Regulating Respiration Questions

1. **What are the differences between fat & protein metabolism biochemical pathways?**

Fat: glycerol molecules converted to G3P or glucose (gluconeogenesis), fattty acids can become acetyl-CoA via beta oxidation which uses 1 ATP, makes 1 NADH & 1 FADH2 per cleavage of 2 carbons
Proteins: various locations into cellular respiration, mainly Krebs cycle, process of deamination to make molecules that can enter cycles, ammonia wastes produced

2. **Describe how carbohydrates, fats, and proteins can be interconverted from one to another.**

Fats -> glycerol (gluconeogenesis to form glucose) & fatty acids (beta oxidation) to form acetyl-CoA because molecules all contain carbon, hydrogen & oxygen.
Proteins -> demainatiton to remove NH2 leaving mainly C,H,O atoms left which can create carbon based molecules that fit into Krebs

3. **Each molecule of fat can release __C__ of ATP, compared with a molecule of glucose.**
   a. smaller amounts b. the same amount c. larger amounts d. only twice the amount

fats produce 1 NADH & 1 FADH2 for every 2 carbons (5 ATP made in ETC)
ex. 16 carbon fatty acid = 8 x 5 ATP = 40 ATP

4. **Some organisms excrete ammonia directly; others convert ammonia into other nitrogen-containing compounds, such as** A
   a. urea or uric acid. b. carbon dioxide c. sweat. d. fat.

5. **Picture yourself as an atom of hydrogen tied up in a molecule of fat. You are present in the stored fat of a person who is starving.**
   a. **Trace the biochemical pathways you would be part of as you moved through the process of aerobic cellular respiration. Be as specific as you can in describing your location and how you got there, as well as the molecules of which you are a part.**

triglyceride -> fatty acid ->(beta oxidation) -> acetyl-CoA -> Krebs -> NADH or FADH2 -> ETC (NADH dehydrogenase or succinate dehydrogenase)-> matrix -> pumped to intermembrane space -> ATP synthase -> matrix