

Topic :- Respiration in Plants

- 1 (c)
The pyruvic acid formed during glycolysis enters to mitochondria where oxidative Decarboxylation takes place and acetyl Co-A is formed. It occurs in presence of NAD⁺, pyruvic acid Dehydrogenase complex and coenzyme-A. $\text{pyruvic acid} + \text{NAD}^+ \rightarrow \text{Acetyl Co-A} + \text{NADH} + \text{H}^+ + \text{CO}_2$
- 3 (a)
Oxidation of one molecule of NADH give rise to 3 molecules of ATP while that of one molecule of FADH₂ produces 2 molecules of ATP
- 4 (a)
Respiration is defined as breaking down of C-C bond of various organic molecules by oxidation process for cellular use
- 5 (b)
If oxygen is not available, pyruvic acid undergoes anaerobic respiration/fermentation, but under aerobic condition, the pyruvic acid enters into mitochondria and converted to **Acetyl Co-A**. Acetyl Co-A functions as substrate entrant for Krebs' cycle so, a connecting link between glycolysis and Krebs' cycle.
Glycolysis is the process of breakdown of glucose (hexose sugar) to two molecules of pyruvic acid through a series of enzyme mediated reactions. It occurs in cytoplasm and is common both to aerobic and anaerobic respiration. Last product is pyruvic acid.
- 6 (b)
The electron acceptors of respiratory chains occur in linear sequences (cyt.-b, c, a, a₃) and their enzymes are components of the inner mitochondrial membrane.
- 7 (c)
In microorganisms, the term anaerobic respiration is replaced by fermentation. The pyruvic acid formed in glycolysis is transformed to ethyl alcohol and release 2 ATP molecules.
- 8 (a)
One of the three carbon atoms of pyruvic acid which is the end product of glycolysis is oxidised to carbon dioxide in a reaction called oxidative decarboxylation. Pyruvate is first decarboxylated and oxidised by the enzyme pyruvate dehydrogenase
- 9 (c)
Saccharomyces shows Pasteur's effect.
- 10 (a)
Fermentation is a type of cellular respiration found in plants and some unicellular microorganism, which does not require oxygen, i.e., **anaerobic respiration**, and that results in

the production of ethanol from glucose and release of small amount of energy.

11 **(c)**

Krebs' cycle is also called as citric acid cycle. Citric acid (Tricarboxylic acid) is the first product of this cycle.

12 **(d)**

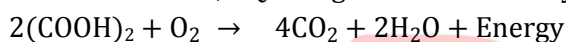
Six carbon dioxide molecules are released by complete oxidation of one glucose molecules. Two carbon dioxide molecules are released during oxidative Decarboxylation reaction and four carbon dioxide molecules are released in Krebs' cycle or tricarboxylic Acid cycle.

13 **(b)**

The respiratory decomposition of fatty acids is known as beta oxidation, which occurs in liver and adipose tissue. First of all, there is activation of fatty acid, then dehydrogenation of activated fatty acid takes place. This is followed by hydration. The β -hydroxyl acyl derivative is converted to β -keto derivative which then reacts with Co-A.

14 **(c)**

Respiratory Quotient (RQ) is the ratio of volume of CO_2 released to the volume of O_2 absorbed during respiration. In case of organic acids (eg., oxalic acid), more CO_2 is released than the O_2 absorbed. Hence, RQ of organic acids is always more than one.



$$\text{RQ} = \frac{4\text{CO}_2}{1\text{O}_2} = 4$$

15 **(c)**

ATP is called as energy currency of cell.

16 **(a)**

Breakdown processes within the living organism is also called catabolism

17 **(b)**

In fermentation, the incomplete oxidation of glucose is achieved under, anaerobic condition by set of reactions, where pyruvic acid is converted into carbon dioxide and ethanol. The enzyme, pyruvic acid decarboxylase and alcohol Dehydrogenase catalyse these reactions.

18 **(a)**

ATP is utilised at two steps – First in the conversion of glucose into glucose – 6 phosphate and second in the conversion of fructose – 6 – phosphate to fructose 1, 6 biphosphate

19 **(a)**

Aerobic respiration takes place within the mitochondria, the final product of glycolysis, pyruvate is transported from the cytoplasm into the mitochondria

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	C	D	A	A	B	B	C	A	C	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	D	B	C	C	A	B	A	A	B

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