CHEMISTRY

1. The rate law for the reaction, $RCl + NaOH(aq) \rightarrow ROH + NaCl$ is given by rate = $k_1[RCl]$. The rate of the reaction will be
   (1) doubled on doubling the concentration of sodium hydroxide
   (2) halved on reducing the concentration of alkyl halide to one half
   (3) decreased on increasing the temperature of the reaction
   (4) unaffected by increasing the temperature of the reaction.

2. The concentration of a reactant decreases from 0.2 M to 0.1 M in 10 minutes. The rate of the reaction is
   (1) 0.01 M (2) 10^{-2}
   (3) 0.01 mol dm^{-3} min^{-1}
   (4) 1 mol dm^{-3} min^{-1}

3. In the reaction $2A + B \rightarrow A_2B$, if the concentration of A is doubled and of B is halved, then the rate of the reaction will
   (1) Increase by four times
   (2) Decrease by two times
   (3) Increase by two times
   (4) Remain the same

4. The rate of a reaction is doubled for every 10 °C rise in temperature. The increase in reaction rate as a result of temperature rise from 10 °C to 100 °C is
   (1) 112 (2) 512
   (3) 400 (4) 614

5. The experimental data for the reaction $2A + B_2 \rightarrow 2AB$ is

Exp.	$[A]_0$	$[B]_0$	Rate (mole s^{-1})
(1)	0.50	0.50	1.6×10^{-4}
(2)	0.50	1.00	3.2×10^{-4}
(3)	1.00	1.00	3.2×10^{-4}

   The rate equation for the above data is
   (1) Rate = $k[B_2]$
   (2) Rate = $k[B_2]^2$
   (3) Rate = $k[A]^2 [B]^2$
   (4) Rate = $k[A]^2[B]$

6. The specific rate constant of a first order reaction depends on the
   (1) Concentration of the reactants
   (2) Concentration of the products
   (3) Time of reaction
   (4) Temperature of reaction

7. The unit of rate constant for a zero order reaction is
   (1) L s^{-1} (2) L mol^{-1} s^{-1}
   (3) mol L^{-1} s^{-1} (4) mol s^{-1}

8. The hydrolysis of ethyl acetate is a reaction of
   $CH_3COOEt + H_2O \xrightarrow{H^+} CH_3COOH + EtOH$
   (1) First order (2) Second order
   (3) Third order (4) Zero order

9. A first order reaction which is 30% complete in 30 minutes has a half-life period of
   (1) 24.2 min (2) 58.2 min
   (3) 102.2 min (4) 120.2 min

10. Decay constant of a reaction is 1.1×10^{-9} s^{-1}, then the half life of the reaction is
    (1) 1.2×10^8 (2) 6.3×10^8
    (3) 3.3×10^8 (4) 2.1×10^8