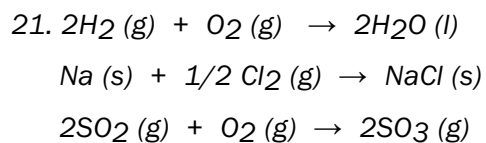


CH142
Sample Exam 3 Answers

Multiple Choice

1. A
2. B
3. B
4. C
5. C
6. C
7. B
8. C
9. A
10. D
11. C
12. A
13. E
14. A
15. E
16. C
17. C
18. D
19. D
20. C

Short Answer



22. 1930 K

23. -42 kJ/mol

24. a) -166.4 J/K
b) -790.4 kJ
c) -740.8 kJ

25. 0.130 V

26. 10.1 g

27. 2.38×10^{24}

28. -150 J/K

29. a) $4.0 \times 10^5 \text{ g Li}$

b) 4.41 V

30. a) $\text{Sn}^{2+}(\text{aq}) + 2\text{Fe}^{3+}(\text{aq}) \rightarrow 2\text{Fe}^{2+}(\text{aq}) + \text{Sn}^{4+}(\text{aq})$

b) $+0.617 \text{ V}$

c) -119 kJ

d) 7.20×10^{20}

31. a) -795 kJ ; spontaneous at 298K

b) 518 kJ ; non-spontaneous at 298 K , spontaneous at $T > 3200$

32. $4 \text{ MnO}_4^- + 5 \text{ CH}_3\text{OH} + 12 \text{ H}^+ \rightarrow 4 \text{ Mn}^{2+} + 5 \text{ HCO}_2\text{H} + 11 \text{ H}_2\text{O}$

33 a) $\Delta G^\circ(\text{NaCl}) = -9.1 \text{ kJ/mol}$; $\Delta G^\circ(\text{AgCl}) = +55.6 \text{ kJ/mol}$

b) Primarily due to enthalpy term.

c) $K_{\text{sp}}(\text{NaCl}) = 40$; $K_{\text{sp}}(\text{AgCl}) = 1.9 \times 10^{-10}$

d) It is consistent since K_{sp} for NaCl is >1 whereas K_{sp} for AgCl is so much smaller.

e) ΔG° for both salts will become more negative with increasing T , indicating increasing solubility.

34. a) 1.08 V

b) Initial $[\text{Ag}^+] = 0.47 \text{ M}$

c) $[\text{Ni}^{2+}]$ increases.