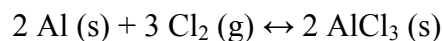


Quiz: Ch 19-20
Version M (32 pts)
AP Chemistry

Name:
I have not received or given, nor will give any aid on this exam.
April 7, 2006 Period: 1 2 3 4

Show your work for all problems and include sensible units. No work (i.e., no reasonable justification) = no credit.

1. (20 pts) Consider the following balanced reaction, which occurs at 25°C:



S° (J/K·mol): Al (s) = 28 Cl₂ (g) = 223 AlCl₃ (s) = 111

- a. (5 pts) Calculate ΔS° for this reaction.

$$\Delta S^\circ =$$

- b. (5 pts) Calculate E°_{cell} for this reaction.

$$E_{\text{cell}}^\circ =$$

- c. (5 pts) Calculate ΔG° for this reaction.

$$\Delta G^\circ =$$

- d. (7 pts) Calculate $\Delta H^\circ_{\text{formation}}$ of AlCl₃ (s).

$$\Delta H_f^\circ =$$

- e. (5 pts) If the reaction is reversed when connected to a 9-V battery, which produces a current of 50.0 A for 3.0 minutes, how many moles of Al (s) would be produced?

moles Al =

- f. (5 pts) If ΔG of the reaction is -1450 kJ/mol, then what is the value of the ion-product constant, Q?

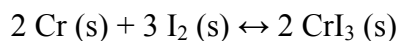
Q =

Quiz: Ch 19-20
Version N (32 pts)
AP Chemistry

Name:
I have not received or given, nor will give any aid on this exam.
April 7, 2006 Period: 1 2 3 4

Show your work for all problems and include sensible units. No work (i.e., no reasonable justification) = no credit.

1. (20 pts) Consider the following balanced reaction, which occurs at 25°C:



S° (J/K·mol): Cr (s) = 24 I₂ (s) = 116 CrI₃ (s) = 102

- a. (5 pts) Calculate E°_{cell} for this reaction.

$$E_{\text{cell}}^\circ =$$

- b. (5 pts) Calculate ΔG° for this reaction.

$$\Delta G^\circ =$$

- c. (5 pts) Calculate ΔS° for this reaction.

$$\Delta S^\circ =$$

- d. (7 pts) Calculate $\Delta H^\circ_{\text{formation}}$ of CrI₃ (s).

$$\Delta H_f^\circ =$$

- e. (5 pts) If the reaction is reversed when connected to a 9-V battery, which produces a current of 40.0 A for 6.0 minutes, how many moles of I_2 (s) would be produced?

moles I_2 =

- f. (5 pts) If ΔG of the reaction is -750 kJ/mol, then what is the value of the ion-product constant, Q ?

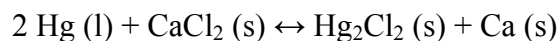
Q =

Quiz: Ch 19-20
Version O (32 pts)
AP Chemistry

Name:
I have not received or given, nor will give any aid on this exam.
April 7, 2006 Period: 1 2 3 4

Show your work for all problems and include sensible units. No work (i.e., no reasonable justification) = no credit.

1. (20 pts) Consider the following balanced reaction, which occurs at 25°C:



S° (J/K·mol): Hg (l) = 77.4 CaCl₂ (s) = 104.6
 Ca (s) = 41.4 Hg₂Cl₂ (s) = 192.5

ΔH_f° (kJ/mol): CaCl₂ (s) = -795.8

- a. (5 pts) Calculate E_{cell}° for this reaction.

$$E_{\text{cell}}^{\circ} =$$

- b. (5 pts) Calculate ΔG° for this reaction.

$$\Delta G^{\circ} =$$

- c. (5 pts) Calculate ΔS° for this reaction.

$$\Delta S^{\circ} =$$

- d. (7 pts) Calculate $\Delta H^{\circ}_{\text{formation}}$ of Hg₂Cl₂ (s).

$$\Delta H_{\text{f}}^{\circ} =$$

- e. (5 pts) If ΔG of the reaction is -600.0 kJ/mol at $30.0 \text{ }^\circ\text{C}$, then what is the value of the ion-product constant, Q ?

$Q =$

- f. (5 pts) If the reaction is reversed when connected to a 9-V battery, what current, applied for 2.00 minutes, will produce 0.240 moles of Hg (l)?

Current =