**Grade 12 Chemistry-Equilibrium Worksheet-Answers**

Pages 590-593

27. There are still forward and reverse reactions taking place.

28. Double arrows

29. No indication of reverse reaction

30. Homogeneous means all substances are in the same physical state (g, l, aq)

31. It is a balance point (concentrations of substances) for forward and reverse reactions

33. It means that mathematically there are greater amounts or concentrations of products compared to reactants. It is a ratio of products to reactants.

34. Because some substances’ concentrations may not be part of the expression (e.g. solids and liquids).

35. It means that the equilibrium favours mostly reactants. Keq would be a small number.

36. Liquid ethanol evaporates at the same time it is condensing.

37. A change in concentration, temperature or pressure which causes a change in the equilibrium position.

38. The system shifts its balance (equilibrium) point to accommodate or absorb the stress.

39. Because there are less product particles to collide and change into reactants so the reverse reaction rate slows.

40. There are more (or greater concentrations of) reactants.

41. The pressure (concentration) of CO2 stays low as the gas is escaping. It causes the system to try to produce more CO2 so eventually the drink goes flat.

42. Keq would become smaller because adding heat to an exothermic reaction would cause a shift to the reactants.

43. In the first reaction the system can adjust to a change in pressure (due to the change in volune) by producing either more or less moles of gas. In the second system, the number of moles of gas is the same on either side of the reaction equation so a shift would not accommodate this stress.

44. Adding a noble gas would increase the pressure of the system (like adding air or any gas to your car tires). This system would shift to make more reactants (4 moles of gas) from the products (7 moles of gas).

45. a. [reactants] goes down b. [products] goes up

46. a. products b. products c. no change d. products e. products (reduce moles gas)

47. The concentration of a solid is constant (it cannot be compressed).

48. They contain one ion in common e.g. NaCl and CaCl2

50. It causes the equilibrium to shift towards reactants (the solid) or away from products (dissolved ions).

52. Takes too long to type.

53. a. Do not include NaHCO3 and Na2CO3

b. Exclude C6H6 liquid

c. Exclude Fe3O4 and Fe

55. 3900

57. 4.4 x 10-3

59. a. Shift to reactants

b. Shift to products

c. Shift to products

d. Shift to reactants

60. Lowers pressure so

a. Shift to products b. No shift (same moles of gas on either side)

61. Raises pressure so a. Shift to reactants b. Shift to reactants

62. a. Shift to reactants b. Shift to products

63. a. Cool so system shifts to products (ethane)

b. Cool so system shifts….

c. Heat so system shifts to products (hydrogen gas).

65. 0.131

66. 2.0 x 10-4

68. 5.9 x 10-3

70. 1.3 x 10-5

71. 2.0 x 10-2

74. a. Shift to products b. Shift to reactants

75. Keq is small so there are generally more reactants than products. Hydrogen, a product, would not be in high yield. By increasing the volume of the container (lower pressure) you would cause the system to shift to make more pressure, i.e. more moles of gas i.e. towards products. Also you could add heat to the system and it would use up the heat (reactant side) and produce more products.

76. Does not seem like an equilibrium question. I would guess that greater temperature would cause more molecules to leave the solid and therefore it would “work better” by having more NH3 molecules (they are the smelly ones).

78. ??

Standardized Test Practice p. 593

1. D
2. B
3. C
4. C
5. A
6. A
7. Omit
8. D
9. B
10. C