8. List the 5 major features of signal transducing systems. (Hint: your answer must be a DESCRIPTIVE LIST **without explanations**)

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PRACTICE: BIOENERGETICS

9. If K_{eq} is greater than 1, and $\Delta G'°$ is negative for a particular reaction done at standard conditions, in which direction will the reaction proceed?

a. the reaction will not proceed at all
b. the reaction will proceed forward
c. the reaction will proceed in reverse if it occurs at low temperature
d. the reaction will proceed in reverse
e. the reaction is at equilibrium

10. Which of the following is not correct?

a. Acid anhydride ΔG = -30 to -40 kJ/mol
b. Esters ΔG = -13 to -20 kJ/mol
c. Amides and peptides ΔG = -10 to -14 kJ/mol
d. Glucose when oxidized ΔG = -2,840 kJ/mol
e. Phosphocreatine ΔG = -10 kJ/mol

11. $\Delta G'°$ on the reaction, studentose → producate is -35 kJ/mole. This means under standard conditions the reaction:

a. is at equilibrium
b. will never react equilibrium
c. will not occur spontaneously
d. will proceed at a rapid rate
e. will proceed spontaneously from studentose to producate

12. Which of the following has the largest negative value for $\Delta G'°$ of hydrolysis?

a. phosphate ester
b. amide
c. glycoside
d. acid anhydride
e. aldol condensation

13. Consider the malate dehydrogenase reaction, $\Delta G'°$ = +29.7 kJ/mole:

$$\text{L-malate} + NAD^+ \rightarrow \text{oxaloacetate} + NADH + H^+$$

This reaction as written:

a. can never occur in a cell
b. can occur in a cell if it is coupled to a positive $\Delta G'°$ reaction
c. can not occur at all because of its activation energy
d. does not even occur in Biochem texts
e. may occur in cells at some concentrations of substrates and products