

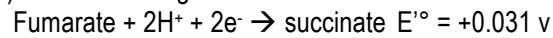
14. Muscle contraction involves the conversion of:

- a. chemical energy to kinetic energy
- b. potential energy to chemical energy
- c. potential energy to kinetic energy
- d. kinetic energy to chemical energy
- e. chemical energy to potential energy

15. Biological oxidation-reduction reactions always involve:

- a. participation of oxygen
- b. formation of water
- c. mitochondria
- d. transfer of hydrogens
- e. transfer of electrons

16. The standard reduction potentials (E'°) for the following half reactions are:



If you mixed succinate, fumarate, FAD, and FADH₂ together, all at 1M concentrations at pH 7.0 and in the presence of succinate dehydrogenase, which of the following will happen initially?

- a. fumarate and succinate would become oxidized and FAD and FADH₂ would become reduced
- b. fumarate would become reduced and FADH₂ would become oxidized
- c. no reaction, all reactants and products are already standardized
- d. succinate would become oxidized; FAD would become reduced
- e. succinate would become reduced, FADH₂ would be unchanged because it is a cofactor

17. The hydrolysis of phosphoenolpyruvate has a $\Delta G'^{\circ}$ of about -62 kJ/mole. The greatest contributing factor to this reaction is:

- a. electrostatic attraction
- b. ionization
- c. polarization
- d. tautomerization
- e. dynamite

18. The reverse reaction of phosphoglucisomerase has a K'_{eq} of 1.97.

a. What is the $\Delta G'^{\circ}$ for the reverse reaction, use 2.5 kJ/mol for RT.

b. If the cellular concentration of the substrate of this reverse reaction is 1.2 mM and the product 0.6 mM, what is the ΔG of the reverse reaction.
