Chemistry Worksheets Class 12 on Chapter 4 Chemical Kinetics with Answers - Set 4

Q-1: The increase in the rate of the reaction with every 10^o rise in the temperature is:

a.) Twice the initial rate
b.) Half of the initial rate
c.) Thrice of the initial rate
d.) ten times of the initial rate

Q-2: The rate of the reaction A + B + C → Products is :

$$-d[A] / dt = k[A]^{½}[B]^{⅓}[C]^{¼}$$

The order of the reaction is _____.

a.) 1/2
b.) 2
c.) 13/12
d.) 1

Q-3: DDT decomposes when it comes in contact with water. The half-life period of DDT is 10 years. Calculate the time required for its 99% decomposition.

Q-4: In the rate expression, the term -dx/dt refers to ____.

a.) the instantaneous rate of the reaction
b.) the concentration of the reactants
c.) the increase in concentration of the reactants
d.) the average rate of the reaction

Q-5: Give reason for the following:
Coal does not burn itself in air. However, once the burning is initiated by a flame, the coal keeps burning.

Q-6: According to the Collision theory:

a.) all collisions are sufficiently violent for the reaction
b.) all collisions are effective
c.) all collisions result in product formation
d.) only a few collisions which have the sufficient energy are effective and result in product formation

Q-7: Why does the equilibrium constant remain unchanged even when a catalyst is used for the reaction?

Q-8: Differentiate between the order and the molecularity of a reaction.

Q-9: The rate of a reaction depends on

a.) the active mass of the reactant
b.) the molecular mass of the reactant
c.) the atomic mass of the reactant
d.) the equivalent mass of the reactant

Q-10: Give an example of a first order reaction.

Q-11: A reactant with initial concentration 'a' undergoes a zero order reaction. How much time will the reaction take for completion?

Q-12: Which is the rate determining step of a chemical reaction?

Q-13: Give reason for the following observation:
1 gram of pulverised wood burns faster than a piece of wood weighing 1 gram.

Q-14: At 27 °C, the activation energy of a reaction reduces by 2 kcal due to the presence of a catalyst. Calculate the increase in the rate of the reaction. (Given R = 2 x 10^{-3} kcal K^{-1} mol^{-1})

Q-15: The catalyst

a.) decreases the activation energy of the reaction
b.) increases the collision frequency
c.) increases the activation energy of the reaction
d.) increases the average kinetic energy of reactants

Q-16: The concentration of A takes 10 minutes to change from 0.5 mol L^{-1} to 0.4 mol L^{-1} in the given reaction: 2A → Products. What must be the rate of the reaction during this interval?

Q-17: Match the following.
Note:- More than 1 option of column I can have the same answer in Column II.

	Column I		**Column II**
a.	Rate of reaction	(i)	s^{-1}

b.	First order rate constant	(ii)	mol L^{-1} s^{-1}
c.	Second order rate constant	(iii)	mol L^{-1}
d.	Zero order rate constant	(iv)	L mol^{-1} s^{-1}

Q-18: Determine the order of the reactions and the dimensions of the rate constants for the given rate expressions of the following reactions:
(a.) H_2O_2 (aq) + $3I^-$ (aq) + $2H^+ \rightarrow 2H_2O$ (l) + I_3^-; Rate = $k[H_2O_2][I^-]$
(b.) 3NO (g) $\rightarrow N_2O$ (g) + NO_2 (g); Rate = $k[NO]^2$

Q-19: What is the effect of temperature on the rate constant of a reaction?

Q-20: The rate constant of a first order reaction is 1.15×10^{-3} s^{-1}. Calculate the time taken by the reactant to reduce from 5 g to 3 g.