glucose-6-phosphate

Answer: C

Watch Video Solution

7. The three boxes in this diagram represent the three major biosynthetic pathways in aerobic respiration. Arrows represent net reactants or products.



Arrows numbered 4,8 and 12 can all be

A. ATP

B. H_2O

C. FAD^+ or $FADH_2$

D. NADH

Answer: A

Watch Video Solution

8. Read the following four statements (A-D)

(A) Both, photophosphorylation and oxidative phoshorylation involve up hill transport of protons across the membrane

(B) In dicot stems, a new cambium origanets from the cell of pericycle at trhe time of secondary growth

(C) Stamens in flowers of Gloriosa and Petunia are polyandrous

Symbiotic nitrogen-fixers occur in the free-living state also in soil

How many of the above statements are right

A. Two

B. Three

C. Four

D. One

Answer: A

Watch Video Solution

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

A. Photorespiration

B. Glycolysis

C. Fermentation

D. Aerobic respiration

Answer: C

Watch Video Solution

10. Aerobic respiratory pathway is appropriately termed

A. Parabolic

B. Amphilbolic

C. Anabolic

D. Catabolic

Answer: B

Watch Video Solution

Watch Video Solution

11. A competitive inhibitor of succinic dehydrogenase is

A. Malate

B. Malonate

C. Oxaloacetate

D. α-ketoglutarate

Answer: B

Watch Video Solution

12. The chemiosmotic coupling hypothesis of oxidative phosphorylation proposes that adenosine triphosphate

(ATP) is formed because

A. There is a change in the permeability of the inner mitochondrial membrane toward adenosine diphosphate (ADP)

B. High energy bonds are formed in mitochondrial proteins

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

D. A proton gradient forms across the inner membrane

Answer: D

Watch Video Solution

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

A. Nucleic acids

B. ATP in small stepwise units

C. ATP in one large oxidation reaction

D. Sugars

Answer: B

Watch Video Solution

14. 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. Succinate dehydrogenase

B. Lactate dehydrogenase

C. Isocitrate dehydrogenase

D. Malate dehydrogenase

Answer: A

Watch Video Solution

15. How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one mole of glucose to CO_2 and H_2O yields 686 kcal and the useful chemical energy available in the high energy phosphate bond of one mole of ATP is 12 kcal

A. Two

B. Thirty

C. Fifty seven

D. One

Answer: C

Watch Video Solution

16. During which stage in the complete oxidation of glucose are the greatest number of ATP molecules formed from ADP ?

A. Conversion of pyruvic acid to acetyl Co-A

B. Electron transport chain

C. Glycolysis

D. Krebs cycle

Answer: B

Watch Video Solution

17. Chemiosmotic theory of ATP synthesis in the chloroplasts and mitochondria is based on

A. Proton gradient

B. Accumulation of K ions

C. Accumulation of Na ions

D. Membrane poetntial

Answer: A

Watch Video Solution

18. Glycolysis

A. Takes place in the mitochondria

B. Produces no ATP

C. Has no connection with electron transport chain

D. Reduces two molecules of NAD^+ for every glucose molecule processed

Answer: D

Watch Video Solution

19. The first phase in the breakdown of glucose in animal cell is

A. Fermentation

B. Krebs cycle

C. Glycolysis

D. E.T.S.

Answer: C

Watch Video Solution

20. In glycolysis ultimately (or end product of glycolysis is)

A. Ethyl alcohol

B. Acetyl CoA

C. Pyruvic acid

D. ATP

Answer: C

Watch Video Solution

21. In glycolysis, during oxidation, electrons are removed by

A. ATP

B. Glyceraldehyde-3-phosphate

C. NAD^+

D. Molecular oxygen

Answer: C

Watch Video Solution

22. The organism used for alcohol fermentation, is

A. Aspergillus

B. Saccharomyces

C. Pseudomonas

D. Penicillium

Answer: B

Watch Video Solution

23. Which of the following products are obtained by anaerobic respiration from yeast ?

A. Beer and wine

B. Alcohols

C. CO_2

D. All of these

Answer: D

Watch Video Solution

24. The end products of fermentation are

A. O_2 and C_2H_5OH

B. CO_2 and acetaldehyde

C. CO_2 and O_2

D. CO_2 and C_2H_5OH

Answer: D

Watch Video Solution

25. In manufacture of bread, it becomes porous due to release of CO_2 by the action of

A. Yeast

B. Bacteria

C. Virus

D. Protozoans

Answer: A

Watch Video Solution

26. In alcohol fermentation,

A. Triose phosphate is the electron donor while acetaldehyde is the electron acceptor

B. Triose phosphate is the electron donor while pyruvic acid is the electron acceptor

C. There is no electron donor

D. Oxygen is the electron acceptor

Answer: A

Watch Video Solution

27. Dough kept overnight in warm weather becomes soft and spongy due to

A. Absorption of carbon dioxide from atmosphere

B. Fermentation

C. Cohesion

D. Osmosis

Answer: B

Watch Video Solution

28. In Krebs cycle, the FAD participates as electron acceptor during the conversion of

A. Fumaric acid to malic acid

B. Succinic acid to fumaric acid

C. Succinyl CoA to succinic acid

D. α-ketoglutarate to succinyl CoA

Answer: B

Watch Video Solution

29. Which is key intermediate compound linking glycolysis to Krebs cycle ?

A. Malic acid

B. Acetyl CoA

C. NADH

D. ATP

Answer: B

Watch Video Solution

30. In which one of the following do the two names refer to one and the same thing

A. Krebs cycle and Calvin cycle

B. Tricarboxylic acid cycle and citric acid cycle

C. Citric acid cycle and Calvin cycle

D. Tricarboxylic acid cycle and urea cycle

Answer: B

Watch Video Solution

31. In mitochondria, protons accumulate in the

A. Intermembrane space

B. Matrix

C. Outer membrane

D. Inner membrane

Answer: A

Watch Video Solution

32. The respiratory substrate yielding maximum number of ATP molecules among the following is

A. Glycogen

B. Ketogenic amino acid

C. Glucose

D. Amylose

Answer: C

Watch Video Solution

33. When one molecule of ATP is disintegrated, the amount of energy liberated is

A. 1.8 kcal

B. 38 kcal

C. 8.15 kcal

D. 4.5 kcal

Answer: C

Watch Video Solution

34. The correcrt sequence of electron acceptor in ATP synthesis is

A. Cyt. a, c, a_3, a

B. Cyt. c, b, a, a_3

C. Cyt. a_3, a, b, c

D. Cyt. b, c, a, a_3

Answer: D

Watch Video Solution

35. ATP formation in chloroplast and mitochondrion is explained by

A. Chemiosmotic theory

B. Munch's hypothesis (mass flow model)

C. Relay pump theory of Godlewski

D. Cholodny-Went's model

Answer: A

36. Net gain of ATP molecules, during aerobic respiration, in heart cells is

A. 40 molecules

B. 48 molecules

C. 36 molecules

D. 38 molecules

Answer: D

Watch Video Solution

37. How many ATP molecules are produced by the aerobic oxidation of one molecule of glucose ?

A. 2

B. 4

C. 36

D. 34

Answer: C

Watch Video Solution

38. Plants, but not animals, can convert fatty acids to sugars by a series of reactions called

A. Photosynthesis

B. Krebs cycle

C. Glycolysis

D. Glyoxylate cycle

Answer: D

Watch Video Solution

39. Pasteurization is heating at

A. $70^\circ C$ and 60 minutes

B. $80^\circ C$ and 30 minutes

C. $120^\circ C$ and 60 minutes

D. $60 - 70^\circ C$ and 30 minutes

Answer: D

Watch Video Solution

Assignment Section D

1. Assertion :- 2,4 DNP is an uncoupling agent in ETS.

Reason :- It is soluble in lipid.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: B

Watch Video Solution

2. A : In PPP (HMS), complete oxidation of one glucose molecule would produce $6CO_2$ molecules and $12NADPH_2$ moleucles.

R : It occurs in cytoplasm and chloroplast, in presence of O_2.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: B

3. A : RQ of maturing fatty seeds is > 1.

R : Fats are preferred energy fuels.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

Watch Video Solution

4. Assertion :- In cellular respiration, ETS electron movement is a downhill journey.

Reason :- Electrons move from high redox potential to low redox potential to low redox potential.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion,

then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

Watch Video Solution

5. Assertion :- Succinyl CoA is the precursor of pyrrole group containing compounds.

Reason :- Succinyl CoA is an intermediate of TCA cycle.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: B

 Watch Video Solution

6. A : Fat breakdown yields fatty acids and glycerol

R : Glycerol enters glycolysis through serine formation.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

Watch Video Solution

7. A : Four ATP molecules are produced directly during glycolysis.

R : Substrate level phosphorylation occurs at two steps for a glucose broken down in mitochondrial matrix.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then

mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

Watch Video Solution

8. A : Fermentation stops when alcohol in sugar solution is about 13%.

R : Saccharomyces cerevisiae are killed and zymase in not formed.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: A

Watch Video Solution

9. A : Cytochrome c is the peripheral protein.

R : It is found attached on the perimitochondrial space side of the inner mitochondrial membrane.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: A

10. A : Tricarboxylic acid cycle is an amphibolic pathway.

R : A number of TCA cycle intermediates are used in various catabolic reactions only.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).

B. If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

C. If Assertion is true statement but Reason is false, then mark (3)

D. If both Assertion and Reason are false statements, then mark (4)

Answer: C

Watch Video Solution