Date Planned : __ / __ / __	Daily Tutorial Sheet-4	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-1	Exact Duration :_____

46. For a reaction of reversible nature, net rate is

$$\left(\frac{dx}{dt}\right) = k_1[A]^2 - k_2[C][B]$$

hence, given reaction is :

(A) $2A + \frac{1}{B} \rightleftharpoons C$ **(B)** $2A - B \rightleftharpoons C$

(C) $2A \rightleftharpoons C - B$ **(D)** None of these

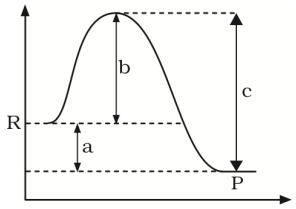
47. In a first order reaction, the concentration of the reactant decreases from 800 mol/dm^3 to 50 mol/dm^3 in 2×10^4 sec. The rate constant of the reaction in sec^{-1} is :

(A) 2×10^4 **(B)** 3.45×10^{-5}

(C) 1.386×10^{-4} **(D)** 2×10^{-4}

48. The potential diagram for reaction $R \rightarrow P$ is given below:

ΔH° of the reaction corresponds to the energy



(A) c – a

(B) b

(C) b – c

(D) c – b

49. The reaction $A \rightarrow B$ follows first order kinetics. The time taken for 0.8 mole of A to produce 0.6 mole of B is 1 hour. What is the time taken for conversion of 0.9 mole of A to produce 0.675 mole of B?

(A) 1 hour **(B)** 0.5 hour

(C) 0.25 hour **(D)** 2 hours

50. DDT on exposure to water decomposes. How much time will it take for its 90% decomposition? (Half-life = 20 years)

(A) 50 years **(B)** 67 years

(C) 500 years **(D)** 700 years

51. The half-life of a reaction is halved as the initial concentration of the reactant is doubled. The order of reaction is :

(A) 0.5 **(B)** 1 **(C)** 2 **(D)** 0

52. The rate constant of the reaction at temperature 200 K is10 times less than the rate constant at 400 K. What is the activation energy of the reaction?

(A) 1842.4 R **(B)** 921.2R

(C) 460.6 R **(D)** 230.3 R

53. In the elementary reaction $2A + B \rightarrow A_2B$, if the concentration of A is doubled and that of B is halved, then the rate of reaction will:

(A) increase by 4 times **(B)** decrease by 2 times

(C) increase by 2 times **(D)** remain the same

54. The rate constant k, for the reaction $N_2O_5(g) \rightarrow 2NO_2(g) + \frac{1}{2}O_2(g)$ is $2.3 \times 10^{-2} s^{-1}$. Which equation given below describes the change of $[N_2O_5]$ with time? ($[N_2O_5]_o$ and $[N_2O_5]_t$ correspond to the concentration of N_2O_5 initially and at time t.)

(A) $[N_2O_5]_t = [N_2O_5]_o + kt$ **(B)** $[N_2O_5]_o = [N_2O_5]_t e^{-kt}$

(C) $\log[N_2O_5]_t = \log[N_2O_5]_o + kt$ **(D)** $\ln\frac{[N_2O_5]_o}{[N_2O_5]_t} = kt$

55. The rate of a first order reaction is 1.5×10^{-2} mol L^{-1} min^{-1} at 0.5 M concentration of the reactant. The half-life of the reaction is:

(A) 0.383 min **(B)** 23.1 min **(C)** 8.73 min **(D)** 7.53 min

56. Which increases on increase of temperature?

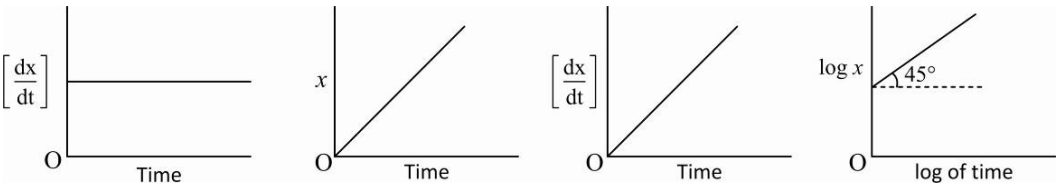
(A) Energy of activation (E_a) **(B)** Collision frequency (Z)

(C) Rate constant (k) **(D)** Both (B) and (C)

57. The disintegration rate of a radioactive sample at any instant is 4750 disintegrations per min. Five minutes later, the rate becomes 2700 per min. The half-life when the rate becomes 2700 per min.

(A) 6.3 min **(B)** 6.1 min **(C)** 6.5 min **(D)** 6 min.

58. Which is not the graphical representation for the zeroth order reaction ?



(A) **(B)** **(C)** **(D)**

59. The half-lives of two samples are 0.1 and 0.4 second. Their respective concentrations are 200 and 50 respectively. What is the order of the reaction?

(A) 0 **(B)** 2 **(C)** 1 **(D)** 4

60. The activation energy for most of the reactions is approximately 50 kJ mol^{-1}. The value of temperature coefficient for such reactions is :

(A) approx 2 **(B)** approx 3 **(C)** < 1 **(D)** > 4