AP Chemistry
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Name_____

AP MULTIPLE CHOICE QUESTIONS
CH. 15, SET 2

1989

68. The specific rate constant k for radioactive element X is 0.023 min^{-1}. What weight of X was originally present in a sample if 40. grams is left after 60. minutes? (Note: all radioactive decay processes are always 1^{st} order)

(A) 10. grams (B) 20. grams (C) 80. grams (D) 120 grams (E) 160 grams

1994

48. $PCl_3\,(g) + Cl_2\,(g) \rightleftharpoons PCl_5\,(g) + \text{energy}$

Some PCl_3 (g) and Cl_2 (g) are mixed in a container at 200°C and the system reaches equilibrium according to the equation above. Which of the following causes an increase in the number of moles of PCl_5 present at equilibrium?

I. Decreasing the volume of the container.
II. Raising the temperature.
III. Adding a mole of He gas at constant volume.

(A) I only (B) II only (C) I and III only (D) II and III only
(E) I, II and III

51. $4HCl\,(g) + O_2\,(g) \rightleftharpoons 2Cl_2\,(g) + 2H_2O\,(g)$

Equal numbers of moles of HCl and O_2 in a closed system are allowed to reach equilibrium as represented by the equation above. Which of the following must be true at equilibrium?

I. [HCl] must be less than $[Cl_2]$
II. $[O_2]$ must be greater than [HCl]
III. $[Cl_2]$ must equal $[H_2O]$

(A) I only (B) II only (C) I and III only (D) II and III only
(E) I, II and III

73. $2SO_2\,(g) + O_2\,(g) \rightleftharpoons 2SO_3\,(g)$

When 0.40 mole of SO_2 and 0.60 mole of O_2 are placed in an evacuated 1.00 liter flask, the reaction represented above occurs. After the reactants and product reach equilibrium and the initial temperature is restored, the flask is found to contain 0.30 moles of SO_3. Based on these results, the equilibrium constant, K_e, for the reaction is

(A) 20. (B) 10. (C) 6.7 (D) 2.0 (E) 1.2

1999

Questions 1 – 4 refer to the following types of energy

(A) Activation energy (B) Free energy (C) Ionization energy
(D) Kinetic energy (E) Lattice energy

1. The energy required to convert a ground-state atom in the gas phase to a gaseous positive ion.
2. The energy change that occurs in the conversion of an ionic solid to widely separated gaseous ions.
3. The energy in a chemical or physical change that is available to do useful work.
4. The energy required to form the transition state in a chemical reaction.

24. The safest and most effective emergency procedure to treat an acid splash on skin is to do which of the following immediately?

(A) Dry the affected area with paper towels. (B) Sprinkle the affected area with powdered Na_2SO_4.
(C) Flush the affected area with water and then with a dilute NaOH solution.
(D) Flush the affected area with water and then with a dilute NaHCO3 solution.
(E) Flush the affected area with water and then with a dilute vinegar solution.