

1. What is substrate level phosphorylation (vs. oxidative phosphorylation)?
2. Glycolysis can be separated into 3 phases. What are the three phases of glycolysis and the energy used or produced in each phase?
3. In the Citric Acid cycle the six-carbon compound
(name) _____ is converted into the five-carbon compound
(name) _____. Next tell me if energy is captured in this
step or not and if so in what form _____.
4. What is the energy yield of the complete oxidation of a glucose molecule?
5. Explain the mechanism and the purpose of anaerobic metabolism.
6. What are the trends in the Global temperatures in the last 50 years? What has created this change?
7. What are the rising concerns related to global warming.
8. Glycolysis requires _____ ATP as an energy input, and yields _____ ATP and _____ NADH. More importantly, what's the big deal about generating ATP and NADH?
9. About 35% of the total energy released by glycolysis and respiration is captured. Where happens to the other 65% of the energy? Do you think this is very efficient? Compare this efficiency to gasoline powered internal combustion engine.
10. We discussed the catabolic role of glycolysis and the tca cycle, briefly discuss the two roles these processes play in anabolism.
11. What are the three major reservoirs of CO₂?

12. Beta-oxidation of fatty acids produces an important substrate for the TCA cycle. Name the substrate.

13. How much energy is made in Glycolysis? How much energy is used in Glycolysis? What is the net energy in Glycolysis?

14. After Glycolysis occurring in _____, the _____ Carbon compound named ___ is then converted into a _____ Carbon compound called _____, this process makes NADH per 1 mol pyruvate. This compound then enters the _____ cycle upon entering the _____ where it is eventually converted into _____ which is then removed from the body. The TCA cycle “makes” _____ GTP, _____ NADH, and FADH₂ per 1 mol acetyl CoA.

Three	TCA
Pyruvate	Mitochondria
Two	One
Acetyl CoA	One
One	Three
CO ₂	Cytoplasm

15. Where is NADH and FADH₂ used after the TCA cycle? How many electrons does each one donate in the electron transport chain?

16. Per mol of Glucose one would get 10 NADH, 2 FADH₂, and 4 ATP. Considering that 1 NADH makes 2.5 ATP and 1 FADH₂ makes 1.5 ATP, how many ATP are made per mol Glucose?

17. ΔG for Glucose is -686 Kcal/mol, and the ΔG for ATP is 7.4 Kcal/mol: What is the efficiency of the ATP synthase cycle?

18. What is the Terminal electron acceptor in the electron transport chain?