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1. Reaksiya uchun $\Delta H = -80.0\ kJ \cdot mol^{-1}$, $\Delta S = +50.0\ J \cdot mol^{-1} \cdot K^{-1}$, $T = 298\ K$. ΔG ni hisoblang va reaksiyaning o‘z-o‘zidan borishini belgilang.

2. $\Delta H = +25.0\ kJ \cdot mol^{-1}$, $\Delta S = +100.0\ J \cdot mol^{-1} \cdot K^{-1}$. Qaysi T da $\Delta G = 0$ bo‘ladi? (O‘tish temperaturasi)

3. Standart sharoitda ($T = 298\ K$) $\Delta G^\circ = -45.0\ kJ \cdot mol^{-1}$ berilgan. Muvozanat doimiysi K ni toping.

4. $K = 2.00 \cdot 10^3$ ($T = 298\ K$) berilgan. ΔG° ni $J \cdot mol^{-1}$ va $kJ \cdot mol^{-1}$ da hisoblang.

5. $\Delta H^\circ = +60.0\ kJ \cdot mol^{-1}$ (taxminan T ga bog‘lanmaydi). Birinchi holatda $K_1 = 10.0$ da $T_1 = 300\ K$. Van’t Hoff tenglamasidan foydalanib, $T_2 = 350\ K$ da K_2 ni toping.

6. Ideal aralashmada 2 mol A va 1 mol B (jami 3 mol) 298 K da aralashtiriladi. Ideal aralashma uchun aralashish erkin energiyasi ΔG_mix ni $J \cdot mol^{-1}$ hisobida toping.

7. $\Delta H = -20.0\ kJ \cdot mol^{-1}$, $\Delta S = -10.0\ J \cdot mol^{-1} \cdot K^{-1}$, $T = 298\ K$. ΔG ni hisoblang va reaksiyaning espontan ekanligini aniqlang.

8. Reaksiya $A \rightleftarrows B$. Boshlang‘ich: $[A]_0 = 1.000\ M$, $[B]_0 = 0.000\ M$. Muvozanat doimiysi $K = 4.00$. Muvozanatdagi [A] va [B] ni toping.

9. $K = 0.0500$ berilgan ($T = 400\ K$). Standart erkin energiya o‘zgarishi ΔG° ni $J \cdot mol^{-1}$ da hisoblang.

10. $\Delta H = -100.0\ kJ \cdot mol^{-1}$ va $\Delta S = -150.0\ J \cdot mol^{-1} \cdot K^{-1}$. Qaysi T dan pastda reaksiyaning $\Delta G < 0$ bo‘ladi? (ya’ni reaksiyaning o‘z-o‘zidan borishi uchun maksimal T ni aniqlang)