



# BIOLOGY

## BOOKS - ARIHANT NEET BIOLOGY (HINGLISH)

### RESPIRATION IN PLANTS

#### Check Point 21 1

1. Keeping the genral equation of respiration in mind,pick out the option tht correctly the

products of respiration.

- A. Water, oxygen and carbon dioxide
- B. Carbon dioxide, water and energy
- C. Carbon dioxide and glucose
- D. Glucose, carbon dioxide and energy

**Answer: B**



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2. Name a pathway including a series of reaction, that form a common link between anaerobic and aerobic respiration.

A. Glycolysis

B. Krebs' cycle

C. Fermentation

D. Pyruvate oxidation

**Answer: A**



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### 3. The step in glycolysis that produces glucose-6-phosphate

A. Glucose  $\rightarrow$  Glucose-6-phosphate

B. 2-phosphoglycerate  $\rightarrow$  Phosphoenolpyruvate

C. Pyruvate  $\rightarrow$  Acetyl Co-A

D. Fructose-1,6-diphosphate  $\rightarrow$  Dihydroxyacetone phosphate

**Answer: A**



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4. Pick out the reaction of glycolysis in which isomerisation takes place

A. G-3-P  $\rightarrow$  DHAP

B. Glucose  $\rightarrow$  Fructose-6-Phosphate

C. 3-Phosphoglycerate  $\rightarrow$  2-

phosphoglycerate

D. Phosphoenol pyruvate  $\rightarrow$  pyruvate

**Answer: A**



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5. Which of the following enzymes does not catalyse a reversible reaction in glycolysis?

A. Phosphoglucoisomerase

B. Phosphoglycerate kinase

C. Pyruvate kinase

D. Aldolase

**Answer: C**



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6. The enzyme that can replace the need of ATP phosphotructokinase is

- A. Phosphoglycerokinase
- B. Atp kinase
- C. Phosphate dismutase
- D. Pyrophosphate fructokinase

**Answer: D**



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7. The number of substrate level phosphorylation reaction in glycolysis is

A. Two

B. One

C. Three

D. Zero

**Answer: A**



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8. The net gain of ATP via glycolysis is

A. 8 ATP

B. 5 ATP

C. 4 ATP

D. 3 ATP

**Answer: A**



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9. The reaction that forms a link between krebs' cycle and glycosis is

A. Oxidative decarboxylation of pyruvate

B. Warbing reaction

C. Oxaloacetate oxidation

D. Reduction Reaction

**Answer: A**



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10. The enzyme complex pyruvate dehydrogenase does not consist of

A.  $Mg^{2+}$

B. Vitamin-B<sub>1</sub>

C.  $Co(2^+)$

D. Thiamine pyrophosphate

**Answer: C**



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11. The only step in TCA cycle, where FAD is involved is

A. Succinate  $\rightarrow$  Fumarate

B. Citrate  $\rightarrow$  Isocitrate

C. Fumarate  $\rightarrow$  malate

D.  $\alpha$ -ketoglutarate  $\rightarrow$  succinyl Co-a

**Answer: A**



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12. Arsenite dehydrogenase can block

A. Isocitrate  $\rightarrow$   $\alpha$ -ketoglutarate

B. Malate  $\rightarrow$  Oxaloacetate

C. Pyruvate  $\rightarrow$  Acetyl Co-A

D.

**Answer: B**



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13. The krebs' cycle is also called as tricarboxylic acid cycle because.....is a tricarboxylic acid.

A. Citrate

B. malate

C. Succinyl Co-A

D. Fumarate

**Answer: A**



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14.  $\text{Malate} + \text{NAD}^+ \rightarrow \text{NADH} + \text{Oxaloacetate}$

this reaction in krebs' cycle is catalysed by enzyme

A. Malate dehydrogenase

B. malate reductase

C. Malate dicarboxylase

D. Malate kinase

**Answer: A**



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15. Which of these steps in Kreb's cycle indicates substrate level phosphorylation

A. Citrate  $\rightarrow$  Isocitrate

B.  $\alpha$ -Ketoglutarate  $\rightarrow$  succinate

C. succinyl Co-A  $\rightarrow$  Succinate

D. Malate  $\rightarrow$  Oxaloacetate

**Answer: C**



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16. The primary electron acceptor in ETC is ubiquinone. It is also called as

- A. Coenzyme-Q
- B. FeS
- C. Cytochrome- $a^3$
- D.  $\text{Cu}^+$  ions

**Answer: A**



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17. The primary role of  $O_2$  in cellular respiration is to

- A. Act as an acceptor of electrons and protons
- B. Catalyse reactions of glycolysis
- C. Combine with carbon to form  $C_6H_{12}O_6$
- D. Synthesise pyruvate

**Answer: A**



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## Check Point 21 2

1. The process in which electrons are accepted at the of respiratory chain is known as

A. Oxidative phosphorylation

B. Terminal oxidation

C. glycolysis

D. None of the above

**Answer: B**



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2. Which of the following is the reason for ATP synthesis?

A. Conformational change in  $\beta$ -Subunit of

$F_1$

B. Conformational change in *gamma*-subunit

of  $F_1$

C. Conformational change in  $\beta$ -Subunit of

$F_0$

D. All of the above

**Answer: A**



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**3.** How many molecules of ATP are produced a single rotation of *gamma*-subunit?

A. 1

B. 2

C. 3

D. 4

**Answer: C**



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**4.** How many molecules of ATP are consumed in the transfer of  $\text{NADH} + \text{H}^+$  from cytoplasm to mitochondria?

A. 2

B. 4

C. 6

D. 8

**Answer: A**



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5. Who discovered hexose monophosphate pathway?

A. Peter mitchell

B. Warbung and dickens

C. Calvin

D. Emerson

**Answer: B**



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**6. What is the net gain of ATP in PPP?**

A. 38

B. 36

C. 35



D. 44

**Answer: C**



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7. The enzyme which converts 6-phosphogluconolactone to 6-Phosphogluconate is

A. Ribulose-5-phosphate isomerase

B. Transaldolase

C. Glucose-6-phosphate dehydrogenase

D. gluconolactonase

**Answer: D**



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**8. Which are the two important phases of PPP?**

A. Oxidation-reduction

B. Oxidative-non-oxidative

C. Initial-terminal

D.

**Answer: B**



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9. Which of the following has inhibitory effect on cellular respiration?

A.  $\text{Ca}^{2+}$

B. CO

C.  $\text{Mg}^{2+}$

D. Cu

**Answer: B**



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**10.** What happens with the respiration rate at the site of injury?

A. No effect

B. Decrease

C. Increase

D. None of the above

**Answer: C**



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## Check Point 21 3

1. The end product of alcoholic fermentation of glucose gives

A. Methyl alcohol

B. Ethyl alcohol

C. Both (a) and (b)

D. Fatty acid

**Answer: B**



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2. What is the ratio of ATP synthesis in aerobic and anaerobic cellular respiration?

A. 8:1

B. 9: 1

C. 18: 1

D. 13: 1

**Answer: C**



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**3.** Which enzyme is released by yeast cells during fermentation?

A. Sucrase

B. Oxidase

C. Zymase

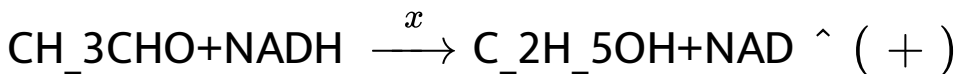
D. Carboxylase

**Answer: C**



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**4. Complete the following equation.**



A. Pyruvate dicarboxylase



B. Glycolysis

C. Alcohol dehydrogenase

D. pruvic acid

**Answer: C**



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**5. Where is lactic acid formed in human body?**

A. Skin

B. Bone

C. Stomach

D. Muscles

**Answer: D**



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**6. Lactic acid fermentation does not produce**

A. CO<sub>2</sub>

B. NADH

C. Both (a) and (b)

D. ATP

**Answer: A**



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7. Which is the intermediate product in the fermentation of acetic acid?

A. Acetaldehyde

B. Acetic acid

C. Pyruvic acid

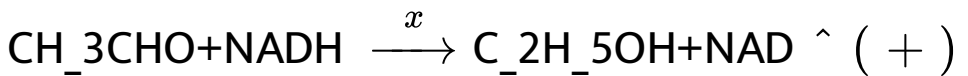
## D. Lactic acid

**Answer: A**



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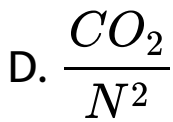
**8. Complete the following equation.**



A.  $\frac{\text{CO}_2}{\text{O}_2}$

B.  $\frac{\text{O}_2}{\text{CO}_2}$

C.  $\frac{\text{N}_2}{\text{CO}_2}$



**Answer: A**



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9. If volume of  $CO_2$  liberated during respiration is more than the volume of  $O_2$  used, then the respiratory substrate will be

A. Fats

B. Organic acids

C. Proteins

D. Carbohydrates

**Answer: B**



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**10.** Which among the following has the least RQ?

A. Proteins

B. Carbohydrates

C. Carbohydrates associated with  
carbohydrate synthesis

D. Carbohydrates associated with organic  
acid synthesis

**Answer: D**



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**Chapter Exercises A Taking It Together Assorted  
Questions Of The Chapter For Advanced Level  
Practice**

## 1. Respiration in plants

- A. Results in the formation of fats
- B. Produces  $O_2$  and water
- C. is characteristic feature of all living cells
- D. Occurs only during night

**Answer: C**



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

A. Energy from carbohydrates is released in one step

B. Energy from carbohydrates is released in different steps

C. Efficiency is very low

D. All of the above

**Answer: B**



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3. The respiration in germinating seeds produces energy energy which can be detected in the form of

A. Water

B. Heat

C. Oxygen

D. Carbon dioxide

**Answer: B**



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

A. Growing shoot apex

B. Germinating seed

C. Root tip

D. Leaf bud

**Answer: B**



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

A. Hexokinase

B. glucose synthetase

C. Glucose-6-phosphate dehydrogenase

D. None of these

**Answer: A**



6. Which of the following is formed after

A. fructose-1,6-Biphosphate

B. 1,3-Disphosphoglycerate

C. PEP

D. 2-Phosphoglycerate

**Answer: A**



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7. Which of the following are isomers?

A. 3PGA-2PGS

B. G3P-DHAP

C. PEP-pyruvate

D. All of these

**Answer: B**



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8. During formation of 1,3-diphosphoglyceric acid from 3 phosphoglyceric acid , the phosphatic donor is

A.  $ATP \rightarrow ADP$

B.  $ADP \rightarrow ATP$

C.  $GTP \rightarrow GDP$

D.  $H_3PO_4 \rightarrow$  utilisation

**Answer: D**



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9. In the conversion of glucose into two molecules of pyruvate, which does not occur?

- A. hydrolysis of ATP
- B. Phosphorylation of hexose
- C. Reduction of NAD
- D. Release of  $CO_2$

**Answer: D**



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**10.** Which of the following is removed from the substrate during glycolysis

A. hydrogen

B. Electrons

C. Both (a) and (b)

D. none of these

**Answer: C**



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11. Which one of the following is also formed during glycolysis along with ATP

A.  $NADPH_2$

B.  $NADH_2$

C. FAD

D.  $FADH_2$

**Answer: B**



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

A. Zero

B. Two

C. Three

D. Four

**Answer: A**



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13. In glycolysis, electrons removed by

A. ATP

B. NAD

C. Glyceraldehyde-3-phosphate

D. Molecular oxygen

**Answer: B**



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14. Which is the first product of krebs' cycle?

A.  $CO_2$

B.  $H_2O$

C. Citric acid

D. ATP

**Answer: C**



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**15.** Name the compound which is oxidised in the last step of krebs' cycle.

A.  $\alpha$ -Ketoglutarate

B. Flouroacetate

C. Succinate

D. Malate

**Answer: D**



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**16.** The functioning in electron transport chain occurs through a series of carriers. What are they called?

A. Cytochromes

B. Shuttles

C. Enzymes

D. Fermentation

**Answer: B**



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**17.** Which one of these is not an electron carrier?

A. NAD

B. FMN

C. Ubiquinone

D. Malate

**Answer: D**

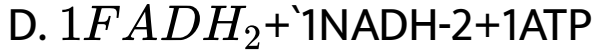
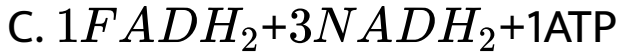
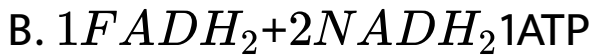


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**18.** A single cycle of TCA cycle yields

A.  $2FADH_2 + 6NADH_2 + 2ATP$





**Answer: C**



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**19.** Which of the following products of glycolysis is/are consumed in alcoholic fermentation?

A.  $Nadh_2$

B.  $CO_2$

C. ATP

D. Both (a) and (c)

**Answer: A**



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**20.** Which of the following enzymes participates in EMP and  $C_2$

A. transferases

B. Aldolase

C. Cytochrome oxidase

D. Triose phosphate isomerase

**Answer: D**



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**21.** Common immediate source of energy in cellular activity or Energy currency of the cell is

Or

To a living organism which of the following has the greater amount of available energy per molecule

A.  $CO_2$

B.  $H_2O$

C. ATP

D. GDP

**Answer: C**



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22. Phosphorylation of glucose during glycolysis is catalysed by

A. Phosphoglucomutase

B. Phosphoglucoisomerase

C. Hexokinase

D. Phosphorylase

**Answer: C**



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

A. Lactic acid

B.  $CO_2 + H_2O$

C. Acetyl Co-A +  $CO_2$

D. Ethanol +  $CO_2$

**Answer: C**



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24. NADH of glycolysis reacts with an inorganic element during liberation of energy. The respiration is

- A. Photorespiration
- B. Fermentation
- C. Aerobic respiration
- D. Anaerobic respiration

**Answer: A**



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25. During cellular respiration the energy produced is stored in

" " Or

The common immediate source of energy in cellular activity

A. ATP

B. CTP

C. NAD

D. DNA

**Answer: C**





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**26.** ATP is a

A. Component of nucleic acid

B. Molecule which contains high energy  
phosphate bonds

C. Both (a) and (b)

D. Protein

**Answer: A**



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27. Inner mitochondrial membrane is not permeable to

A. NADH

B. Pyruvate

C. Acetate

D.  $\alpha$ -ketoglutarate

**Answer: D**



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**28.** Hydrogen ions and electrons join oxygen at the end of

A. Glycolysis

B. ETC

C. TCA cycle

D. Pyruvate oxidation

**Answer: C**



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29. Which can accept a hydride ions during electron transduction system?

A. FADH and NADH

B.  $FAD^+$  and  $NADP^+$

C.  $FAD^+$  and NADH

D. FADH and  $NAD^+$

**Answer: A**



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30. In cytochromes, electrons are picked up and released by

A. iron

B. Molybdenum

C. Copper

D. Zinc

**Answer: B**



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

A. Cytochrome

B. Oxygen

C. hydrogen

D. glucose

**Answer: B**



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**32.** An enzyme absent in mitochondrial ETS is

A. FeS protease

B. Glucose-6-Phosphate dehydrogenase

C. NADH Dehydrogenase

D. Cytochrome-c oxidase

**Answer: B**



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**33.** Which aerobic pathway is considered as a part of glycolysis?

A. Oxidative phosphorylation

B. Pentose phosphate pathway

C. Glycolysis

D. Krebs' cycle

**Answer: B**



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**34.** LAB can ferment lactose sugar formed in milk. What is LAB in the statement?

- A. Lactic acid breakdown
- B. Lactic acid bacteria
- C. Lactic adenine breakdown
- D. None of the above

**Answer: B**



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**35.** Erythrose-4-phosphate(E-4-P)formed in pentose phosphate pathway has its applications in

- A. Synthesis of nucleotides
- B. Synthesis of fatty acids
- C. Synthesis of carbohydrates
- D. Synthesis of aromatic amino acids

**Answer: D**



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36. Which is the alternate name of ATP synthetase?

A. Flavin dinucleotide

B. Flavin mononucleotide

C.  $F_0-F$  complex

D. Co-A

**Answer: C**



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37. In presence of cyanide, azide and carbon monoxide, the rate of respiration.

A. Increase

B. Decrease

C. Remain the same

D. None of these

**Answer: B**



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38. In mitochondrion, the proton gradient required for ATP synthesis develops across

A.  $F_o-F_1$  particle

B. outer membrane

C. Inner membrane

D. inner membrane space

**Answer: C**



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39. The end product of oxidative phosphorylation is

A. NADH

B. Oxygen

C. ADP

D.  $\text{ATP} + \text{H}_2\text{O}$

**Answer: D**



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40. 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 potential

**Answer: A**



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41. When bond between first and second phosphate of ATP is hydrolysed, the amount of energy released (at pH 7) is

- A. 1200 cal
- B. 3000 cal
- C. 1500-1800 cal
- D. 6.5 kcal

**Answer: D**



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42. In aerobic respiration in plants ,the end products are

- A.  $H_2O$  and energy
- B.  $CO_2, H_2O$  and energy
- C.  $CO_2$  and starch
- D.  $CO_2$

**Answer: B**



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**43.** As compared to anaerobic respiration, the energy released during respiration is

A. 8 times

B. 10times

C. 18times

D. 24times

**Answer: C**



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

A. 6860000 cal

B. 686000 cal

C. 68600 cal

D. 6860 cal

**Answer: B**



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**45.** Number of ATP molecules formed from complete oxidation of fructose-1,6 diphosphate is

A. 20

B. 32

C. 36

D. 40

**Answer: D**



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**46.** Anaerobic respiration was first reported by

A. pfeffer

B. Kostytchev

C. Priesrley

D. Klein

**Answer: B**



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47. larger amount of energy per molecule of glucose broken down in which of the following process?

A. Fermentation

B. Lactic acid cycle

C. Glycolysis in liver cells

D. Pentose phosphate shunt in liver

**Answer: A**



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**48.** Conversion of pyruvic acid into ethyl alcohol is facilitated by which of the following enzyme?

A. Phosphatase

B. Decarboxylase

C. Dehydrogenase

D. Both (b) and (c)

**Answer: D**



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49. The end product of fermentation is

A. Pyruvic acid and  $H_2O$

B.  $H_2O$  and  $CO_2$

C.  $C_2H_5OH$  and  $CO_2$

D.  $CO_2$

**Answer: C**



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50. Buchner successfully extracted the

A. ATP

B. Ztmase

C. Plastids

D. hexokinase

**Answer: D**



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51. Which of the following yields the highest energy per gram?

- A. Amino acids
- B. Proteins
- C. Polysaccharides
- D. Fats

**Answer: D**



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52. The bacteria which convert pyruvic acid to acetic acid is

A. Acetobactor aceti

B. Clostridium

C. Lactobacilli

D. clostridia

**Answer: A**



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53. Which of the following is an amphibolic pathway

A. TCA cycle

B. Calvin cycle

C. Terminal oxidation

D. ETC

**Answer: A**



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54. RQ in anaerobic respiration is

A. 0.7

B. 0.9

C. unity

D. infinity

**Answer: D**



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55. Which one provides twice as much energy as carbohydrates

A. oils and fats

B. Proteins

C. Vitamins

D. minerals

**Answer: A**



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56. In germinating seeds of *ricinus communis*, RQ is

A. Zero

B. Less than one

C. One

D. more than one

**Answer: B**



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57. In an organism, utilising sugars as its source of energy anaerobically, the RQ is likely to be

A. 0.7

B. 0.9

C. 1.0

D. infinity

**Answer: D**



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

A. 0.718

B. 1.34

C. 2.71

D. 3.25

**Answer: A**



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59. If respiratory substrate is rich in  $O_2$ , then RQ will be

- A. More than one
- B. Less than one
- C. Equal to one
- D. Much less than one

**Answer: A**



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**60.** Excess of ATP inhibits the enzyme

A. Phosphofructokinase

B. Pyruvic dehydrogenase

C. Phosphate isomerase

D. Glyceraldehyde phosphatase

**Answer: A**



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**61.** The formation of Acetyl CoA from pyruvic acid is the result of its

- A. Dehydration
- B. Dephosphorylation
- C. Reduction
- D. Oxidative decarboxylation

**Answer: D**



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62. Removal of hydrogen and  $CO_2$  from a substrate is called

A. Decarboxylation

B. Oxidation

C. Oxidative decarboxylation

D. Reductive decarboxylation

**Answer: C**



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**63.** TPP is an abbreviation of

- A. Tetra pyro phosphate
- B. Thiamine pyro phosphate
- C. Thymine penta phosphate
- D. Thiamine penta phosphate

**Answer: B**



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64. Pyruvic dehydrogenase is used in converting

- A. glucose to pyruvate
- B. Pyruvate to glucose
- C. Pyruvate to acetyl Co-A
- D. Lactic acid to pyruvic acid

**Answer: C**



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65. Pyruvic acid before combining with the oxaloacetic acid of Krebs cycle becomes

- A. Acetyl Co-A
- B. Lactic acid
- C. Acetic Acid
- D. Aconitic acid

**Answer: A**



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**66.** The cycle in which the acetyl Co-A broken down in the presence of oxygen is known as

A. Anaerobic respiration

B. glycolysis

C. TCA cycle

D. None of these

**Answer: C**



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67. Who discovered the citric acid cycle?

- A. Aronson in 1956
- B. Hans Krebs in 1937
- C. Melvin Calvin in 1953
- D. Robert Hill in 1953

**Answer: B**



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**68.** The intermediate product between  $\alpha$ -ketoglutaric acid and succinic acid in TCA cycle is

- A. Acetyl Co-A
- B. Succinyl Co-A
- C. Fumarate
- D. Oxalosuccinic acid

**Answer: B**



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69. In Krebs cycle, malate hands over hydrogen to

A.  $NAD^+$

B. FAD

C. FMN

D. Oxalo acetate

**Answer: A**



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70. A 5-carbon compound from krebs' cycle is an important compound in nitrogen metabolism. It is a

- A. Citric acid
- B. Oxalosuccinic acid
- C.  $\alpha$ -ketoglutaric acid
- D. Fumaric acid

**Answer: C**



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71. ATP Equivalents, produced during oxidation of catalysed by the enzyme

A. 1

B. 2

C. 3

D. 4

**Answer: B**



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72. The conversion of fumaric acid to malic acid is catalysed by the enzyme

A. Fumarase

B. Maltase

C. Thiokinase

D. Malic dehydrogenase

**Answer: A**



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**73.** Succinyl Co-A is related to

- A. Krebs' cycle
- B. Calvin cycle
- C. Glycolate cycle
- D. HMP cycle

**Answer: A**



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**74.** The universal hydrogen acceptor is



A. NAD

B. ATP

C. Co-A

D. TPP

**Answer: A**



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**75.** Which of the following pairs makes the shuttle system in eukaryotes for electron transfer?

A. Glycerol phosphate

B. Malate-asparate

C. Both (a) and (b)

D. None of these

**Answer: C**



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**76. Which is true of glycolysis**

- A. It is not common to both aerobic and anaerobic respiration
- B. Substrate level phosphorylation
- C. Expenditure of  $H_2O$
- D. Production of NAD

**Answer: B**



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**77. Oxidation of pyruvic acid is accompanied by**

A. Oxidation of  $NAD^+$

B. Reduction of  $NAD^+$

C. Oxidation of Co-A

D. Reduction of Co-A

**Answer: B**



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**78. Function of Co-A is**

A. Oxidative phosphorylation

B. Inactivation of acetyl group

C. Breakdown of pyruvic acid

D. Photophosphorylation

**Answer: B**



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**79.** Correct sequence of events in Krebs' cycle is

A. Isocitrate acid  $\rightarrow$   $\alpha$ -Ketoglutaric acid

$\rightarrow$  Succinyl-Co-A

B. Succinyl Co-A to succinic acid

C. Succinic acid to fumaric acid

D.

**Answer: A**



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**80.** GTP is formed during the conversion of

A. Fumaric acid to malic acid

B. Succinyl Co-A to succinic acid

C.  $\alpha$ -Ketoglutaric acid to succinyl Co-A

D. Succinic acid to fumaric acid

**Answer: B**



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**81.** Oxidation of succine acid to fumaric acid in the krebs' cycle takes place by

- A. Addition of oxygen to it
- B. Removal of hydrogen from it
- C. Loss of electron from it
- D. None of the above

**Answer: B**



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**82.** The correct sequence of acids in TCA cycle is



A. 1:3 PGA  $\rightarrow$  3PGA  $\rightarrow$  2 PGA

B. OAA  $\rightarrow$  AA  $\rightarrow$  PA

C. Isocitric acid  $\rightarrow$  cisaconitic acid  $\rightarrow$

O:succinic acid

D. Succinic acid  $\rightarrow$  Fumaric acid  $\rightarrow$  Malic

acid

**Answer: D**



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

A. Fumaric acid and pyruvic acid

B. OAA and acetyl Co-A

C. Malic acid and acetyl Co-A

D. Succinic acid and pyruvic acid

**Answer: B**



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**84.** Electron acceptors in ETS are arranged according to

A. Decreasing positive potential

B. Increasing positive potential

C. Increasing negative potential

D. None of the above

**Answer: A**



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**85.** In electron transport system a carrier holds electron at

A. High energy level than the previous carrier

B. Lower energy level as the adjacent one

C. None of the above

D.

**Answer: B**

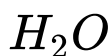


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86. The maximum energy in the cell is liberated when

A. Pyruvic acid is converted into acetyl Co-A

B. Pyruvic acid is converted into  $CO_2$  And



C. Sugar is converted into pyruvic acid

D.

**Answer: B**



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

A. Mitochondria synthesise ATP

B. Mitochondria have a double membrane

C. The enzymes of the krebs' cycle and cytochromes are found in mitochondria

D. Mitochondria are found in almost all plants and animal cells

**Answer: A**



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**88.** 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 membrane

D. ATP breakdown cyanide

**Answer: A**



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

A. Two are produced outside in 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. All are formed inside mitochondria

**Answer: B**



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90. in the process of respiration 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 1372 cal of energy

D. large amount of  $CO_2$ , no water and energy

**Answer: B**



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**91.** When a molecule of pyruvic acid is subjected to anaerobic oxidation and forms lactic acid, there is

A. Loss of 3 Atp molecules

B. Loss of 6 Atp molecules

C. Gain of 2 ATP molecules

D. Gain of 6 ATP molecules

**Answer: A**



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**92.** What will happen if fermentation is allowed to proceed in a closed vessel?

A. vacuum will result

B. No charge will be there

C. Pressure will develop because of  
excessive  $CO_2$

D. Pressure will develop because of  
excessive  $O_2$

**Answer: C**



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**93.** In alcoholic 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**



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**94.** The most appropriate reason for storing green-colored apples at low temperature is

A. The rate of photosynthesis is reduced

B. The rate of respiration is reduced

C. The rate of photosynthesis and respiration are reduced

D. Respiration and photosynthesis are completely inhibited

**Answer: B**



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**95.** Dry seeds can tolerate higher temperature than the germinating seeds due to the reason

- A. Dry seeds have more reserve food
- B. Hydration makes the enzymes more sensitive to temperature
- C. Seeds are meant for perennation



D. None of the above

**Answer: B**



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**96.** Refrigerated fruits maintain their flavour and taste for longer period due to

A. Non-availability of oxygen

B. The presence of excess of  $CO_2$

C. The presence of excess humidity

D. Slower rate of respiration

**Answer: D**



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**97.** If the net rate of respiration is higher than that of photosynthesis, what will happen to plants?

A. More growth will be there

B. Plant will die due to starvation

C. Continue to grow

D. None of the above

**Answer: B**



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**98.** Which of the following statement is not true regarding PPP?

I. It occurs cytoplasm of both eukaryotes and prokaryotes.

II. This pathway is resistant to cyanide.

III.The net gain of ATP molecules in 38.

IV.It produces pentose sugars to synthesise nucleotides.

A. 1 and 2

B. Only 2

C. Only 3

D. None of above

**Answer: C**



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## B Medical Entrance Special Format Question

1. Which of the following may be used as respiratory substrates? I.Fats II.Proteins III.Carbohydrates associated with carbohydrate synthesis iv.Nucleic acids

A. Only I

B. I,II and III

C. Only II

D. All of these

**Answer: B**



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2. Which of the following statement(s) is/are correct? I.RQ of carbohydrate is one.

II.RQ of protein is more than one

III.RQ of anaerobic respiration is infinity.

IV.RQ of tripalmitin is one.

A. Only I

B. Only II

C. I and III

D. All of these

**Answer: C**



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3. ATP is produced by oxidative phosphorylation and photophosphorylation.

II. Acts as energy Mediator in the cells.

III. Has high energy containing first phosphate bond.

IV. Has low energy containing second and third phosphate bonds

A. I and II

B. I and III

C. Only II

D. Only III

**Answer: A**



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#### 4. During Krebs' cycle.

I. Acetyl Co-A combines with 4 carbon oxaloacetic acid to produce 6 carbon citric acid.

II. In the presence of  $\alpha$ -Ketoglutaric acid dehydrogenase enzyme,  $\alpha$ -Ketoglutaric acid is converted into succinyl Co-A.

III. In the presence of  $Mn^{2+}$  and dehydrogenase, Isocitric acid and after oxidation produces fumarate.

IV. Malic acid undergoes reduction to produce oxaloacetic acid.

A. I,II and III

B. II and IV

C. Only I

D. I And III

**Answer: B**



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5. Which of the following statement(s) is/are not correct?

I.Compensation point is the state,when

photosynthesis and respiration exactly balance each other.

II. The respiration that inhibits in the presence of cyanide is called cyanide resistant respiration.

III. The high rate of respiration during fruit ripening is called respiration climacteric.

IV. Pentose phosphate pathway is an alternate method of anaerobic respiration.

A. Only II

B. II and III

C. Only IV

D. II and IV

**Answer: D**



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**6. Assertion** ATP is the energy carrier of cell,

**Reason** AMP is a nucleotide

A. Both assertion and reason are true and reason is the correction explanation for the assertion

B. Both assertion and reason are true and reason is not the correct explanation for the assertion

C. Assertion is true and reason is false

D. Assertion is false and reason is false

**Answer: B**



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7. Assertion To make ATP from ADP and inorganic phosphate it requires 30.6KJ



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8. Assertion Carbohydrates are the biomolecules to be used by most cells.  
Reason Oil is never used in respiration.



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**9.** Assertion glycolysis occurs in the matrix of mitochondria

reason krebs' cycle occurs on the cristae of mitochondria.



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**10.** Assertion Two turns of krebs' cycle occurs per glucose molecules used.

reason Each turn of krebs' cycle produces  $3\text{NADH}$ ,  $1\text{FADH}_2$  and  $1\text{ATP}$  molecules.





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**11.** Assertion: Cytochrome oxidase enzyme contains copper.

Cyanide combines with copper of cytochrome oxidase and prevents oxygen combining with it



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**12.** Assertion yeast cells perform alcoholic fermentation.



Reason Fermentation is an process.

A. Both assertion and reason are true and reason is correct statement for the assertion

B. Both assertion and reason are true and assertion is not correct option for this assertion.

C. Assertion is true and reason is false

D. Assertion is false and reason is false

**Answer: C**



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## C Medical Entrances Gallery Collection Of Question Asked In Neet Various Medical Entrance Exams

1. 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 released

from electrons removed during

substrate oxidation

**Answer: A**



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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 biphosphate

C. Pyruvic acid

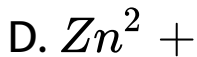
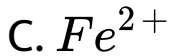
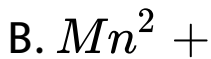
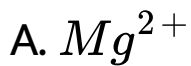
D. Acetyl Co-A

**Answer: D**



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**3.** During anaerobic respiration the conversion of pyruvate into acetaldehyde, along with co-enzyme TPP, the cofactor required is



**Answer: A**



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**4.** Which process does the following equation represent



- A. Complete glycolysis
- B. Complete aerobic respiration
- C. Complete anaerobic respiration
- D. Complete fermentation

**Answer: A**



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5. How much of the energy released during aerobic respiration is approximately conserved in the form of ATP

A. 0.2

B. 0.4

C.

D. 0.6

**Answer: B**



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6. Cytochromes are found in

A. Matrix of mitochondria

B. outer wall of mitochondria

C. Cristate of mitochondria

D. Lysosomes

**Answer: C**



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7. Given below are some reactions and the enzymes involved. Identify the correct pairs.

I		II	
1.	Fructose 1,6 diphosphate → 3 PGAL + DHAP	A.	Enolase
2.	Citrate → Cis - aconitate	B.	Thiokinase
3.	Succinyl Co. A → Succinate	C.	Aconitase
4.	2 PGA → PEPA	D.	Aldolase

A. *A B C D*  
4 3 2 1

B. *A B C D*  
1 2 3 4

C. *A B C D*  
2 1 4 3

D. *A B C D*  
3 4 1 2

**Answer: A**



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8. When protein is aerobically oxidised, the R.Q. value will be

A. One

B. Zero

C. More than one

D. Less than one

**Answer: D**



9. Which of the following is the only 5-carbon compound formed during Krebs cycle

- A. Malic acid
- B. Succine acid
- C. Cis-aconitic acid
- D.  $\alpha$ -ketoglutaric acid

**Answer: D**



10. Which one has the lowest respiratory quotient

A. glucose

B. Tripalmitin

C. Oxalic acid

D. Malic acid

**Answer: B**



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11. Which one is the first compound which is common for both glucose and fructose in glycolysis

- A. Fructose 6-P
- B. Glucose 6-P
- C. Fructose-1,6 biphosphate
- D. Fructose-1-P

**Answer: A**



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12. Which molecule links glycolysis with fermentation as well as TCA cycle

A. Ethanol

B. Acetaldehyde

C. PEP

D. Pyruvic acid

**Answer: D**



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13. In which one of following reactions of glycolysis, oxidation takes place

A. Glucose-6-P to fructose-6-P

B. Fructose-6-P to fructose-1,6-biphosphate

C. 1,3-biphosphoglyverate to 3-  
Phosphoglyceric acid

D. 3-phosphoglyceraldehyde to 1,3-  
biphosphoglycerate

**Answer: D**



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14. FAD is electron acceptor in citric acid cycle during the oxidation of

- A. Malic acid to oxaloacetic acid
- B. Succine acid to fumaric acid
- C. Citric acid  $\alpha$ -Ketoglutaric acid
- D.  $\alpha$ -Ketoglutaric acid to succine acid

**Answer: B**



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15. Choose the correct statement.

A. Oxygen is vital in respiration for removal of hydrogen

B. pyruvate is formed in then mitochondrial matrix

C. There is complete breakdown of glucose in fermentation

D. During the conversion of succinyl Co-A to succinic acid a molecule of ATP is

synthesised

**Answer: D**



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**16.** Conversion of pyruvic acid into ethyl alcohol is facilitated by enzyme(s)

- A. Carboxylase
- B. Phosphatase
- C. Dehydrogenase

D. Decarboxylase and dehydrogenase

**Answer: D**



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**17. During respiration.....**

A. 2PFAL are evolved during glycolysis and

none in krebs' cycle

B. 2PGAL are envolved during glycolysis and

two pyruvic acid in krebs'cycle

C. 2PGAL are involved during glycolysis and

4 pyruvic acid in krebs' cycle

D. PGAL is not produced during respiratory

events

**Answer: A**



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**18.** Which of the two statements together support that respiratory pathway is an amphibolic pathway ,

(i) Fats breakdown to glycerol and fatty acids, subsequently yields acetyl CoA

(ii) In respiration C-C bonds of complex compounds breakdown through oxidation leading to release of energy

(iii) Acetyl CoA from respiratory pathway is withdrawn for synthesis of fatty acids

(iv) Proteins are degraded by protease to amino acids and enter the respiratory pathway

A. I and II

B. I and IV

C. II and IV

D. I and III

**Answer: D**



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**19.** Choose the correct sequence of electron pathway in ETS

A. cyt oxidase → cyt reductase →

Succinate dehydrognase → NAD

dehydrogenase

B. NADH                      dehydrogenase → Succine

dehydrogenase → cyt-c    reductase →

cyt-c oxidase

C. NADH                      Dehydrogenase → cyt-c

reductase → cyt-c oxidase →  $O_2$

D. Succinic dehydrogenase → cyt oxidase

→ cyt reductase →  $O_2$

**Answer: C**



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20. In which one of the following process  $CO_2$  is not released ?

A. Aerobic respiration in plants

B. Aerobic respiration in animals

C. Alcoholic fermentation

D. Lactase fermentation

**Answer: D**



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21. How many NAD molecules get reduced in complete oxidation of one glucose molecule

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

B. Five

C. Ten

D. Twelve

**Answer: C**



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22. Acetylation of pyruvate takes place in the

A. Perimitochondrial space

B. Mitochondrial matrix

C. Cristate

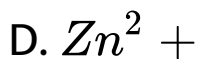
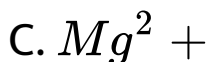
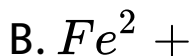
D.  $F_1 - F_0$  particles

**Answer: A**



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23. Enzyme enolase catalyses the conversion of 2-PGA to phosphoenol pyruvic acid in the presence of cofactor



**Answer: C**



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24. In which of the following steps of citric acid cycle,  $CO_2$  is evolved

I. Citric acid  $\rightarrow$   $\alpha$ -ketoglutaric acid.

II. Succinic acid  $\rightarrow$  malic acid III. Malic acid

$\rightarrow$  oxaloacetic acid IV.  $\alpha$ -Ketoglutaric acid

$\rightarrow$  succinyl CoA

A. I and II

B. I and IV

C. II and III

D. II and IV

**Answer: B**



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**25.** Oxidative decarboxylation of pyruvic acid results in the formation of

I. Acetyl CoA , II.  $CO_2$

III. ATP , IV.  $NADH + H^+$

A. Only I

B. Both I and II

C. I,II and III

D. I,II and IV

**Answer: D**



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**26.** Select the correct order of reactions in glycolysis

(a) 3-Phosphoglyceraldehyde  $\rightarrow$  1, 3-bisphosphoglycerate

(b) 3-phosphoglycerate  $\rightarrow$  2-phosphoglycerate

(c) BPGA  $\rightarrow$  3-phosphoglyceric acid

(d) Splitting of fructose-1, 6 bisphosphate to dihydroxy acetone phosphate and 3-phosphoglyceraldehyde

A. IV,III,I,II

B. II,III,I,IV

C. IV,II,II,III

D. I,IV,III,II

**Answer: D**



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27. Respiratory quotient of glucose is

A. 0.5

B. 0.7

C. 1

D. 1.5

**Answer: C**



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28. How many ATP are produced when 1 molecule of  $FADH_2$  is oxidised to FAD through electron transport System?

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

B. Three

C. One

D. Four

**Answer: A**





29. When respiratory quotient is less than 1.0 in a respiratory metabolism, it means that

A. Carbohydrates are used as respiratory substrate

B. Volume of carbon dioxide evolved is less than volume of oxygen consumed

C. Volume of carbon dioxide evolved is more than volume of oxygen consumed

D.

**Answer: B**



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**30.** A small protein attached to the outer surface of the inner membrane and which acts as a mobile carrier for transfer of electron between complex III and IV



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31. During glycolysis, fructose 1, 6-biphosphate is split into

A. Dihydroxyacetone phosphate and 2-phosphogly-eraldehyde

B. Dihydroxycentone phosphate and 1-phosphogly ceraldehyde

C. Dihydroxyacetone phosphate and 2-phosphoglycerate

D. Dihydroxyacetone phophate and 3-phosphogly ceraldehyde

**Answer: D**



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

A. Lactic acid fermentation, alcoholic

fermentation, aerobic respiration

B. Oxaloacetic acid fermentation, lactic acid

fermentation, aerobic fermentation

C. Alcoholic fermentation, oxaloacetic acid fermentation, citric acid fermentation

D. Citric acid fermentation, lactic acid fermentation, alcoholic fermentation

**Answer: A**



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**33.** 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**



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**34.** Which one of the following reactions is an example of oxidative decarboxylation?

A. Conversion of succinate to fumarate

B. Conversion of fumarate to malate

C. Conversion of pyruvate to acetyl Co-A

D. Conversion of citrate to isocitrate

**Answer: C**



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35. Oxygen content reduction makes the glycolyse (glycogenesis) intensity increased due to

A. Increase of ADP concentration in cell

B. Increase of  $NAD^+$  concentration cells

C. Increase of ATP concentration in cell

D. Increase of concentration of peroxides  
and free radicals

**Answer: D**



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**36.** The process by which ATP is produced in the inner membrane of a mitochondrion. The electron transport system transfers protons from the inner compartment to the outer, as the protons flow back to the inner compartment, the energy of their movement is used to add phosphate to ADP, forming ATP.

A. Chemiosmosis

B. Phosphorylation of hexose

C. Glycolysis

## D. Fermentation

**Answer: A**



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**37. Biological oxidation in Kreb's cycle involves**

A.  $O_2$

B.  $CO_2$

C.  $O_3$

D.  $NO_3$

**Answer: A**



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**38.** In which one of following reactions of glycolysis, oxidation takes place

A. Glucose -6- $PO_4$  to fructose-6- $PO_4$

B. Glyceraldehyde-3-Phosphate to 1,3-bisphosphoglycerate

C. 1,3-Diphosphoglycerate to 3-phosphoglycerate

D. 2-Phosphoglycerate to phosphoglycerate

**Answer: B**



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**39.** The pyruvic acid formed in Glycolysis is oxidised to  $CO_2$  and  $H_2O$  in a cycle called

A. Calvin cycle

B. Nitrogen cycle

C. Hill reaction

D. Krebs' cycle

**Answer: D**



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**40.** Krebs cycle takes place in

A. Cytoplasm

B. Chloroplast

C. Nucleus

D. Mitochondria

**Answer: D**



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**41.** FAD acts as an e-acceptor in between

A. Fumaric and malic acid

B. Succinic and fumaric acid

C. Malic and oxaloacetic acid

D. Citric and isocitric acid

**Answer: B**



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**42.** The energy content in Kcal/g of carbohydrate : protein : triglycerol respectively is approximately in the ratio of

A. 1 : 1 : 2

B. 1 : 2 : 1



C. 2: 1: 1

D. 2: 2: 1

**Answer: A**



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**43.** Anaerobic respiration is also called as

A.  $\beta$ -oxidation

B. Fermentation

C. Oxidation of Co-A

D. None of these

**Answer: B**



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**44.** The number of ATP produced when a molecule of glucose undergoes fermentation.

A. 4

B. 36

C. 12

D. 38

**Answer: C**



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## **45. 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**



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**46.** In krebs' cycle,GTP is formed in

- A. Oxidative phosphorylation
- B. Substrate level phosphorylation
- C. Photophosphorylation

## D. Decarboxylation

**Answer: B**



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**47.** Common enzyme in glycolysis and pentose phosphate pathway is

A. Hexokinase

B. Aconitase

C. Fumarase

D. Dehydrogenase

**Answer: A**



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**48.** Link enzyme in cellular respiration is

- A. Citrate synthetase
- B. Pyruvate dehydrogenase
- C. Isocitrate dehydrogenase
- D. Succinyl thikinase

**Answer: B**



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**49.** Chemiosmotic hypothesis give by Peter Mitchell proposes the mechanism of

A. NADH

B. ATP

C.  $FADH_2$

D. NADPH

**Answer: B**



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**50. Select the wrong statement**

- A. When tripalmitin is used as a substrate in respiration, The RQ is 0.7
- B. The intermediate compound which links glycolysis with krebs' cycle malic acid



C. One glucose molecule yields a net gain  
36 ATP molecules during aerobic  
respiration

D. One glucose molecule yields a net gain  
of 2 ATP molecules during fermentation

**Answer: B**



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51. Which of these steps in Krebs's cycle indicates substrate level phosphorylation

- A. Conversion of succinyl acid to  $\alpha$ -keoglutaric acid
- B. Conversion of succinic acid to malic acid
- C. Conversion of succinyl Co-A to succine acid
- D. Conversion of malic acid to oxaloacetic acid

**Answer: C**



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**52.** In the electron transport system present in the inner mitochondrial membrane complexes I and IV are respectively

- A. NADH dehydrogenase and  $FADH_2$
- B.  $NADH_2$  and NADH dehydrogenase
- C. NADH dehydrogenase and cytochrome-c oxidase complex

D. NADH dehydrogenase and ATP stnthase

**Answer: C**



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**53.** The enzyme for TCA cycle are present in

A. Plastids

B. Golgi complex

C. Mitochondia

D. Endoplasmic reticulum

**Answer: C**



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**54.** Acetyl Co-A binds to oxaloacetic acid to form

A. Formaldehyde

B. Citrate

C. Acetate

D. Isocitrate

**Answer: B**



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**55.** When tripalmitin is used as a substrate in respiration the RQ is

A. 1

B. 0.7

C. 0.9

D. infinity

**Answer: B**



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**56. Which one is true for ATP**

- A. ATP is prosthetic part of an enzyme
- B. ATP is an enzyme
- C. ATP is ofganic ion of enzyme
- D. ATP is a coenzyme

**Answer: D**



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57. Net/direct gain of ATP molecules formed in glycolysis is

A. 3

B. 6

C. 8

D. 2

**Answer: D**





58. Aerobic respiratory pathway is appropriately termed

- A. Catabolic
- B. Parabolic
- C. Amphibolic
- D. Anabolic

**Answer: C**



**59.** A scientist added a chemical (cyanide) to an animal cell to stop aerobic respiration. Which of the following is most likely to have been affected by this treatment?

A. Active transport of substances across the plasma membrane

B. Passive transport of substances across the plasma membrane

C. Diffusion of substances across the plasma membrane

D. The thickness of the plasma membrane

**Answer: A**



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**60.** What is the correct order of the stage of cellular respiration?

- A. Krebs' cycle-Electron transport chain-  
Glycolysis
- B. Electron transport chain-krebs' cycle-  
glycolysis
- C. Glycolysis-krebs'cycle-Electron transport  
chain
- D. Glycolysis-Electron transport chain-krebs'  
cycle

**Answer: C**



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

- A. Krebs' cycle
- B. Glycolysis
- C. Glycogenolysis
- D. ETS

**Answer: B**



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62. In mitochondria, enzyme cytochrome oxidase is present in

- A. Outer membrane
- B. Perimitochondrial space
- C. Inner membrane
- D. Matrix

**Answer: C**



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**63.** The respiratory quotient during cellular respiration would depend on

- A. Nature of enzyme involved
- B. Nature of the substrate
- C. Amount of carbon dioxide
- D. Amount of oxygen utilised

**Answer: B**



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**64.** Oxidative phosphorylation refers to

- A. Anaerobic production of ATP
- B. The citric acid cycle production of ATP
- C. Production of ATP by chemiosmosis
- D. Alcoholic fermentation

**Answer: C**



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**65.** In hurdle race, which of the following is accumulated in the leg muscle

A. Performed ATP

B. Glycolysis

C. Lactate

D. Oxidative metabolism

**Answer: C**



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**66.** The connecting link between glycolysis and Krebs cycle is

- A. Pyruvic acid
- B. Isocitric acid
- C. Acetyl Co-A
- D. Phosphoglyceric acid

**Answer: C**



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67. In aerobic respiration, citric acid cycle takes place in

A. Cytosol

B. Mitochondria

C. Peroxisome

D. Endoplasmic reticulum

**Answer: B**



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68. How many PGAL are produced by glycolysis of three molecules of glucose ? How many ATP are released by respiration of these PGAL till formation of  $CO_2$  and  $H_2O$

A. 4 PGAL\_80 ATP

B.

C. 6 PGAL-160ATP

D. 4PGAL-40 ATP

**Answer: D**



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69. Which of the following ,reduction of NAD does not occur?

A. Isocitric acid  $\rightarrow$   $\alpha$ -ketoglutaric acid

B. Malic acid  $\rightarrow$  Oxaloacetic acid

C. Pyruvic acid  $\rightarrow$  Acetyl coenzyme

D. Succinic acid  $\rightarrow$  Fumaric acid  $\rightarrow$  Malic acid

**Answer: D**



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70. The R.Q. value of oxalic acid is

A. 1.0

B. 0.7

C. 4

D. Infinity

**Answer: C**



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71. the haeme - protein complexes which act as oxidising agents are known as

A. Haemoglobin

B. Myoglobin

C. Chlorophyll

D. Cytochrome

**Answer: D**



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72. Which one of the following is complex V of the ETS of inner mitochondrial membrane

- A. NADH dehydrogenase
- B. Cytochrome oxidase
- C. Succinate dehydrogenase
- D. ATP synthase

**Answer: D**



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73. Which of the following respiratory substances requires the highest number of  $O_2$  molecules for its complete oxidation.

A. Tripalmitin

B. Triolein

C. Tartaric acid

D. Oleic acid

**Answer: B**



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74. for respiratory enzymes are given below.  
Arrange them in increasing order of the carbon number of the substrates on which they act

Enolase (ii) Aconitase

(iii) fumarase (iv) Alcohol dehydrogenase

A. II,IV,III,I

B. IV,I,II,III

C. I,IV,III,II

D. IV,I,III,II

**Answer: D**



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**75.** How many ATP molecules are obtained from fermentation of 1 molecule of glucose

A. 2

B. 4

C. 3

D. 5

**Answer: A**



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**76.** net yield of aerobic respiration during  
krabs cycle per glucose molecule is

- A. 2ATP molecules
- B. 8 ATP molecules
- C. 36 ATP molecules
- D. 38 ATP molecules

**Answer: A**



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**77.** Which of the following substances yield less than 4 Kcal/mol when its phosphate bond is hydrolysed

- A. Creatine phosphate
- B.  $\text{ADP} \rightarrow \text{ATP}$
- C. Glucose-6-phosphate
- D. ATP

**Answer: C**



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**78.** Which one is product of aerobic respiration?

A. Malic acid

B. Ethyl alcoholic

C. Lactic acid

D. Pyruvic acid

**Answer: A**



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**79.** FAD is electron acceptor during oxidation of

A.  $\alpha$ -ketoglutarate  $\rightarrow$  Succinyl Co-A

B. Succinic acid  $\rightarrow$  Fumaric acid

C. Succinyl Co-A  $\rightarrow$  Succinic acid

D. Fumaric acid  $\rightarrow$  malic acid

**Answer: B**



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**80.** The cellular respiration first takes place in the

A. Cytoplasm

B. Golgi bodies

C. Endoplasmic reticulum

D. Lysosomes



**Answer: A**



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**81.** Which one of the following substrates is used in the formation of alcoholic?

A. Sucrose

B. Glucose

C. Galactose

D. Fructose

**Answer: B**



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

A. 12

B. 18

C. 36

D. 30

**Answer: C**



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**83.** Cytochrome oxidase is a/an

- A. Exoenzyme
- B. Endoenzyme
- C. Proenzyme
- D. Coenzyme

**Answer: B**



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**84.** Cell respiration is carried out by

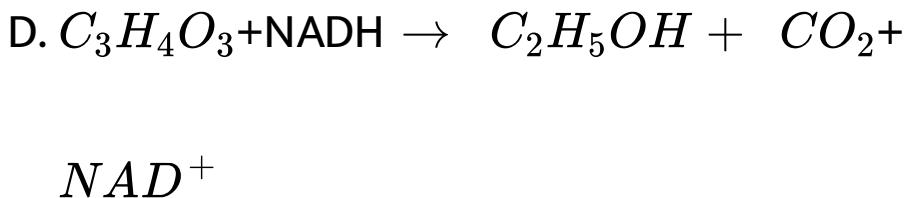
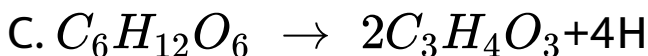
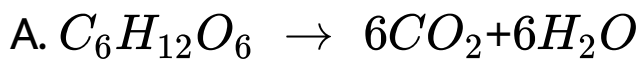
- A. Ribosome
- B. Mitoenzyme
- C. Proenzyme
- D. Coenzyme

**Answer: B**



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85. Glycolysis is



Answer: C



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**86.** Most of the biological energy is supplied by mitochondria through

- A. Breaking of proteins
- B. Reduction of  $NADP^+$
- C. Breaking of sugars
- D. Oxidising TCA substrates

**Answer: C**



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87. Oxidation of pyruvate to  $CO_2$  and  $H_2O$  occurs through

- A. Citric acid cycle
- B. Tricarboxylic acid
- C. Krebs' Cycle
- D. All o those

**Answer: D**



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**88.** In succulent plants like opuntia, the RQ value will be

A. Less than one

B. zero

C. more than one

D. infinity

**Answer: D**



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**89.** If RQ is less than 1.0 in a respiratory metabolism, it would mean that

A. Carbohydrates are used as respiratory substrate

B. Organic acids are used as respiratory substrate

C. The oxidation of the respiratory substrate consumed more oxygen than the amount of  $CO_2$  is released

D. The oxidation of respiratory Substrate consumed less oxygen than the amount of  $CO_2$  is released

**Answer: C**



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

A. Fructose-6-Phosphate  $\rightarrow$  Fructose-1,6-bisphosphate

B. 3-phosphate glyceraldehyde  $\rightarrow$  1,3-bisphosphoglyceric acid

C. PEP  $\rightarrow$  Pyruvic acid

D. 2-Phosphoglycerate  $\rightarrow$  PEP

**Answer: D**



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91. A competitive inhibitor of succinic dehydrogenase is

A. Malonate

B. Oxaloacetate

C.  $\alpha$ -Ketoglutarate

D. Malate

**Answer: A**



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92. All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membranes in eukaryotes and in cytosol in prokaryotes. This enzyme is

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

**Answer: D**





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**93.** Energy currency of the cell is

A. NAD

B. GDP

C. RNA

D. ATP

**Answer: D**



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**94.** Decarboxylation is involved in

A. Electron transport system

B. glycolysis

C. Krebs' Cycle

D. Lactic acid fermentation

**Answer: C**



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**95.** Lactic acid is formed in

A. Fermentation

B. Glycolysis

C. HMP pathway

D. None of these

**Answer: A**



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96. Which of the following is involved in the catalysis of link reaction during aerobic respiration.

A. Vitamin-A

B. Vitamin-B<sub>1</sub> (1)

C. Vitamin-B<sub>6</sub>

D. Vitamin-K

**Answer: B**



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97. Maximum number of ATP is obtained from

A. Glucose

B. Palmitic acid

C. Malic acid and acetyl Co-A

D.  $\beta$ -amino acid

**Answer: B**



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98. Which one of the following cells do not respire?

A. Epidermal cells

B. Cork cells

C. RBC

D. Sieve tube cells

**Answer: B**



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99. The respiratory Quotient(RQ) of a germinating castor seed is

- A. Equal to one
- B. Greater than one
- C. Less than one
- D. Equal to zero

**Answer: C**



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**100.** Five gram mole of glucose on complete oxidation releases

A. 3430 kcal of energy

B. 343 kcal of energy

C. 2020 kcal of energy

D. 430 kcal of energy

**Answer: A**



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**101.** Hexose monophosphate pathway takes place in

A. ER

B. Cristae

C. Cytoplasm

D. Mitochondrial matrix

**Answer: C**



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102.  $2NADH(H^+)$  produced during anaerobic glycolysis yielded

A. 6 ATP molecules

B. 4 ATP molecules

C. 8 ATP molecules

D. none of these

**Answer: A**



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**103.** RQ value of four may be expected for the complete oxidation of, Which one of the following?

A. Glucose

B. Malic acid

C. Oxalic acid

D. Tartaric acid

**Answer: C**



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**104.** The respiratory Quotient(RQ) of some of the compounds are 4,1 and 0.1.These compounds are identified respectively as

- 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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**105.** Which of the following is produced in oxidative pentose phosphate pathway

A. Pyruvic acid

B. Acetyl Co-A

C.  $NADH_2$

D. NADPH

**Answer: D**



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

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

**Answer: A**



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**107.** 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**



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**108.** Kreb's cycle was discovered by Krebs in pigeon muscles in 1940. Which step is called gateway step. Link reaction/transition reaction in respiration.

A. Glycolysis

B. Formation of acetyl Co-A

C. Citric acid formation

D. ETS terminal oxidation

**Answer: B**



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**109.** The carrier, Which transfers the electrons in electron transport system, is

A. Phytochrome

B. Cytochrome

C. Quantasome

D. Fucoxanthin

**Answer: B**



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**110.** Alcoholic fermentation takes place in the presence of

A. Maltase

B. Zymase

C. Amylase

D. Invertase

**Answer: B**



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