

Problem Set 27: Metabolism, Krebs Cycle and the Electron Transport Chain

1. Which of the following are exergonic processes overall? Select ALL that apply.
 - a. Photosynthesis
 - b. Anabolism
 - c. Catabolism
 - d. Combustion of fuel
2. What is the fate of acetyl-CoA in complete catabolism?
3. How many carbons from the food source remain in ONE molecule of acetyl-CoA?
4. How many ATP form (theoretical yield) when one mole of FADH_2 is reoxidized during the ETC and oxidative phosphorylation?
5. Is NAD^+ the oxidized or reduced form of the coenzyme nicotinamide adenine dinucleotide?
6. Refer to your answer from #5. Is this form an oxidizing agent or a reducing agent?
7. Refer to the Krebs Cycle (slide 5 of Tutorial 27), and complete a-e below.
 - a. Which step(s) of the Krebs cycle involve an isomerase enzyme?
 - b. Which step(s) of the Krebs cycle involve the oxidation of a substrate?
 - c. In step 3 of the Krebs Cycle, what is the substrate? The product? The enzyme? The coenzyme?
 - d. How many NADH/H^+ and FADH_2 result from ONE turn in the Krebs Cycle?
 - e. Explain why the ATP yield from one turn in the Krebs Cycle is 12 ATP (theoretical yield).