

KEY

10. Given the reaction:
- $A + B \rightleftharpoons C + D$

When 1.0 mole of A is combined with 1.0 mole of B, an equilibrium is established in which $[A] = 0.2 \text{ M}$, $[B] = 0.2 \text{ M}$, $[C] = 0.8 \text{ M}$ and $[D] = 0.8 \text{ M}$ \rightarrow equil^m approached from left

If, at the same temperature, 1.0 mole of C and 1.0 mole of D is combined. When equilibrium is established, determine what the following concentrations will be:

$[A] = 0.2 \text{ M}$, $[B] = 0.2 \text{ M}$, $[C] = 0.8 \text{ M}$ and $[D] = 0.8 \text{ M}$ \rightarrow equil^m approaches from right

11. Given sufficient activation energy, a system
- not at equilibrium*
- will eventually move toward

equilibrium

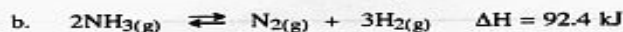
12. Systems will tend toward a position of
- minimum (low)
- enthalpy.

13. Systems will tend toward a position of
- maximum (high)
- entropy.

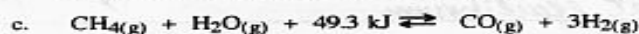
14. Tell whether each of the following is
- endothermic*
- or
- exothermic*
- and state which has
- minimum enthalpy*
- , the
- reactants*
- or the
- products*
- :



exo thermic and the products have *minimum enthalpy*.



endo thermic and the reactants have *minimum enthalpy*.



endo thermic and the reactants have *minimum enthalpy*.

15. If the reaction:
- $\text{Cl}_2(\text{aq}) \rightleftharpoons \text{Cl}_2(\text{g}) \quad \Delta H = +25 \text{ kJ}$
- (
- endo
-)

was proceeding to the right, the enthalpy would be increas ing. Is this a favourable change? no.

16. If the reaction:
- $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) + 92.4 \text{ kJ}$
- (
- exo
-)

was proceeding to the right, the enthalpy would be decreas ing. Is this a favourable change? yes.

17. For each of the following, decide whether the
- reactants*
- or the
- products*
- have
- greater entropy*
- :



(gas is formed)