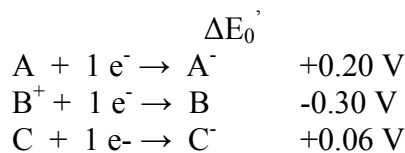


- For the reaction $A \leftrightarrow B$, if $[B]$ is 0.1M and $K_{eq} = 0.1$, the concentration of A at equilibrium will be
 - 1 M
 - 0.1 M
 - 0.01 M
 - 10 M
 - 100 M
- Which of the following compounds does not contain a phosphoryl group with high phosphoryl transfer potential?
 - Phosphoenol pyruvate
 - 1,3 bisphosphoglycerate
 - Glyceraldehyde-3-phosphate
 - GTP
 - ATP
- Under which of the following conditions is the pyruvate dehydrogenase complex most likely to be fully catalytically active
 - Low ATP, high acetyl CoA, high NADH
 - Low ATP, low acetyl CoA, high NADH
 - High ATP, low acetyl CoA, low NADH
 - High ATP, high acetyl CoA, high NADH
 - Low ATP, low acetyl CoA, low NADH
- ΔG for the movement of an ion across a cell membrane is composed of a concentration term ΔG_c and an electrical term ΔG_m . For the movement of K^+ ions into cells
 - ΔG_c is negative and ΔG_m is positive
 - ΔG_c is positive and ΔG_m is negative
 - Both ΔG_c and ΔG_m are positive
 - Both ΔG_c and ΔG_m are negative
 - None of the above
- You have discovered an organism with an uncharacterized electron transfer chain. You are able to determine the standard reduction potentials for three of the electron carriers in this chain, A, B and C. These values are



On the basis of this information, what is the most likely sequence in which electrons pass through these three carriers?

- $A \rightarrow B \rightarrow C$
- $C \rightarrow B \rightarrow A$
- $C \rightarrow A \rightarrow B$
- $B \rightarrow C \rightarrow A$
- $A \rightarrow C \rightarrow B$

6. How many protons are translocated across the inner mitochondrial during the reaction $\text{succinate} + \frac{1}{2} \text{O}_2 \rightarrow \text{fumarate} + \text{H}_2\text{O}$
1. 2
 2. 4
 3. 6
 4. 8
 5. 10
7. How many NAD^+ molecules are reduced to NADH for each acetyl CoA that is oxidized to $2 \text{CO}_2 + \text{CoA}$ by the tricarboxylic acid (TCA) cycle:
1. one
 2. two
 3. three
 4. four
 5. six
8. Which of the following enzymes does not catalyze a step in the pathway for glycolysis?
1. Pyruvate carboxylase
 2. Phosphofructokinase
 3. Pyruvate kinase
 4. Hexokinase
 5. Glyceraldehyde-3-phosphate dehydrogenase
9. Conformational changes in the beta subunits of the mitochondrial ATP synthase are thought to result from:
1. conformational changes in the associated alpha subunits
 2. movement of protons through the b subunits of F_o
 3. rotation of the associated gamma subunit of the ATP synthase
 4. electron transfer from cytochrome c to cytochrome b
 5. the binding of AMP to F_o
10. Photophosphorylation is a term that refers to:
1. synthesis of ATP in the mitochondria during photosynthesis
 2. the phosphorylation of intermediates in the Calvin cycle pathway for CO_2 fixation
 3. synthesis of ATP by chloroplast ATP synthase during photosynthesis
 4. cyclic electron flow
 5. the dark reactions of photosynthesis
11. Which of the following reactions occurs only as part of the gluconeogenesis pathway:
1. Fructose-6-Phosphate + ATP \rightarrow Fructose-1,6-bisphosphate + ADP
 2. Phosphoenol pyruvate + ADP \rightarrow Pyruvate + ATP
 3. Glyceraldehyde-3-phosphate + phosphate + NAD^+ \rightarrow 1,3-bisphosphoglycerate + NADH
 4. Fructose 1,6 bisphosphate \rightarrow Fructose-6-phosphate + phosphate
 5. Glucose + ATP \rightarrow Glucose-6-phosphate

12. If $\Delta G_0'$ for the reaction $C \leftrightarrow A + B$ is 1.36 kcal/mol, what is $\Delta G_0'$ for the reaction $A + B \leftrightarrow C$?
1. 1.36 kcal/mol
 2. -1.36 kcal/mol
 3. 2.72 kcal/mol
 4. -2.72 kcal/mol
 5. cannot be determined from the information given
13. At an early step in oxidation of fatty acids in the peroxisome, FAD is reduced to FADH₂. The FAD is regenerated through:
1. the direct transfer of electrons from FADH₂ to coenzyme Q
 2. the direct transfer of electrons from FADH₂ to NAD⁺
 3. the direct oxidation of FADH₂ by molecular oxygen
 4. the transfer of electrons from FADH₂ to water to form hydrogen peroxide in the peroxisome
 5. the transport of FADH₂ out of the peroxisome to the mitochondrion
14. Which of the following is not associated with photosystem II
1. oxidation of water
 2. charge separation in P680
 3. absorption of light by chlorophyll a
 4. reduction of ferredoxin
 5. reduction of plastoquinone
15. Pyruvate will be converted to lactate when
1. cells are deprived of oxygen
 2. the tricarboxylic acid cycle is blocked (completely inhibited)
 3. the electron transfer chain is blocked
 4. pyruvate dehydrogenase is blocked
 5. all of the above