Short Answer Questions – I

Q. 1. Write two differences between anaerobic respiration and fermentation.
[KVS Agra 2016]

Ans.

S. No.	Anaerobic Respiration	Fermentation
(i)	It uses oxygen for breaking the respiratory material into simple substances.	Oxygen is not used in the breakdown of respiratory substrate
(ii)	Respiratory material is completely oxidised to CO_2 and H_2O.	Respiratory material incompletely broken.

Q. 2. Anaerobic respiration cannot continue for a long in higher organisms. Why?

**Ans. Anaerobic respiration cannot continue for a long in higher organisms because of:**

(i) low yield of energy,
(ii) decomposition of large amount of substrates so that little is left for growth and repairs,
(iii) toxic effect of end products in higher concentration,
(iv) inhibition of a number of physiological process linked with aerobic respiration.

Q. 3. What is Glycolysis? Where does it occur?

Ans. Glycolysis is also called as EMP (Embden Meyerhof Parnas) pathway. Glycolysis is the process of breakdown of glucose or similar hexose sugar to two molecules of pyruvic acid through a series of enzyme mediated reactions releasing some energy (ATP) and reducing power (NADH). It occurs in cytosol or cytoplasm.
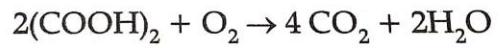
Q. 4. What are the chemical changes that takes place in a pyruvic acid molecule before it enter mitochondria?

Ans. The pyruvic acid is first decarboxylated and 2-C acetate joins coenzyme A to form acetyl Co-A before entering as:

$$\text{Pyruvic acid} + \text{CoA} \xrightarrow[\underset{NAD^+ \quad NADH^+H^+}{}]{Mg^{2+}} \text{Acetyl CoA} + \underset{2}{CO_2 \rightarrow}$$
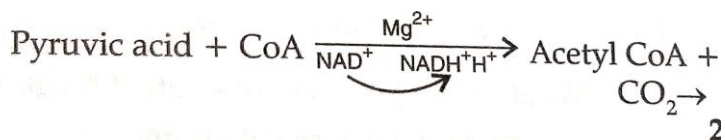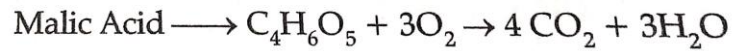
Q. 5. How is RQ slightly more than unity?

Ans. RQ Slightly more than unity is found when organic acids are broken down as respiratory substrates under aerobic conditions, e.g.,

$$2(COOH)_2 + O_2 \rightarrow 4\,CO_2 + 2H_2O$$

$$RQ = \frac{4CO_2}{1O_2} = 4.0$$

$$\text{Malic Acid} \longrightarrow C_4H_6O_5 + 3O_2 \rightarrow 4\,CO_2 + 3H_2O$$

$$R.Q. = \frac{4CO_2}{3O_2} = 1.3$$