

Benha university. Exam(4th year Micro&Chem).

Faculty of science. Time:-1 hour
Botany Department Metabolism ,June2013

Answer the following questions:

Comment on the following:-

- 1 - Biosynsytic intermediates.**
- 2-Stages of catabolism.**
- 3-Nitrate respiration.**
- 4- Oxidative phosphrylation.**
- 5- Light reaction in purple bacteria.**

With best wishes

1 - Biosynsytic intermediates.

- | | | |
|------------------------|-------------------------|---------------------|
| 1- glucose 6 phosphate | 2- fructose 6 phosphate | 3- pyruvic acid |
| 4-Ribose 5 phosphate | 5-Erythrose phosphate | 6-trios 3 phosphate |
| 7-Acety CO-A | 8-Oxaloactic acid | 9- 3Phosphglycerat |
| 10-Succinyl CO-A | 11-Phosphenolpyruvate | 12- Ketoglutarate |

2-Stages of catabolism.

Stage1-Hydrolysis of complex molecules:

The complex molecule are broken dawn into their simple buiding blocks.e.g, protein ara degraded to amino acid, polysaccharides to monosaccharides&lipeds to free fatty acid and glycerol.

Stage2-Conversion of building blocks to simple intermediates:

These diverse building blocks are further degraded to acetyl Co-A andother simple compounds.Some energy is capturedas ATP but small compared to third stage.

Stage3-Oxidation of actyl CO-A:

The citric acid cycle is the final common pathway in the oxidation of fuel molecules ,to give two CO₂and4 pairs of electrons are transferred to coenzymesNADand FAD. large amount of ATP are generated.

3-Nitrate respiration.

Incomplete oxidation.

Give varying amount of ATP(2).

NAD the only intermediate carrier.

The final H₂ acceptor NO₂.

Liberation of energy 30 K.cal.
Glycolysis is the same , but one step further.

4- Oxidative phosphorylation.

The process by which ATP is generated by the transfer of electron from reduced co-enzyme to oxygen.

In the process of electron transfer between cytochromes, more energy is liberated and then stored in ATP. At the end of the electron transport system, the electron are passed to oxygen, which becomes negatively charged. The oxygen then combines with H ions to form water.

5- Light reaction in purple bacteria.

Can not use oxygen gas (anoxygenic).

Not produce oxygen.

Use H₂S as electron donor.

The pigments are bacteriochlorophyll.

NADPH not produce directly.

Lack photosystem II.