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1) A certain first-order reaction has a half life of 20.0 minutes. The time (in minutes) required for this reaction to be 87.5% complete is:

A) 60 B) 65 C) 70 D) 75

2) It takes 42.6 minutes for the concentration of a reactant in a first order reaction to drop from 0.45 mol L^{-1} to 0.32 mol L^{-1} at 25°C. How long will it take (in minutes) for the concentration of the reactant to drop from 0.65 mol L^{-1} to 0.46 mol L^{-1} at 25°C?

A) 65.4 B) 52.4 C) 43.2 D) 40.6

3) The rate constants for a first-order reaction (k) is 5×10^{-2} s^{-1} at 760 K and (k) is 6×10^{-3} s^{-1} at 700 K. The activation energy "E_a" (in kJ/mol) for this reaction is:

A) 145.8 B) 156.3 C) 175.7 D) 182.4

4) F_2 gas reacts with ClO_2 gas according to:

$$F_2(g) + 2ClO_2(g) \rightarrow 2FClO_2(g)$$

use the following data to determine the value of the reaction rate constant.

Experiment	$[F_2]_o$ M	$[ClO_2]_o$ M	Initial rate (/M.s)
1	0.1	0.01	1.2×10^{-3}
2	0.1	0.04	4.8×10^{-3}
3	0.2	0.01	2.4×10^{-3}

A) 1.2/M.s B) 2.4/M.s C) 4.8/M.s D) 0.24/M.s

5) A first order reaction A→ B is 25% completed in 45 min. Calculate (in min) the half life of the reaction.

A) 86.8 B) 99.3 C) 101.5 D) 108.4

6) At 25°C the rate constant for the first-order decomposition of a pesticide solution is 6.4×10^{-3} min^{-1}. If the starting concentration of pesticide is 0.80 M, what concentration will remain after 40 min?

A) 0.62 M B) 0.56 M C) 0.52 M D) 0.48 M

7) The activation energy for the following reaction is 60190 J/mol:

$$2HI \rightarrow H_2 + I_2$$

by what factor will the rate constant increase when the temperature is raised from 10°C to 29°C.

A) 7 B) 6 C) 5 D) 4

8) Which statement of the following is true?

A) The activation energy of a chemical reaction increases as the temperature decreases.
B) The activation energy of a chemical reaction increases as the temperature increases.
C) The activation energy of a chemical reaction doesn't depend on the temperature.
D) The activation energy of a chemical reaction increases in the presence of the catalyst.