CH104 Practice exam 3 KEY

1. 62.4 L
2. 5.38 L
3. 0.888 L
4. 6.70×10^{-2} L
5. 111 mL
6. 44.8 L
7. 252 L
8. 15.6 g
9. 2.00 atm
10. $O_2/N_2 = 7.62$
11. Volume N_2 =8.47 L Volume H_2O = 33.9 L
12. $6H_2O + P_4O_{10} \rightarrow 4H_3PO_4$
13. $C_8H_{18} + 12.5O_2 \rightarrow 8CO_2 + 9H_2O$
14. $Li + H_2O \rightarrow LiOH + ½ H_2$
15. $Ca(OH)_2 + 2HNO_3 \rightarrow Ca(NO_3)_2 + 2H_2O$
16. $8Na + SF_6 \rightarrow Na_2S + 6NaF$
17. 6.52%
18. 6.5%
19. 2.9%
20. 15.7 g
21. 25 g
22. 0.135%
23. 0.144 M
24. 84.1 g
25. 2.00 L
26. 4.7 mL
27. 0.0545 M
28. 0.400 M
29. 0.01
30. combustion
31. decomposition
32. precipitation
33. van der Waal's
34. vapor pressure lowering/ freezing point depression/ boiling point elevation/ osmotic pressure
35. boiling point elevation and higher temeprature speeds cooking reaction
36. osmotic pressure
37. pressure or temperature
38. exothermic
39. entropy
40. 10.0 kcal
41. decreases
42. increases
43. increases

44. decreases
45. $\Delta G = \Delta H - T\Delta S$
46. ΔG free energy change
    ΔH enthalpy change
    T temperature in Kelvin
    ΔS entropy change
47. 1. Like text Fig. 7.11b with small activation "hill"
    2. Like 7.11a with large hill
48. Like Fig. 7.11 a and b, but endothermic, so reactants at lower energy then products.
49. rate = $k[H_2O_2]^2$
50. rate increases
51. $2SO_3 \leftrightarrow 2SO_2 + O_2$ $K_{eq} = [SO_2]^2[O_2] / [SO_3]^2$
52. $H_3PO_4 \leftrightarrow 3H^+ + PO_4^{-3}$ $K_{eq} = [H^+]^3[PO_4^{-3}] / [H_3PO_4]$
53. $2NO_2 + H_2O \leftrightarrow HNO_3 + HNO_2$ $Keq = [HNO_3][HNO_2] / [NO_2]^2[H_2O]$
54. equilibrium shifts to the left
55. left
56. left
57. right