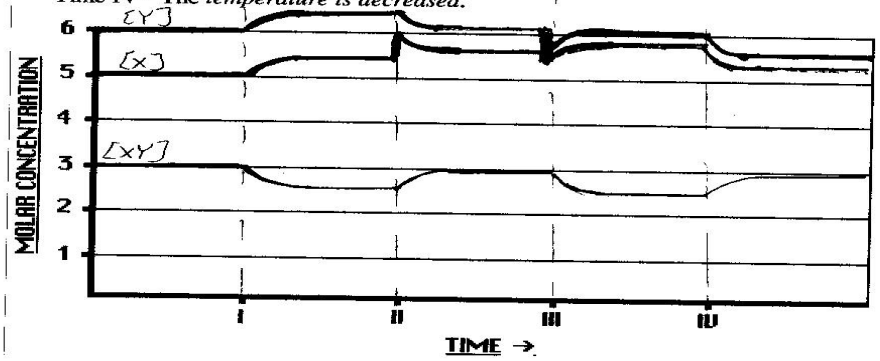
KEY

17. Given the equilibrium equation:

$$XY_{(g)} + heat \rightleftarrows X_{(g)} + Y_{(g)}$$

If initially, at equilibrium, the [XY] = 3.0 M, the [X] = 5.0 M and the [Y] = 6.0 M, draw a graph *similar to the one in question 16* showing qualitatively what happens to the concentrations of each species as the following changes are made to the system:

Time I - The *temperature is increased.*
Time II - Some $X_{(g)}$ is *added* to the system
Time III - Some $Y_{(g)}$ is *removed* from the system
Time IV - The *temperature is decreased.*



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18. For each of the following reactions, predict whether the ***entropy*** increases or decreases.

a) $2H_{2(g)} + O_{2(g)} \rightleftarrows 2H_2O_{(g)}$ ..... Answer decrease

b) $2SO_{3(g)} \rightleftarrows 2SO_{2(g)} + O_{2(g)}$ ..... Answer increase

c) $MgCO_{3(s)} + 2H_3O^+_{(aq)} \rightleftarrows Mg^{2+}_{(aq)} + 3H_2O_{(l)} + CO_{2(g)}$

Answer increase

d) $Ag^+_{(aq)} + Cl^-_{(aq)} \rightleftarrows AgCl_{(s)}$ ..... Answer decrease

e) $2C_2H_{2(g)} + 5O_{2(g)} \rightleftarrows 4CO_{2(g)} + 2H_2O_{(g)}$ ..... Answer decrease

f) $NH_{3(g)} + HCl_{(g)} \rightleftarrows NH_4Cl_{(s)}$ ..... Answer decrease

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