CHEMISTRY

11. Which one of the following statements is wrong?
    (1) Molecularity of a reaction is always a whole number
    (2) Order and molecularity of a reaction need not be same
    (3) Order of a reaction may be zero
    (4) Order of a reaction depends upon the mechanism of the reaction

12. The order of a reaction with rate equals to $kC_A^{\frac{3}{2}} C_B^{-\frac{1}{2}}$ is
    (1) 2
    (2) 1
    (3) $-\dfrac{1}{2}$
    (4) $\dfrac{3}{2}$

13. The order of the reaction occurring by following mechanism should be
    (i) $A_2 \rightleftharpoons A + A$ (fast)
    (ii) $A + B_2 \rightarrow AB + B$ (slow)
    (iii) $A + B \rightarrow$ (fast)
    (1) $1\dfrac{1}{2}$
    (2) $3\dfrac{1}{2}$
    (3) 2
    (4) 8

14. For a given reaction, $t_{1/2} = \dfrac{1}{K[R_0]}$. The order of the reaction is
    (1) 1
    (2) 0
    (3) 3
    (4) 2
 $t_{1/2} = \dfrac{1}{K[R_0]}$ for second order reactions.

15. If the order of the reaction $x + y \xrightarrow{h\nu} x\,y$ is zero, it means that the rate of
    (1) Reaction is independent of temperature
    (2) Formation of activated complex is zero
    (3) Reaction is independent of the concentration of reacting species
    (4) Decomposition of activated complex is zero

16. An endothermic reaction $A \rightarrow B$ has an activation energy 15 kcal mol^{-1} and energy of reaction 5 kcal mol^{-1}. The activation energy of the reaction $B \rightarrow A$ is

(1) 20 kcal mol^{-1}
(2) 15 kcal mol^{-1}
(3) 10 kcal mol^{-1}
(4) 5 kcal mol^{-1}

17. Which of the following plots is in accordance with the Arrhenius equation?
    (1) log K vs 1/T
    (2) K vs 1/T
    (3) log K vs T
    (4) log K vs log T
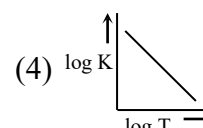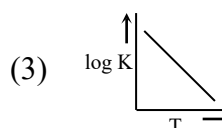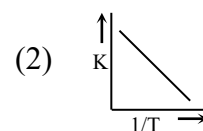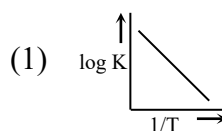
18. For the reaction, $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ the rate of reaction is expressed as
    (1) $-\dfrac{\Delta[I_2]}{\Delta t} = -\dfrac{\Delta[H_2]}{\Delta t} = \dfrac{1}{2}\dfrac{\Delta[HI]}{\Delta t}$
    (2) $\dfrac{\Delta[I_2]}{\Delta t} = \dfrac{\Delta[H_2]}{\Delta t} = \dfrac{\Delta[HI]}{2\Delta t}$
    (3) $\dfrac{\Delta[H_2]}{\Delta t} = \dfrac{1}{2}\dfrac{\Delta[I_2]}{\Delta t} = -\dfrac{\Delta[HI]}{\Delta t}$
    (4) None of these

19. A Substance undergoes first order decomposition. The decomposition follows two parallel first order reactions as

    $k_1 = 1.26 \times 10^{-4}\,s^{-1}$
    $k_1 = 3.8 \times 10^{-5}\,s^{-1}$
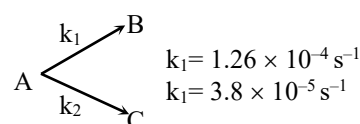
    The percentage distribution of B and C are
    (1) 75% B and 25% C
    (2) 80% B and 20% C
    (3) 60% B and 40% C
    (4) 76.83% B and 23.17% C

20. A chemical reaction is at equilibrium when
    (1) Reactants are completely transformed into products
    (2) The rates of forward and backward reactions are equal
    (3) Formation of products is minimised
    (4) Equal amounts of reactants and products are present