BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

RESPIRATION IN PLANTS

Section A Topicwise Questions Topic 2 Glycolysis

1. In any case (aerobic or anaerobic), all living organisms retain the enzymatic machinery to partially oxidise glucose without the help of oxygen. This breakdown of glucose is called

A. Glycogenesis

B. Glycogenolysis

C. Glycolysis

D. Gluconeogenesis

Answer: C

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2. The scheme of glycolysis was given by

A. Gustav Embden

B. Otto Meyerhof

C. J. Parnas

D. All of the above

Answer: D

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3. In plants, glucose is derived from sucrose, which is the end product of photosynthesis or from storage carbohydrates. Sucrose is converted into glucose and fructose by the enzyme

A. Zymase

B. Hexokinase

C. Sucrase

D. Invertase

Answer: D

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4. The key product of glycolysis is

A. PEP

B. Acetyl CoA

C. Pyruvic acid

D. Glucose

Answer: C

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5. The metabolic fate of pyruvate/pyruvic acid depends on

A. Cellular need

B. Availability of oxygen

C. Organism

D. All of the above

Answer: D

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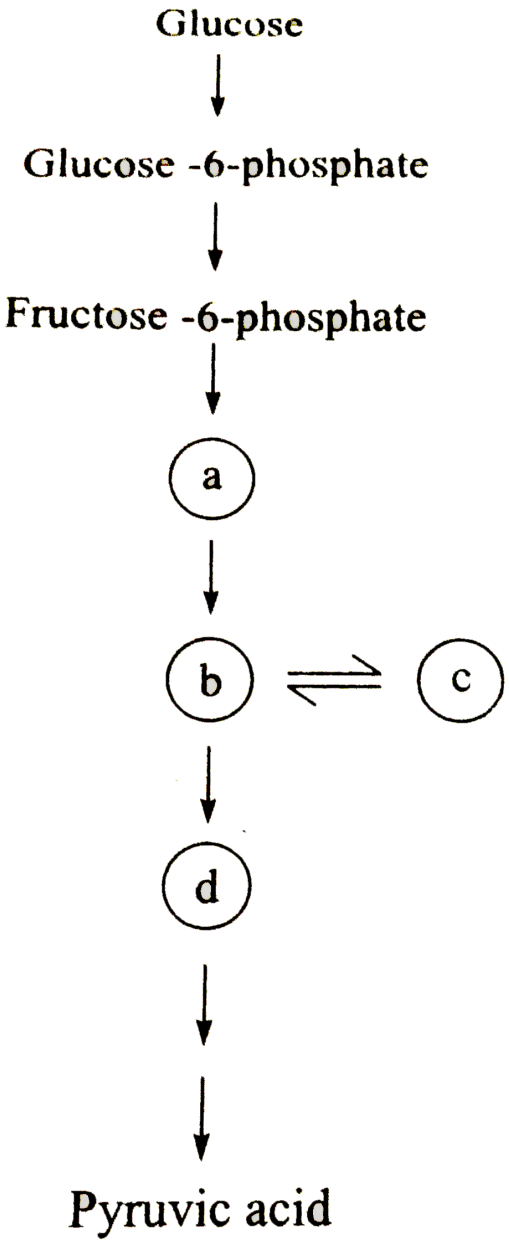
6. Recognise the figure and find out the correct matching.



A. a-glyceraldehyde 3-phosphate, b-fructose 1,6-bisphosphate, c-1,3-bisphosphoglyceric acid. d-dihydroxy acetone phosphate

B. b-glyceraldehyde 3-phosphate, c-fructose 1,6-bisphosphate, d-1 ,3-bisphosphoglyceric acid. a-dihydroxy acetone phosphate

C. b-glyceraldehyde 3-phosphate, d-fructose 1,6-bisphosphate, a-1 ,3-bisphosphoglyceric acid, c-dihydroxy acetone phosphate

D. b-glyceraldehyde 3-phosphate. a-fructose 1,6-bisphosphate, d-1,3-bisphosphoglyceric acid, c-dihydroxy acetone phosphate

Answer: D

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7. There are three major ways in which different cells handle pyruvic acid produced by glycolysis. These are

A. Fermentation, TCA and ETS

B. Fermentation, aerobic respiration and TCA

C. Alcoholic fermentation, lactic acid fermentation and aerobic respiration

D. Alcoholic fermentation, lactic acid fermentation and ETS

Answer: C

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8. In which of the following reaction of glycolysis, a molecule of water is removed from the substrate

A. 2- phosphoglycerate $\rightarrow$ PEP

B. PEP $\rightarrow$ Pyruvic acid

C. Glucose $\rightarrow$ Glucose 6-phosphate

D. Fructose, 6-phosphate $\rightarrow$ Fructose I. 6-biphosphate

Answer: A

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9. Phosphoglyceraldehyde is changed to biphosphoglyceric acid through

A. Carboxylation and hydration

B. Phosphorylation and oxidation

C. Decarboxylation and hydrogenation

D. Dcphosphorylution and dehydrogenation

Answer: B

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10. For two molecules of glucose, glycolysis uses and produces ATP molecules

A. 4 and 8

B. 2 and 4

C. 2 and 8

D. 2 and 2

Answer: A

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11. Glyceraldehyde phosphate is oxidised in glycolysis. What is the fate of hydrogen atom and electron liberated. They cause

A. Oxidation of NAD^+

B. Reduction of NAD^+

C. Change in oxaloacetic acid

D. Formation of methane

Answer: B

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12. 3-Phosphoglyceraldehyde is oxidised in glycolysis to form

A. 1. 3-biphosphoglycerate

B. 3- phosphoglycerate

C. 2- phosphoglycerate

D. Phosphoenol pyruvate

Answer: A

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13. How many molecules of NADH are produced when four molecules of phosphoglyceraldehyde are converted into four molecules of pyruvate?

A. 2

B. 6

C. 8

D. 4

Answer: D

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14. Which of the following is an important intermediate formed in all types of respiration?

A. Acetyl CoA

B. Oxaloacetate

C. Pyruvic acid

D. Tricarboxylic acid

Answer: C

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15. Which one of the following is wrong about glycolysis

A. It produces ATP

B. It uses ATP

C. End products are CO_2 and H_2O

D. None of the above

Answer: C

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16. During glycolysis the number of ATP molecules utilised to change glucose into fructose 1. 6-biphosphate are

A. 4

B. 3

C. 2

D. 1

Answer: C

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17. In glycolysis, during oxidation electrons are removed by

A. ATP

B. NAD

C. Glyceraldehyde 3-phosphate

D. Molecular oxygen

Answer: B

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18. Glycolysis takes place in

A. All cells

B. Only eukaryotic cells

C. Muscle cells

D. Nerve cells

Answer: A

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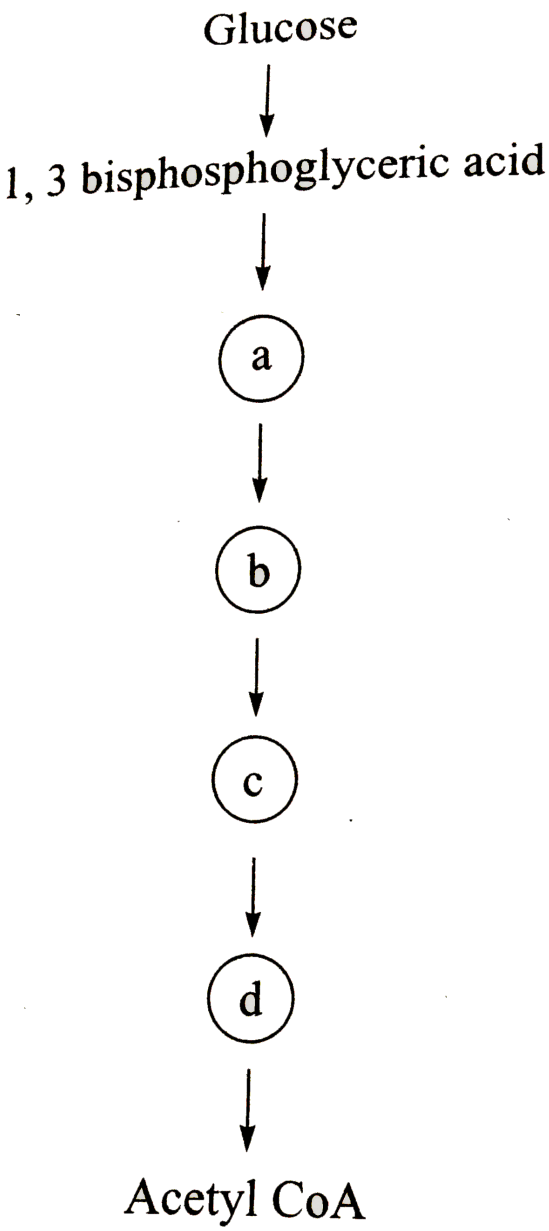
19. Recognise the figure and out the correct matching.



A. b-2-phosphoglycerate, a- 3-phosphoglyceric acid, c- pyruvic acid, d-phosphoenolpyruvate

B. a- 2-phosphoglycerate, b-3-phosphoglyceric acid, c- pyruvic acid, d-phosphoenolpyruvate

C. b-2-phosphoglycerate, a- 3-phosphoglyceric acid, d- pyruvic acid, c-phosphoenolpyruvate

D. a- 2-phosphoglycerate, b-3-phosphoglyceric acid, d- pyruvic acid, c-phosphoenolpyruvate

Answer: C

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20. The reaction forming 3-phosphoglyceric acid in glycolysis is

A. Cleavage

B. Oxidative phosphorylation

C. Dephosphorylation

D. Oxidative decarboxylation

Answer: C

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21. Number of oxygen molecules required for glycolytic breakdown of one glucose molecule is

A. 6

B. 8

C. 2

D. zero

Answer: D

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22. Enzymes taking part in glycolysis are present in

A. Mitochondria

B. Cytoplasm

C. Both mitochondria and cytoplasm

D. Vacuole

Answer: B

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23. What occurs in glycolysis

A. Fixation

B. Reduction

C. Dehydrogenation

D. Oxidation

Answer: D

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24. Glyceraldehyde 3-phosphate is oxidised to 1-3 biphosphoglyceric acid alongwith

A. Release of electrons for reducing NAD^+

B. ATP synthesis

C. Release of phosphate group

D. Release of H and e^- for forming NADH

Answer: D

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25. in the process of repiration in plants 180 gms of sugar plus 192 gms of oxygen produce

A. 132 g of CO_2, 54 g of water and 343 cal of energy

B. 264 g of CO_2, 108 g of water and 686 cal of energy

C. 528 g of CO_2, 216 g of water and 1372 cal. of energy

D. Large amount of CO_2, no water and no energy.

Answer: B

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26. Glycolysis is part of

A. Only anaerobic respiration

B. Krebs' cycle

C. Only aerobic respiration

D. Both aerobic and anaerobic respiration

Answer: D

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27. In glycolysis, enzyme enolase produces

A. Phosphoglyceric acid

B. Phosphoenol pyruvate

C. Phosphoglyceraldehyde

D. Pyruvate

Answer: B

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28. Fructose 6-phosphate is changed to fructose 1,6-diphosphate by

A. Phosphoglycerate

B. Phosphatase

C. Phosphofructokinase

D. Enolase

Answer: C

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29. The number of molecules of pyruvic acid formed from one molecule of glucose at the end of glycolysis is

A. One

B. Two

C. Three

D. Four

Answer: B

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30. The enzyme which converts glucose to glucose 6-phosphate is

A. Phosphorylase

B. Glucose-6-phosphatase

C. Hexokinase

D. Glucose synthetase

Answer: C

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31. In glycolysis, glucose splits into compounds which are

A. 5-C

B. 4-C

C. 2-C

D. 3-C

Answer: D

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32. Glycolysis is

A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

B. $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$

C. $C_6H_{12}O_6 \rightarrow 2C_3H_4O_3 + 4H^+$

D. $C_3H_4O_3 + NADH \rightarrow C_2H_5OH + CO_2 + NAD^+$

Answer: C

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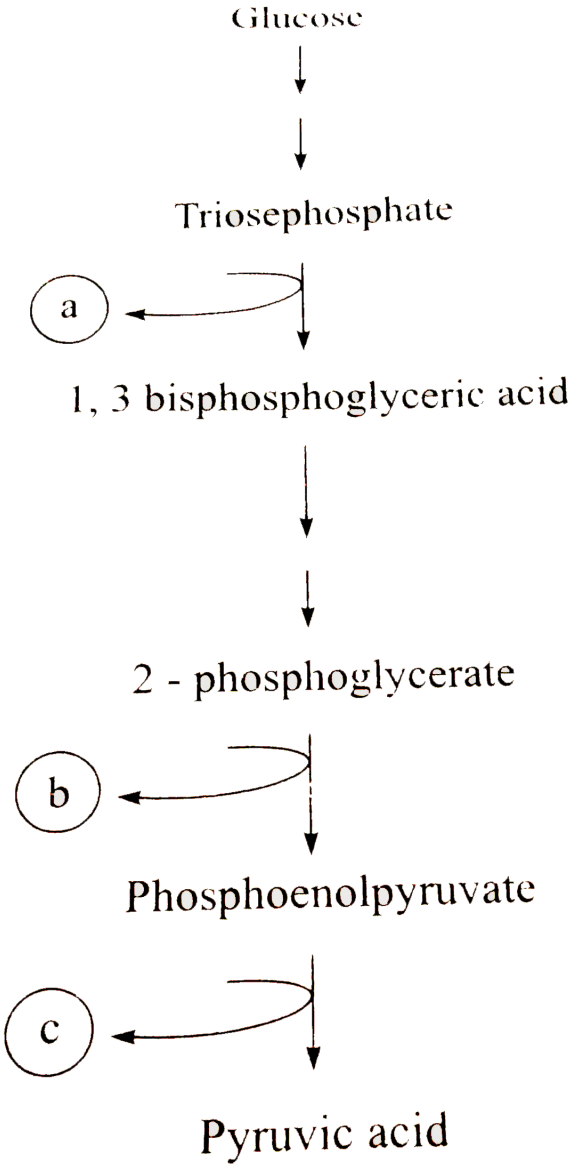
33. Recognise the figure and find out the correct matching.



A. $a - ATP, b - NADH, c - H_20$

B. $a - H_20, b - NADH, c - ATP$

C. $a - NADH, b - H_20, c - ATP$

D. $a - H_20, b - ATP, c - NADH$

Answer: C

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34. Fructose 1 : 6 biphosphate splits into two triose phosphates by enzyme

A. Aldolase

B. Amylase

C. Zymase

D. Lipase

Answer: A

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35. The other name of glycolysis is

A. EMP-pathway

B. TCA-pathway

C. HMS-pathway

D. Carbon-pathway

Answer: A

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36. Number of NADH produced during breakdown of one molecule of glucose to 1 : 3 diphosphoglycerate stage is

A. 6

B. 4

C. 3

D. 2

Answer: D

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37. The reaction involved in reduction of NAD^+ is

A. Glucose $\rightarrow$ Glucose 6-P

B. Fructose 1, 6-diphosphate $\rightarrow$ PGAL + DiHAP

C. Glucose 6-P $\rightarrow$ Fructose 6-P

D. PGAL $\rightarrow$ PGA

Answer: D

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38. Which of the following is formed from phosphorylation ?

A. Fructose 1,6-bisphosphate

B. Phosphoglyceric acid

C. PEP

D. Pyruvic acid

Answer: A

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Section A Topicwise Questions Topic 3 Fermentation

1. Fermentation takes place under anaerobic conditions in

A. Many prokaryotes

B. Unicellular eukaryotes

C. Germinating seeds

D. All of the above

Answer: D

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2. In alcoholic fermentation, by yeast, pyruvic acid is converted to ethyl alcohol and carbon dioxide with the help of enzyme

A. Pyruvate dehydrogenase

B. Alcohol dehydrogenase

C. Both A and B

D. Pyruvic acid decarboxylase and alcohol dehydrogenase

Answer: D

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3. In animal cells, like muscles during exercise, when oxygen is inadequate for cellular respiration pyruvic acid is reduced to lactic acid by

A. Lactate decarboxylase

B. Pyruvate dehydrogenase

C. Both A and B

D. Lactate dehydrogenase

Answer: D

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4. Fill in the blanks:

1. In both lactic acid and alcoholic fermentation not much energy is released, less that ... a ... per cent of the energy in glucose is released out and not all of it is trapped in high energy bonds.

2. Yeast poison themselves to death when the concentration of alcohol reaches about ... b ... per cent.

3. The complete oxidation of pyruvate by the stepwise removal of all the hydrogen atoms, leaving ... c ... molecules of CO_2

4. During the conversion of pyruvic acid to acetyl CoA ... d ... molecules of NADH are produced from the metabolism of one molecule of pyruvic acid.

A. a- 13, b-7, c- 6, d-2

B. a-7, b-13, c-3, d-2

C. a- 13, b-7, c-6, d-1

D. a- 7, b-13, c- 3, d-1

Answer: D

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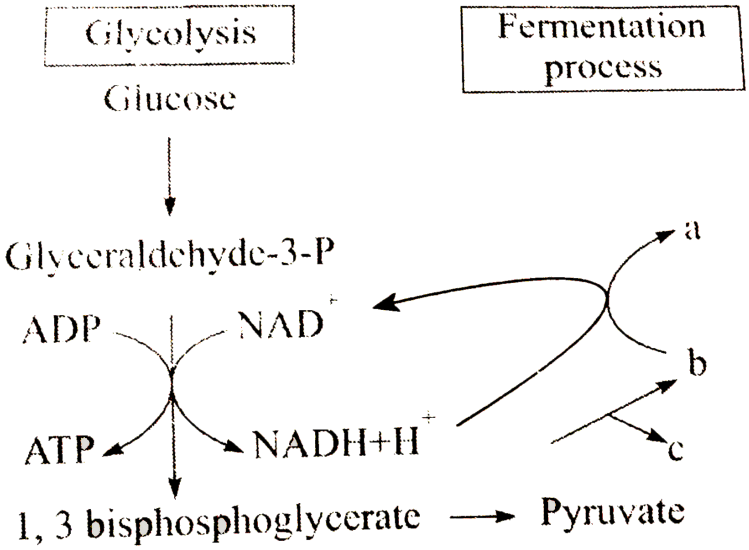
5. Recognise the figure and find out the correct labelling.



A. a-ethanol, $b - C0_2$, c-acetaldehyde

B. $a - CO_2$, b-acetaldehyde, c-ethanol

C. $a - CO_2$, b-ethanol, c-acetaldehyde

D. a-ethanol, b-acetaldehyde, $c - C0_2$

Answer: D

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6. Which one can respire in the absence of oxygen ?

A. Seeds

B. Leaves

C. Stenl

D. Root

Answer: A

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7. Pasteur effect is

A. Stoppage of fermentation in presence of oxygen

B. Increase of fermentation in presence of oxygen

C. Decrease in fermentation in presence of oxygen

D. No effect on fermentation

Answer: A

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8. Pasteur effect can be studied in case of

A. Nostoc

B. Penicillium

C. Pinnularia

D. Saccharomyces

Answer: D

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9. Respiration can occur in the absence of oxygen in

A. Solanum tuberosum

B. Spirogyra

C. Yeast

D. Homo sapiens

Answer: C

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10. In alcoholic fermentation

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

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

C. There is no electron donor

D. Oxygen is electron acceptor

Answer: A

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11. Ethanol is formed from acetaldehyde by an enzyme called

A. Lactate dehydrogenase

B. Pyruvate kinase

C. Alcohol dehydrogenase

D. Pyruvate decarboxylase

Answer: C

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12. Anaerobic respiration takes place in

A. Ribosome

B. Nucleus

C. Vacuole

D. Cytoplasm

Answer: D

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13. Common phase between aerobic and anaerobic modes of respiration is

A. Krebs' cycle

B. EMP/glycolysis

C. Oxidative phosphorylation

D. PPP

Answer: B

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14. Anaerobic respiration of animals/humans produces

A. Glucose and O_2

B. C_2H_5OH and CO_2

C. Lactic acid and water

D. CO_2 and H_2O

Answer: C

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15. Raw material of respiration is

A. Glucose and fructose

B. Glucose and sucrose

C. Glucose $+O_2$

D. Glucose $+CO_2$

Answer: C

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16. Which product of glycolysis is consumed in alcoholic fermentaion ?

A. $NADH + H^+$

B. ATP

C. ATP and $NADH + H^+$

D. CO_2

Answer: A

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17. Lactic acid fermentation does not produce

A. ATP

B. CO_2 and $NADH + H^+$

C. CO_2

D. $NADH + H^+$

Answer: B

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18. End product of fermentation of sugars is

A. Water and carbon dioxide

B. Alcohol and carbon dioxide

C. Carbon dioxide

D. Alcohol

Answer: B

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Section A Topicwise Questions Topic 4 Aerobic Respiration Tca Cycle Ets Oxidative Phosphory

1. In eukaryotes, the breakdown of complex molecules to yield energy takes place in the

A. Chloroplast

B. Mitochondria

C. Cytoplasm

D. Both B and C

Answer: D

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2. The crucial events in aerobic respiration are

1. The complete oxidation of pyruvate by the stepwise removal of all the hydrogen atoms, leaving three molecules of CO_2

2. The passing on of the electrons removal as part of the hydrogen atoms to molecular O_2 with simultaneous synthesis of ATP

A. First process is ETS and takes place in matrix of the mitochondria while second process is TCA and takes place in on the inner membrane of mitochondria

B. First process is TCA and takes place in the matrix of mitochondria while the second process is ETS and is located on the inner membrane of mitochondria

C. First process is ETS and takes place on the inner nmnbranc of mitochondria while second process is TCA and takes place in the matrix of the mitochondria

D. First process is TCA and takes place on the inner membrane of mitochondria while second process is ETS and takes place in the matrix of mitochondria

Answer: B

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3. The first member of the TCA cycle is

A. Acetyl CoA

B. Citric acid

C. OAA

D. Pyruvic acid

Answer: C

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4. The TCA cycle starts with the condensation of acetyl group with oxaloacetic acid and water to yield citric acid. The reaction is catalysed by the enzyme

A. Citrate decarboxylase

B. Citrate dehydrogenase

C. Citrate synthase

D. Both A and B

Answer: C

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5. In Krebs' cycle, number of molecules of CO_2, NADH. $FADH_2$ and ATP produced from one glucose molecule

A. $6CO_2.$, $8NADH.$ $1FADH_2$, $1ATP$

B. $6CO_2$, $6NADH.$ $2FADH_2$, $2ATP$

C. $4CO_2$, $6NADH.$ $1FADH_2$, $1ATP$

D. $4CO_2$, $6NADH.$ $2FADH_2$, $2ATP$

Answer: D

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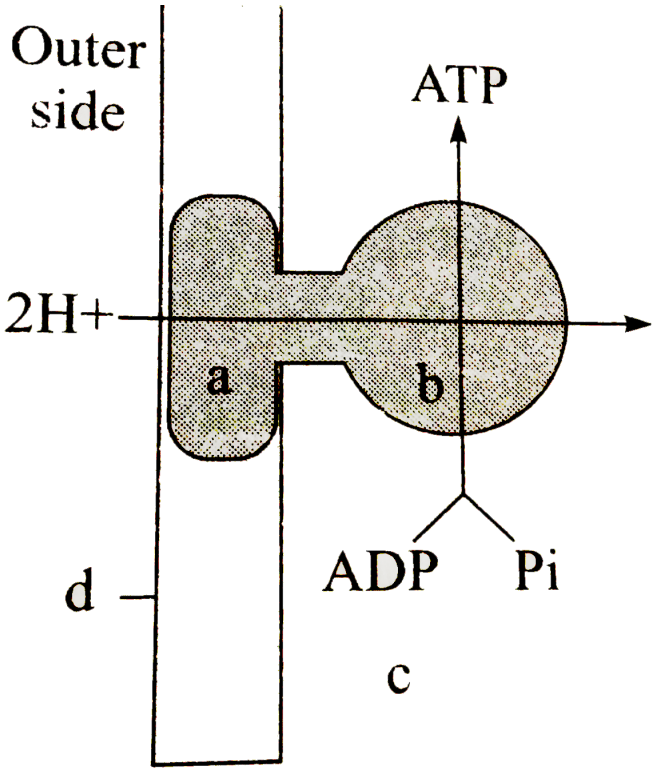
6. Recognise the figure and find out the correct matching.



A. $a - F_1, b - F_0,$ c-intermembrane space, d-outcr mitochondrial membrane

B. $a - F_0, b - F_1,$ c-intennembrane space, d- inner mitochondrial membrane

C. $a - F_1, b - F_0$, c-matrix, d-inner mitochondrial membrane

D. $a - F_0, b - F_1$, c-matrix, d-inner mitochondrial membrane

Answer: D

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7. Cytochrome c is a small protein attached to the

A. Outer surface of the inner membrane

B. Inner surface of the outer membrane

C. Inner surface of the inner membrane

D. Outer surface of the outer membrane

Answer: A

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8. Complex IV refers to cytochrome c oxidase complex containing cytochromes

A. band c_1 and one copper centre

B. a and a_3 and four copper centres

C. c_1 and c and three copper centres

D. a and a_3 and two copper centres

Answer: D

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9. Which of the following acts as a mobile carrier for transfer of electrons between complex Ill and IV ?

A. Cytochrome c

B. Cytochrome b

C. Cytochrome a

D. Cytochrome a and c_3

Answer: A

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10. Electrons from NADH produced in the mitochondrial matrix during TC A cycle are oxidised by complex I, and electrons are then transferred to

A. Cytochrome bc_1 complex

B. Cytochrome a and a_3

C. Cytochrome c

D. Ubiquinone

Answer: D

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11. Ubiquinone is located

A. On the outer surface of inner membrane

B. On the inner surface of outer membrane

C. Within inner membrane

D. Within outer membrane

Answer: C

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12. The energy utilised for the production of proton gradient required for phosphorylation in respiration is

A. Light energy

B. Energy of oxidation-reduction

C. Photochemical energy

D. All of the above

Answer: B

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13. The metabolic pathway through which the electron passes from one carrier to another, is called the

A. Chemiosmotic hypothesis

B. Tricarboxylic acid cycle

C. Electron transport system

D. Glycolysis

Answer: C

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14. Fill in the blanks:

1. ATP synthase consists of two major components, F_o and F_1. The .... a...

headpiece is peripheral membrane protein complex and contains the site for synthesis of ATP from ADP and inorganic phosphate.

2. ... b... is an integral membrane protein complex that forms the channel through which proton crosses the membrane.

3. For each ATP produced, ... c .... passes through .... b.... from the .... d.... to the .... e.... down the electrochemical proton gradient.

A. $a - F_0, b - F_1, c - 3H^+$, d-matrix, c-inner membrane

B. $a - F_1, b - F_0, c - 2H^+$, d-intermembrane space, e-matrix

C. $a - F_0, b - F_1, c - 2H^+$, d-intermembrane space, e-matrix

D. $a - F_1, b - F_0, c - 2H^+$, d-matrix,e-intermembrane space

Answer: B

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15. Complex III and IV of the ETS are respectively:

A. NADH dehydrogenase and $FADH_2$

B. $FADH_2$ and cytochrome c oxidase

C. Cytochrome c oxidase and cytochrome bc_1 complex

D. Cytochrome bc_1 complex and cytochrome c oxidase

Answer: D

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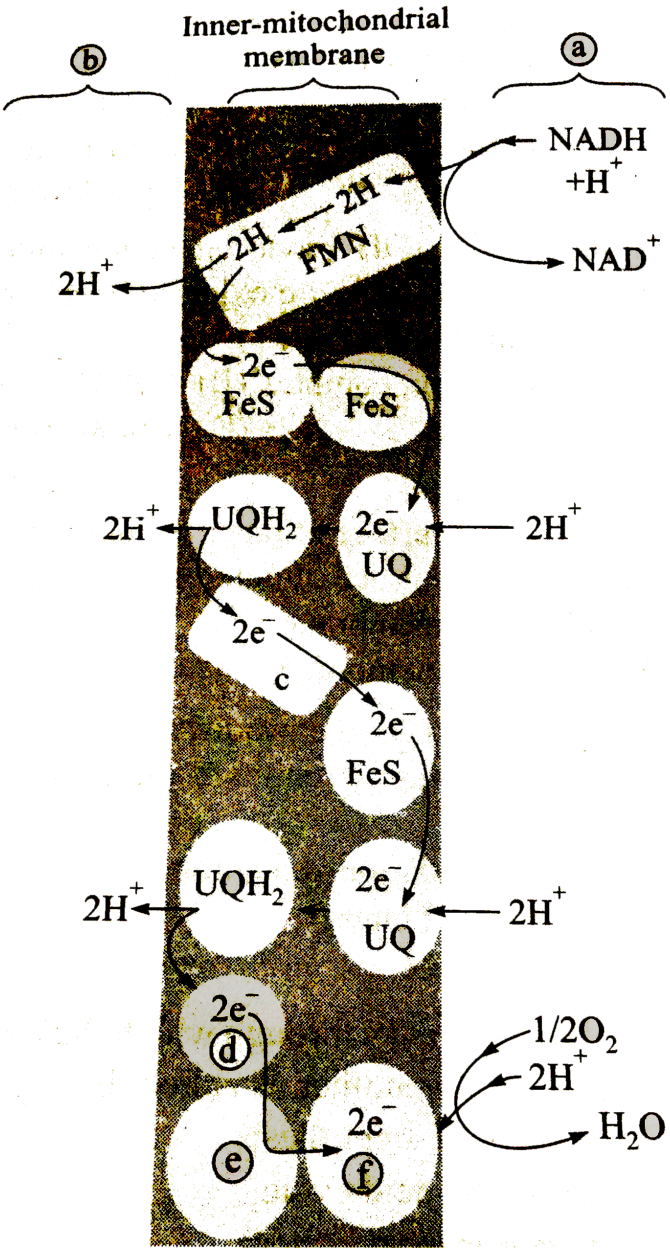
16. Recognise the figure and find out the correct matching.



A.

a-intermembrane space, b-matrix, $c - cytc_1$, $d - cyta - a_3$, e-cyt b, f-

B.

a-matrix, b-intermembrane space, c-cyt b, $d - cytc_1$, $e - cytc$, $f - cy$

C.

a-intermembrane space, b-matrix, c-cyt b, $d - cytc_1$, $e - cytc$, $f - cy$

D.

a-matrix, b-intermembrane space, c-cyt b, $d - cytc$, $e - cytc_1$, $f - cy$

Answer: B

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17. How many protons are accumulated in intermembrane space of mitochondria from one molecule of NADH during ETS?

A. Two

B. Three

C. Four

D. Six

Answer: D

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18. F_1 particle of oxysome

A. Releases proton energy

B. Utilises proton energy

C. Has no role in energy consumption

D. Lies in outer chamber

Answer: B

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19. Oxidation of a molecule of acetyl CoA produces

A. 12 ATP

B. 15 ATP

C. 6 ATP

D. 19 ATP

Answer: A

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20. Citric acid cycle is the alternate name of

A. HMP shunt

B. Glycolysis

C. TCA cycle

D. Calvin cycle

Answer: C

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21. Which one is product of aerobic respiration?

A. Malic acid

B. Ethyl alcohol

C. Lactic acid

D. Pyruvic acid

Answer: A

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22. The end product of oxidative phosphorylation is

A. ATP

B. ATP $+ H_20$

C. NADH

D. Oxygen

Answer: B

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23. Aerobic respiration occurs in

A. Mitochondria

B. Peroxisomes

C. Cytoplasm

D. Cytoplasm and mitochondria

Answer: D

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24. Mechansim of aerboic respiraton//tricarboxylic acid pathway was disocovered by

A. Calvin

B. Krebs'

C. Pasteur

D. Hatch and Slack

Answer: B

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25. Match the columns:

Column I	Column II
a. 4 C	1. Acetyl CoA
b. 2 C	2. Pyruvate
c. 5 C	3. Citric acid
d. 3 C	4. α-ketoglutaric acid
	5. Malic acid

A. a-2, b-5, c-3, d-1

B. a-3, b-1, c-4, d-2

C. a-5, b-1, c-4, d-2

D. a-5, b-3, c-1, d-2

Answer: C

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26. There is no transfer of electrons from cyt b to cyt c as

A. Energy is not available

B. The two are not nearby

C. Electrons are transported in pairs

D. Electrons have no affinity for cytochromes

Answer: B

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27. Which is wrong about Krebs cycle

A. It occurs in mitochondria

B. It starts with 6 carbon compound

C. It is also called citric acid cycle

D. Glycolysis is linked to it through malic acid

Answer: D

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28. ATP synthesis proposed by Peter Mitchell is

A. Phosphorylation

B. Photophosphorylation

C. Oxidative phosphorylation

D. Chemiosmotic synthesis

Answer: D

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29. Succinate + FAD forms

A. Fumarate $+ FADH_2$

B. Malate $+ NADH_2$

C. Isocitrate $+ NADH_2$

D. Citrate+ Water

Answer: A

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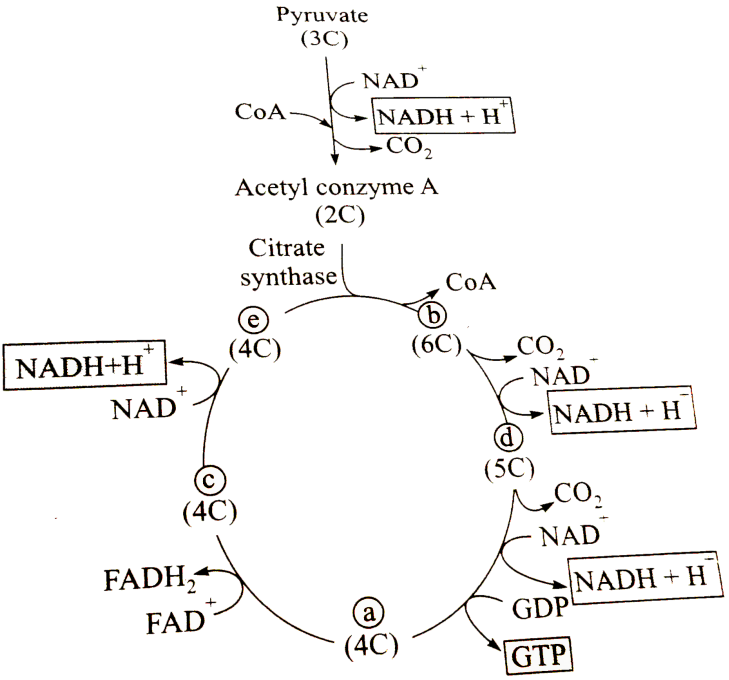
30. Recognise the figure and find out the correct matching.



A. b-malic acid, d--OAA, e- α-ketoglutaric acid, c- succinic acid, a-citric acid

B. a- malic acid, c-OAA, b-α-ketoglutaric acid, d-succinic acid, e-citric acid

C. c-malic acid, e-OAA, d-α-ketoglutaric acid, a-succinic acid, b-citric acid

D. e-malic acid, a-OAA, c-α-ketoglutaric acid, b-succinic acid, d-citric acid

Answer: C

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31. Acetyl CoA forms a 6-C compound after combining with

A. Malic acid

B. Citric acid

C. Succinic acid

D. Oxaloacetic acid

Answer: D

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32. An enzyme not used in Krebs cycle is

A. Aconitase

B. Decarboxylase

C. Fumarase

D. Aldolase

Answer: D

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33. In TCA cycle, conversion of succinyl CoA to succinic acid needs

A. GDP+Pi

B. CoA + GTP + Pi

C. Acetyl CoA + GDP+ Pi

D. Acetyl CoA + GTP + Pi

Answer: A

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34. Pyruvic dehydrogenase is used in converting

A. Pyruvic acid to acetyl co-enzyme A

B. Pyruvate to glucose

C. Glucose to pyruvate

D. Pyruvic acid to lactic acid.

Answer: A

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35. How many ATPs are formed per glucose molecule in Krebs cycle ?

A. 2

B. 24

C. 6

D. 28

Answer: B

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36. Single turn of citric acid cycle yields

A. $2FADH_2, 2NADH_2, 2GTP$

B. $1FADH_2, 2NADH_2, 1GTP$

C. $1FADH_2, 3NADH_2, 1GTP$

D. $1FADH_2, 4NADH_2, 1GTP$

Answer: C

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37. In electron transport system (ETS) which of the following cytochromes reacts with oxygen

A. Cyt a_3

B. Cyt b

C. Cyt b_3

D. Cyt c

Answer: A

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

A. Membrane potential

B. Accumulation of Na^+ ions

C. Accumulation of K^+ ions

D. Proton gradient

Answer: D

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39. In Krebs cycle

A. Pyruvic acid is converted into CO_2 and H_20

B. ADP is converted into ATP

C. Glucose is converted into CO_2

D. Pyruvic acid is converted into ATP

Answer: A

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40. Two names referring to 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

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41. Mitochondrial electron transport chain is

A. Cyclic phosphorylation

B. Oxidative phosphorylation

C. Noncyclic phosphorylation

D. Photooxidation

Answer: B

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42. Electron transport system occurs in

A. Outer membrane of mitochondria

B. Cristae of mitochondria

C. Matrix of mitochondria

D. Oxysomes

Answer: B

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43. In aerobic respiration one glucose produces

A. $8NADH + 2FADH_2 + 2ATP$

B. $12NADH + 2FADH_2 + 38ATP$

C. $12NADH + 30ATP + H_20$

D. $10NADH + 2FADH_2 + 2ATP + 2GTP$

Answer: D

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44. What is true of Krebs cycle

A. ATP/GTP is formed

B. Two decarboxylations

C. Acetyl CoA combines with OAA

D. All of the above

Answer: D

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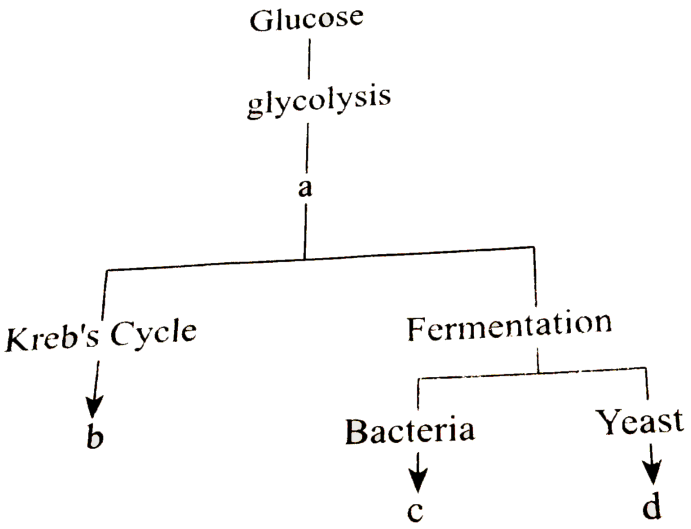
45. Identify the products a, b, c and d and find out the correct option.



A.

a-pyruvic acid, $b - C0_2 + H_20$, c-ethyl alcohol + CO_2, d-lactic acid

B.

a-pyruvic acid, b-ethyl alcohol + CO_2, c-lactic acid, $d - C0_2 + H_20$

C.

$a - CO_2 + H_20$, b-pyruvic acid, c-ethyl alcohol + CO_2, d-lactic aci

D.

a-pyruvic acid, $b - C0_2 + H_2O$, c-lactic acid, d-ethyl alcohol + CO_2

Answer: D

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46. In respiration

A. 2 PGAL are formed in glycolysis and none in Krebs' cycle

B. 6 PGAL in glycolysis, 3 PGAL in Krebs' cycle

C. 8 PGAL in glycolysi, 3 PGAL in Krebs' cycle

D. PGAL formation does not occur in respiration

Answer: A

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47. Which one is the last electron acceptor over ETC in oxidative phosphorylation

A. H_2

B. Cyt a_3

C. Cyt b

D. CO_2

Answer: B

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48. Substrate level phosphorylation occurs during which step of Krebs' cycle

A. Fumaric acid $\rightarrow$ Malic acid

B. Oxalosuccinic acid $\rightarrow$ α-ketoglutaric acid

C. Succinic acid $\rightarrow$ Fumaric acid

D. Succinyl CoA $\rightarrow$ Succinic acid

Answer: D

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49. Component of ETC of mitochondira is

A. Carotenoids

B. Plastocyanin

C. Phytochrome

D. Cytochrome oxidase

Answer: D

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50. Sequence of organic acids in Krebs cycle is

A. Citric acid $\rightarrow$ oxalosuccinic acid $\rightarrow$ isocitric acid

B. Citric acid $\rightarrow$ isocitric acid $\rightarrow$ oxalosuccinic acid

C. Isocitric acid $\rightarrow$ oxalosuccinic acid $\rightarrow$ citric acid

D. Oxalosuccinic acid $\rightarrow$ isocitric acid $\rightarrow$ citric acid

Answer: B

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51. Coenzyme NAD^+ and FAD are connected with respiratory reactions as they

A. Are involved in each step of ATP synthesis

B. Function in Krebs' cycle and terminal oxidative phosphorylation

C. Act as hydrogen carrier

D. Are reducing agents

Answer: C

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52. Total number of ATP molecules produced per glucose molecule in eucaryotic cell is

A. 38

B. 36

C. 24

D. 12

Answer: B

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53. Krebs cycle starts with the formation of six carbon compound by reaction between

A. Malic acid and acetyl CoA

B. Succinic acid and pyruvic acid

C. Fumaric acid and pyruvic acid

D. Oxaloacetic acid and acetyl CoA

Answer: D

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54. Energy for ATP synthesis is obtained from

A. Oxygen ion gradient

B. Hydrogen ion gradient

C. Nitrogen ion gradient

D. All of the above

Answer: B

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55. Energy released in aerobic respiration is higher than the one available from anaerobic respiration by

A. 8 times

B. 19 times

C. 28 times

D. 36 times

Answer: B

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56. Oxygen is reduced to water in

A. Fermentation

B. Calvin cycle

C. Electron transport

D. Krebs' cycle

Answer: C

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57. The reactions of Krebs/citric acid cycle take place

A. In the cytoplasm

B. In ER

C. In matrix of mitochondria

D. On the surface of mitochondria

Answer: C

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58. Cytochromcs are

A. Electron acceptors

B. Protein acceptors

C. Oxygen acceptors

D. Passage way for carbohydrates

Answer: A

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59. The number of ATP molecules produced by electron transport system from Krebs cycle intermediates in a single trun is

A. 11

B. 12

C. 14

D. 16

Answer: A

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60. Differences between photophosphorylation (PP) and oxidative phosphorylation (OP) is

A. In PP, synthesis is of ATP while in OP it is of ADP

B. In PP, oxygen is evolved while in OP oxygen is taken up

C. Both cannot take place in light

D. PP can take place in green leaves while OP cannot occur in green leaves

Answer: B

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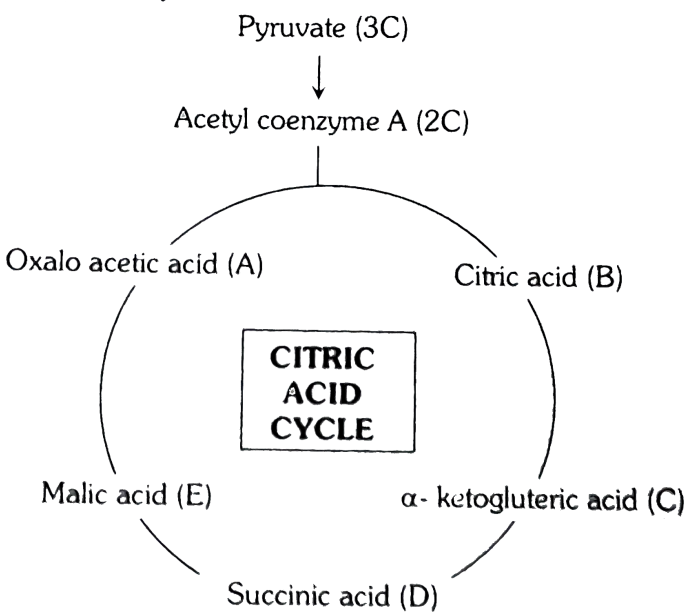
61. Choose the correct combination of labelling the numeberof carbon compounds in the substrate molecules, involved in the citric acid cycle



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-5C, c-6C, d-4C, e-4C

Answer: A

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62. Oxidation of pyruvate to CO_2 and H_2O occurs through

A. Citric acid cycle

B. Tricarboxylic acid cycle

C. Krebs' cycle

D. All of the above

Answer: D

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63. Electron transport requires

A. Cytochromes

B. Phytochrome

C. Enzymes

D. Hormones

Answer: A

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64. Maximum energy becomes available per mole of glucose when it is metabolised through

A. Glycolysis-in skeletal muscle of an athlete

B. Fermentation into ethanol by yeast

C. Fermentation into methanol by intestinal bacteria

D. Aerobic respiration

Answer: D

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65. Which of the following enzymes is absent in mitochondria

A. Aconitase

B. Malic dehydrogenase

C. Fumarase

D. Hexokinase

Answer: D

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66. The correct sequences of electron acceptor in ATP synthesis is

A. Cyt a, a_3, b, c

B. Cyt b, c, a, a_3

C. Cyt c, b, a, a_3

D. Cyt b, c, a_3, a

Answer: B

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67. Number of Oxygen atoms required for complete oxidation of pyruvic acid is

A. 6

B. 12

C. 3

D. 8

Answer: A

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68. FAD is electron acceptor during oxidation of

A. α-Kctoglutaratc $\rightarrow$ Succinyl CoA

B. Succinic acid $\rightarrow$ Fumaric acid

C. Succinyl CoA $\rightarrow$ Succinic acid

D. Fumaric acid $\rightarrow$ Malic acid

Answer: B

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69. Hydrogen atoms released at succinate level in Krebs cycle are accepted by

A. NAD

B. FAD

C. NADP

D. ADP

Answer: B

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70. Which one yields the maximum energy ?

A. Krebs' cycle

B. Anaerobic respiration

C. Glycolysis

D. Aerobic respiration

Answer: D

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71. ETC and TCA enzymes occur in

A. Ribosomes

B. Endoplasmic reticulum

C. Mitochondria

D. Cytoplasm and nucleus

Answer: C

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72. In case NADH is oxidised in a single step to from water

A. Cell will bum

B. Most of energy is liberated as heat

C. 3 ATP are formed

D. 5 ATP are formed

Answer: B

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

A. Krebs' cycle

B. Glycolysis

C. Oxidative phosphorylation

D. E.T.C

Answer: B

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74. Number of ATP molecules which can be built on complete oxidation of pyruvic acid is

A. 6

B. 2

C. 15

D. 30

Answer: C

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75. Find the values of w, x, y and z in the given equation. Pyruvic acid

$$+wNAD+zFAD^{+}+xH_2O+ADP+\Pi\downarrow \text{mitochondrial matrix} yCO_2$$

A. w-4, x-2, y-3, z-1

B. w-3, x-1,y-2, z-1

C. w-3, x-2,y-3,z- 2

D. w-4, x-1, y-3, z- 2

Answer: A

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76. Krebs cycle is

A. Oxidation of glucose to alcohol and water

B. Oxidation of acetyl CoA to carbon dioxide and water involving electron transport

C. Complete oxidation of acetyl CoA without electron transport

D. Complete reduction of acetyl CoA to carbon dioxide and water

Answer: C

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77. Out of 38 ATP molecules per glucose, 30 ATP molecules are formed from $NADH / FADH_2$ in

A. Respiratory chain

B. Krebs' cycle

C. Oxidative decarboxylation

D. EMP

Answer: A

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78. Terminal cytochrome of respiratory chain which donates electrons to oxygen is

A. Cyt b

B. Cyt C

C. Cyt a

D. Cyt a_3

Answer: D

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79. Fumarase changes fumaric acid into

A. Malic acid

B. Malcic acid

C. Citric acid

D. Succinic acid

Answer: A

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80. Enzyme helping in oxidatvie decarboxylation of pyruvic acid is

A. Pyruvic kinase

B. Pyruvate dehydrogenase

C. Malate dehydrogenase

D. Succinic dehydrogenase

Answer: B

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81. Out of 36 ATP molecules produced per glucose molecule during respiration

A. Two are produced outside glycolysis and 34 during respiratory chain

B. Two are produced outside mitochondria and 34 inside mitochondria

C. Two during glycolysis and 34 during Krebs' cycle

D. Ali are formed inside mitochondria

Answer: B

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82. Succinate is oxidised to fumarate in Krebs cycle by

A. Removal of hydrogen

B. Loss of electrons

C. Addition of oxygen

D. Removal of oxygen

Answer: A

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Section A Topicwise Questions Topic 5 Amphibolic Pathway And Respiratory Quotient

1. Which is the favoured substrate for respiration?

A. Glucose

B. Fructose

C. Sucrose

D. Protein

Answer: A

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2. If fat acts as respiratory substrates then they would need to be broken down into fatty acids and glycerol. If fatty acids were to be respired they would first be degraded to .... a .... and enter the pathway. Glycerol would enter the pathway after being converted to .... b ....

A. a-pyruvic acid, b-acetyl CoA

B. a- acetyl CoA, b- PGAL

C. a- PGAL, h-acetyl CoA

D. a-acetyl CoA, b-pyruvic acid

Answer: B

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3. Proteins acts as respiratory substrates then they would be degraded by proteases and the individual amino acids (after deamination) depending on their structure would enter the pathway at some stage.

A. As acetyl CoA

B. As pyruvate

C. Within the Krebs' cycle

D. Any of the above

Answer: D

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4. Which is the correct chemical formula of tripalmitin ?

A. $C_6H_{32}O_2$

B. $C_{54}H_{108}O_2$

C. $C_{32}H_{64}O_4$

D. $C_{51}H_{98}O_6$

Answer: D

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5. Find out the values of x, y and z in the given equation : $2(C_{51}H_{98}O_6) + xO_2 \rightarrow yCO_2 + zH_2O +$ Energy

A. x- 102, y- 145, z- 98

B. x- 145, y- 102, z- 98

C. x- 98, y- 102, z- 145

D. x- 145, y- 98, z- 102

Answer: B

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6. R.Q. of 4 is obtained when respiratory substrate is

A. Oxalic acid

B. Malic acid

C. Tartaric acid

D. Glucose

Answer: A

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7. A value of RQ less than one means

A. Carbohydrates are used as respiratory material

B. Organic acids are used as respiratory substances

C. Oxidation of respiratory substrate consume more O_2 than CO_2 released

D. Oxidation of respiratory substrate consume less O_2 than CO_2 released.

Answer: C

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8. In opuntia, in night the R.Q. will be

A. One

B. More than one

C. Zero

D. Less than one

Answer: C

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9. RQ of 4, 1 and 0.7 occur in case of

A. Malic acid, palmitic acid and tripalmitin

B. Oxalic acid, carbohydrate and tripalmitin

C. Tripalmitin, malic acid and carbohydrate

D. Palmitic acid, carbohydrate and oxalic acid

Answer: B

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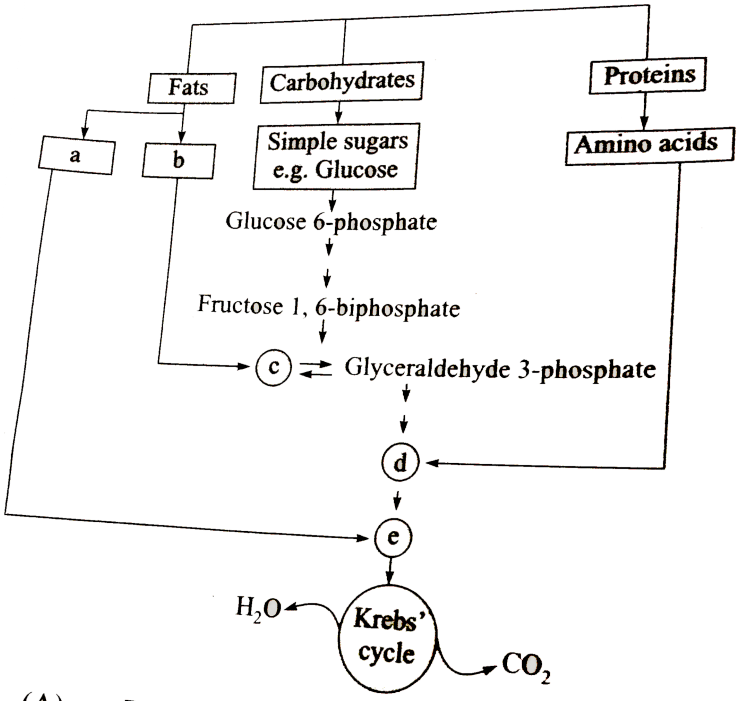
10. Recognise the figure and find out the correct matching.



A. c- DHAP, d- acetyl CoA, e- pyruvic acid, b- fatty acid. a- glycerol

B. d- DHAP, e-acetyl CoA, c- pyruvic acid, a- fatty acid, b-glycerol

C. c- DHAP. e-acetyl CoA, d-pyruvic acid, a-fatty acid, b-glycerol

D. c-DHAP, d-acetyl CoA, e-pyruvic acid, a-fatty acid, b-glycerol

Answer: C

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11. Respiratory quotient (R.Q.) is

A. Volume of O_2 evolved/Volume of CO_2 consumed

B. Volume of CO_2 evolved/Volume of O_2 consumed

C. Volume of O_2 consumed/Volume of CO_2 evolved

D. Volume of CO_2 consumed/Volume of O_2 evolved

Answer: B

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12. R.Q. of protein rich pulses/Pisum sativum is

A. Unity

B. Infinity

C. More than unity

D. Less than one

Answer: D

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13. RQ in anaerobic respiration is

A. Zero

B. ∞ (infinity)

C. 1

D. < 1

Answer: B

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14. Refer the given equation.

$2(C_{51}H_{98}O_6) + 145O_2 \rightarrow 102CO_2 + 98H_2O +$ Energy The RQ in this case is

A. 0·7

B. ∞ (infinity)

C. 1·45

D. 1·62

Answer: A

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15. R.Q. is less than one when the respiratory substrate is

A. Organic acids

B. Fats and proteins

C. Sucrose

D. Glucose

Answer: B

16. In germinating castor seeds, the R.Q. is

or

A mixture containing equal quantity of germinating maize and groundnut seeds are taken. The RQ of this mixture would be

A. Less than one

B. More than one

C. One

D. Zero

Answer: A

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17. When malic acid is respiratory substrate, the amount of CO_2 released is

A. More than O_2 consumed

B. Less than O_2 released

C. Equal to O_2 consumed

D. CO_2 is not released

Answer: A

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18. RQ is more than one indicating

A. Aerobic respiration

B. Anaerobic respiration

C. Both A and B

D. None of the above

Answer: C

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19. R.Q. of sprouting photo tubers will be

A. 1

B. > 1

C. < 1

D. Zero

Answer: A

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20. R.Q. for glucose (carbohydrates) is

A. 1

B. 0.7

C. 2

D. 0.9

Answer: A

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21. R.Q. for fatty substance/fat is

A. Unity

B. Less than one

C. Greater than one

D. Zero

Answer: B

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22. In succulents, respiratory quotient is less than one due to

A. Incomplete oxidation

B. Incomplete reduction

C. Complete reduction

D. Complete oxidation

Answer: A

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23. R.Q. for organic acid is

A. 1

B. > 1

C. < 1

D. 0

Answer: B

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24. Before entering respiratory pathway. Amino acid are

A. Decarboxylated

B. Hydrolysed

C. Deaminated

D. Phosphorylated

Answer: C

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25. Energy required to form glucose from pyruvate is equivalent to

A. 32 ATP

B. 16 ATP

C. 8 ATP

D. 4 ATP

Answer: C

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26. R.Q. of malic acid is

A. 1.3

B. 4

C. 0.7

D. 1

Answer: A

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27. In germinating seed, R.Q. falls when there is shift from

A. Carbohydrate to fat as substrate

B. Fat to carbohydrate

C. Aerobic to anaerobic respiration

D. Protein to carbohydrate

Answer: A

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28. Link between glycolysis, Krebs cycle and β-oxidation of fatty acid or carbohydrate and fat metabolism is

A. Oxaloacetic acid

B. Succinic acid

C. Citric acid

D. Acetyl CoA

Answer: D

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29. Apparatus to measure rate of respiration and R.Q. is

A. Auxanometer

B. Potometer

C. Respirometer

D. Manometer

Answer: C

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Section B Assertion Reasoning Questions

1. Assertion : The complete combustion of glucose, which produces CO_2 and H_20 as end products, yields energy most of which is given out as heat.

Reason: There are sufficient reasons to believe that the first cells on this planet lived in an atmosphere that lacked oxygen.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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2. Assertion: During the process of respiration, oxygen is utilised and carbon dioxide. water and energy is released as products.

Reason: The combustion reaction does not require oxygen.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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3. Assertion: The reduced ubiquinone (ubiquinol) is oxidised with the transfer of electron to cytochrome c.

Reason: During electron transport, proton accumulates within inner membrane of mitochondria.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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4. Assertion : Oxidation of one molecule of NADH gives rise to 3 molecules of ATP and that of one molecule of $FADH_2$ produces 2 molecules of ATP Reason : The number of ATP molecules synthesised depends on the nature of the electron donor.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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5. Assertion: Fermentation accounts for only a partial breakdown of glucose whereas in aerobic respiration it is completely degraded to CO_2 and H_20

Reason: NADH is oxidised to NAD^+ rather slowly in aerobic respiration, however the reaction is very vigorous in case of fermentation.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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6. Assertion: All carbohydrates are usually first converted into glucose before they are used for respiration.

Reason: Proteins fats and organic acid can also be respired but they do not enter respiratory pathway at the first step.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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7. Assertion : Respiratory pathway is an amphibolic pathway.

Reason : In respiration, there is breakdown of many substances (catabolism) and synthesis of many substances (anabolism) by respiratory intermediates.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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8. Assertion: In living organisms, respiratory substrates are often more than one.

Reason: Pure proteins or fats are never used as respiratory substrates.

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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9. Assertion: During ETS, four protons would be accumulated in the intermembrane space of mitochondria from one molecule of $FADH_2$

Reason: Ubiquinone receives reducing equivalents via $FADH_2$

A. If both. assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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Section D Chapter End Test

1. Which of the following is used as a cellular respiration indicator

A. Tetrazolium chloride

B. Ethanol

C. Schiff's reagent

D. Lactic acid

Answer: A

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2. Oxalosuccinic acid, a transient intermediary compound of Krebs cycle is

A. 4-carbon compound

B. 5-carbon compound

C. 6-carbon compound

D. 3-carbon compound

Answer: C

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3. A reaction catalysed by an enzyme not found in mitochondiral matrix

A. Conversion of pyruvic acid to acetyl CoA

B. Oxidative decarboxylation of α-ketoglutaric acid

C. Oxidation of succinic acid

D. Cleavage of succinyl CoA

Answer: C

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4. Glucose administered orally will be used up in

A. Excretion

B. Digestion

C. Respiration

D. Circulation

Answer: C

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5. Which of the following is produced in oxidative pentose phosphate pathway

A. Pyruvic acid

B. Acetyl CoA

C. $NADH_2$

D. NAD (P) H

Answer: D

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6. For formation of ethanol, pyruvic acid is first changed to acetaldehyde by enzyme

A. Pyruvate dehydrogenase

B. Pyruvate decarboxylase

C. Alcohol oxidase

D. Alcohol dehydrogenase

Answer: B

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7. Which is correct for ADP

A. Two high energy bonds

B. One high energy bond

C. Three high energy bonds

D. None of the above

Answer: B

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8. A molecule of ATP is formed as an electron passes from

A. Cyt c to Cyt a

B. Cyt b to Cyt c

C. Cyt a to Cyt c

D. Cyt c to Cyt b

Answer: B

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9. Which cell does not respire?

A. Mesophyll cell

B. Sieve tube cell

C. Epidermal cell

D. Cork cell

Answer: D

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10. During night, a person should not sleep under a tree because the tree

A. Releases 0_2 during night

B. Does not release CO_2 during night

C. Releases CO_2 during night

D. Releases water during guttation

Answer: C

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11. Which of the following statements is/are not true

A) One ATP molecule yields 32 kJ of energy

B. Pentose Phosphate pathway was discovered by Dickens

C. When tripalmitin is used as a substrate, the R.Q. is 0.7

D. energy released by one molecule of glucose on complete oxidation corresponds to 1292 kJA

A. a, b and d

B. a and d

C. c and d

D. a, c and d

Answer: B

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12. Alcoholic fermentation occurs in the presence of

A. Zymase

B. Amylase

C. Invertase

D. Maltase

Answer: A

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13. How many ATP molecules are released when one molecules of glucose is oxidised in our liver cells ?

A. 36

B. 38

C. 2

D. 8

Answer: B

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14. Ganong's respiroscope is used to demonstrate.....

A. Heat during respiration

B. CO_2 during aerobic respiration

C. CO_2 during fermentation

D. Evolution of oxygen during photosynthesis

Answer: B

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15. Carbon dioxide is liberated during

A. Photosynthesis

B. Respiration

C. Transpiration

D. Ascent of sap

Answer: B

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16. Mitochondria are the site for

A. Oxidative phosphorylation

B. Photolysis

C. Phosphorylation

D. Starch synthesis

Answer: A

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17. Which one requires oxygen

A. Fermentation

B. EMP pathway

C. Pentose phosphate pathway

D. None of the above

Answer: D

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18. Enzymes of Krebs cycle occur in mitocho-ndrial matrix except one which is attached to inner mitochondrial membrane

A. Citrate synthetase

B. α-ketoglutarate dehydrogenase

C. Succinate dehydrogenase

D. Malate dehydrogenase

Answer: C

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19. Krebs cycle is

A. Aerobic

B. Anaerobic

C. Anabolic

D. None of the above

Answer: A

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20. Cyanide resistant respiration is found in

A. Plants

B. Bacteria

C. Viruses

D. Animals

Answer: A

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21. A sudden change from anaerobic to aerobic process produces

A. Pasteur effect

B. Emerson effect

C. Blackman's law

D. Chargaffs rule

Answer: A

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22. Bond between first phosphate and adenosine in ATP is

A. Phosphoester bond

B. Nitrophosphate bond

C. Phosphoanhydride bond

D. Adenophosphate bond

Answer: A

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23. Energy required to synthesise ATP from ADP and inorganic phosphate is

A. 2500 cal

B. 7600 cal

C. 12000 cal

D. 20000 cal

Answer: B

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24. Green plants kept in light produce ATP from glucose. The process is

A. Photophosphorylation

B. Glycolysis

C. TCA cycle

D. Oxidative phosphorylation.

Answer: D

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25. Metabolism of one plamitic acid yields ATP

A. 36 ATP

B. 56 ATP

C. 129 ATP

D. 48 ATP

Answer: C

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26. What is produced when succinyl CoA is changed to succinate ?

A. ATP

B. GTP

C. CTP

D. ATP in plants and GTP in animals.

Answer: D

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27. Excess of ATP inhibits respiration by inhibiting one of the following enzymes

A. Phosphofructokinase

B. Hexokinase

C. Pyruvate decarboxylase

D. Aldolase

Answer: A

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28. Enzyme pair common to both EMP and C_3 cycle is

A. Aldolase and enolase

B. Aldolase and triose phosphate isomerase

C. Phosphoglyceromutase and triose phosphate isomerase

D. Cytochrome oxidase and enolase

Answer: B

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29. The respiratory enzymes are located in

A. Mitochondrial matrix

B. Perimitochondrial space

C. Cristae

D. Outer membrane

Answer: A

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30. Mitochondria supply most of the necessary biological energy be

A. Breaking of proteins

B. Reduction of NADP

C. Breaking of sugars

D. Oxidising TCA substrates

Answer: D

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31. NADH is produced in

A. Photosystem II

B. Photosystem I

C. Glycolysis

D. Both A and B

Answer: C

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32. $ADP \rightarrow ATP \rightarrow ADP$ system was found by Lipmann in

A. 1940

B. 1950

C. 1960

D. 1970

Answer: A

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33. α-Ketoglutarate dehydrogenase brings about

A. Oxidation and decarboxylation

B. Oxidation

C. Decarboxylation

D. Reduction

Answer: A

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34. Which theory explains ATP synthesis in chloroplasts and mitochondira ?

A. Lipman and Lohmann theory

B. Lock and Key theory of Fischer

C. Induced fit theory of Koshland

D. Chemiosmotic theory of Mitchell

Answer: D

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35. In bacteria the site for respiratory activity is found in

A. Cytoplasm

B. Mesosome

C. Episome

D. Plasmid

Answer: B

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36. Which one is absent in erythrocytes ?

A. Krebs' cycle

B. Enzymes

C. Biomembrane

D. Hyaloplasm

Answer: A

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37. How much usable energy is available during oxidative combustion of 1 gm mole of glucose in the body?

A. 686000 cal

B. 304000 cal

C. 277400 cal

D. 686 cal

Answer: C

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38. Iron-prophyrin protein complex occurs in

A. Cytochrome

B. Chlorophyll

C. Phytochrome

D. Both A and B

Answer: A

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39. Number of ATP produced from one pyruvic acid during conversion to acetyl CoA is

A. 3

B. 5

C. 8

D. 15

Answer: A

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40. The amount of energy given by one mole of ATP is

A. 7.3 kcal

B. 721 kcal

C. 7600 kcal

D. 1000 kcal

Answer: A

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41. Complete oxidation of one gram mol. Of glucose gives rise to

A. 6860,000 cal

B. 686,000 cal

C. 68,600 cal

D. 6,86 cal

Answer: B

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

A. Ketogenic amino acids

B. Glucose

C. Amylose

D. Glycogen

Answer: B

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43. Which component of ETC is not a protein ?

A. Cytochrome

B. Ubiquinone

C. Cytochrome oxidase

D. All of the above

Answer: B

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44. ATP is injected in cyanide poisoning because it is

A. Necessary for cellular functions

B. Necessary for $Na^+ - K^+$ pump

C. $Na^+ - K^+$ pump operates at the cell membranes

D. ATP breaks down cyanide

Answer: A

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45. Maximum amount of energy/ATP is liberated on oxidation of

A. Fats

B. Proteins

C. Starch

D. Vitamins

Answer: A

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46. Hydrogen released from substrate by dehydrogenase rquires from substrate by dehydrogenase requires one of the following before reducing coenzyme NAD

A. Electrons

B. Protons

C. Photons

D. Both Band C

Answer: A

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47. NAD of Krebs cycle functions as

A. Acceptor of hydrogen ion and electrons

B. Oxygen acceptor

C. Oxygen donor

D. Donor of phosphate ions

Answer: A

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48. "Life without air" was first studied by

A. Reductional

B. Free from oxidative damage

C. Impossible

D. Anaerobic

Answer: D

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49. R.Q. of respiratory substrate $C_{99}H_{72}O_6$ would be

A. 0·718

B. 1·34

C. 2·71

D. 3·250.

Answer: A

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50. R.Q. is maximum when respiratory substrate is

A. Glucose

B. Fat

C. Protein

D. Malic acid

Answer: D

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