CHEMISTRY POINT

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TIME-2hr 30min **No of Question- 100** **Marks- 100**

Single Correct Answer Type

1. The activation energies of two reactions are E_1 and $E_2 (E_1 > E_2)$. If the temperature of the system is increased from T_1 to T_2, the rate constant of the reactions changes from k_1 to k_1' in the first reaction and k_2 and k_2' in the second reaction. Predict which of the following expression is correct?

   a) $\frac{k_1'}{k_1} = \frac{k_2'}{k_2}$ b) $\frac{k_1'}{k_1} > \frac{k_2'}{k_2}$ c) $\frac{k_1'}{k_1} < \frac{k_2'}{k_2}$ d) $\frac{k_1'}{k_1} = \frac{k_2'}{k_2} = 1$

2. Effective collisions are those in which molecules must:

   a) Have energy equal to or greater than the threshold energy

   b) Have proper orientation

   c) Acquire the energy of activation

   d) All of the above

3. Consider the following statements,
   The rate law for the acid catalysed hydrolysis of an ester being given as
   Rate = $k[H^+][ester] = k'[ester]$.
   If the acid concentration is doubled at constant ester concentration
   1. The second order rate constant, k is doubled.
   2. The pseudo first order rate constant, k is double.
   3. The rate of the reaction is doubled.
   Which of the above statements are correct?
   a) 1 and 2 b) 2 and 3 c) 1 and 3 d) 1,2 and 3

4. Half-life of two samples is 0.1 and 0.8 s. Their respective concentration is 400 and 50 respectively.
   The order of reaction is
   a) 0 b) 2 c) 1 d) 4

5. The units of rate of reaction are

   a) $L\ mol^{-1}\ s^{-1}$ b) $mol\ L^{-1}\ s^{-1}$ c) $mol\ s^{-1}$ d) None of these

6. Units of rate constant of first and zero order reactions in terms of molarity M unit are respectively
   a) $s^{-1}, M\ s^{-1}$ b) s^{-1}, M c) $M\ s^{-1}, s^{-1}$ d) M, s^{-1}

7. The half time of a second order reaction is:

a) Inversely proportional to the square of the initial concentration of the reactants

b) Inversely proportional to the initial concentration of the reactants

c) Proportional to the initial concentration of reactants

d) Independent of the initial concentration of reactants

8. $\frac{1}{[A]^2}$ vs times are a straight line. Order of reaction is

a) First b) Second c) Zero d) Third

9. For an endothermic reaction where, ΔH represents the enthalpy of the reaction in kJ/mol, the minimum value for the energy of activation will be

a) Less than ΔH b) Zero c) More than ΔH d) Equal to ΔH

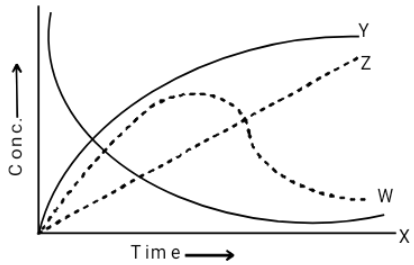
10. The unit of rate constant for a zero order reaction

a) $L\ s^{-1}$ b) $L\ mol^{-1}\ s^{-1}$ c) $mol\ L^{-1}\ s^{-1}$ d) $mol\ s^{-1}$

11. What is the formula to find value of $t_{1/2}$ for a zero order reaction?

a) $\frac{k}{[R]_0}$ b) $\frac{2k}{[R]_0}$ c) $\frac{[R]_0}{2k}$ d) $\frac{0.693}{k}$

12. For the reaction, A + B⟶C + D. The variation of the concentration of the products is given by the curve:



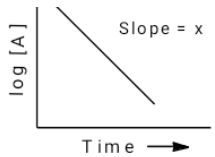
a) X b) Y c) Z d) W

13. Acid hydrolysis of sucrose is a

a) Pseudo first order reaction b) Zero order reaction

c) Second order reaction d) Unimolecular reaction

14. For a first order reaction the graph log [A]vs t is given below



x is equal to

a) $\frac{0.693}{k}$ b) $\frac{k}{2.303}$ c) $-\frac{k}{2.303}$ d) $\log\ [A]_0$

15. The rate constant of a first order reaction is $4\times10^{-3}sec^{-1}$. At a reactant concentration of 0.02 M, the rate of reaction would be:
a) 8×10^{-5} M sec^{-1} b) 4×10^{-3} M sec^{-1} c) 2×10^{-1} M sec^{-1} d) 4×10^{-1} M sec^{-1}

16. The rate constant for the reaction, $2N_2O_5 \rightarrow 4NO_2 + O_2$ is $3.0\times10^{-5}s^{-1}$. If the rate is $2.4\times10^{-5}molL^{-1}s^{-1}$ then the concentration of N_2O_5(in mol L^{-1}) is
a) 0.04 b) 0.8 c) 0.07 d) 1.4

17. Activation energy of a reaction is:

a) The energy released during the reaction

b) The energy evolved when activated complex is formed

c) Minimum amount of energy needed to overcome the potential barrier of reaction

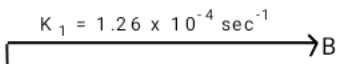
d) The energy needed to form one mole of the product

18. The activation energy for a reaction is 9.0 Kcal/mol. The increase in the rate constant when its temperature is increased from 298 K to 308 K is:
a) 10% b) 100% c) 50% d) 63%

19. The rate of first order reaction, A⟶ Products, is 7.5×10^{-4}mol $litre^{-1}sec^{-1}$. If the concentration of A is 0.5 mol $litre^{-1}$ the rate constant is:
a) $3.75\times10^{-4}sec^{-1}$ b) $2.5\times10^{-5}sec^{-1}$ c) $1.5\times10^{-3}sec^{-1}$ d) $8.0\times10^{-4}sec^{-1}$

20. $2N_2O_5 \rightleftharpoons 4NO_2 + O_2$
For the above reaction which of the following is not correct above rates of reaction?
a) $\frac{-d[N_2O_5]}{dt} = 2\frac{d[O_2]}{dt}$ b) $\frac{-2d[N_2O_5]}{dt} = \frac{d[NO_2]}{dt}$
c) $\frac{d[NO_5]}{dt} = 4\frac{d[O_2]}{dt}$ d) $\frac{-2d[N_2O_5]}{dt} = 4\frac{d[NO_2]}{dt} = \frac{d[O_2]}{dt}$

21. A substance undergoes first order decomposition. The decomposition follows to parallel first order reactions as:



The percentage distribution of B and C are:
a) 80% B and 20% C

b) 76.83% B and 23.17% C

c) 90% B and 10% C

d) 60% B and 40% C

22. In Arrhenius plot intercept is equal to

a) $-E_a/R$ b) $\ln A$ c) $\ln k$ d) $\log_{10} a$

23. Half-life period of a first order reaction is 1386 seconds. The specific rate constant of the reaction is:

a) $5.0\times10^{-2}s^{-1}$ b) $5.0\times10^{-3}s^{-1}$ c) $0.5\times10^{-2}s^{-1}$ d) $0.5\times10^{-3}s^{-1}$

24. On addition of $AgNO_3$ to NaCl, white ppt. occurs:

a) Instantaneously

b) With a measurable speed

c) Slowly

d) None of these

25. Which is correct about zero order reaction?

a) Rate of reaction depends on decay constant.

b) Rate of reaction is independent of concentration.

c) Unit of rate constant is $conc^{-1}$

d) Unit of rate constant is $conc^{-1}$ $time^{-1}$

26. The half-life period of a first order reaction is 1 min 40 s. Calculate its rate constant.

a) $6.93\times10^{-3}min^{-1}$ b) $6.93\times10^{-3}s^{-1}$ c) $6.93\times10^{-3}s$ d) $6.93\times10^{3}s$

27. The reaction $2A + B + C \rightarrow D + E$ is found to be first order in A, second in B and zero order in C. What is the effect on the rate of increasing concentration of A, B and C two times?

a) 72 times b) 8 times c) 24 times d) 36 times

28. In a reaction, the threshold energy is equal to:

a) Activation energy + normal energy of reactants

b) Activation energy – normal energy of reactants

c) Activation energy

d) Normal energy of reactants

29. Which one is not correct?

a) Rate of zero order reaction depends upon initial concentration of reactant

b) Rate of zero order reaction does not depend upon initial concentration of reactant

c) $t_{1/2}$ of first order reaction is independent of initial concentration of reaction

d) $t_{1/2}$ of zero order reaction is dependent of initial concentration of reaction

30. A reaction proceeds by first order, 75% of this reaction was completed in 32 min. the time required for 50% completion is

a) 8 min b) 16 min c) 20 min d) 24 min

31. The rate of the reaction

$CCl_3CHO + NO \rightarrow CHCl_3 + NO + CO$ is equal to rate $k[CCl_3CHO][NO]$. If concentration is expressed in mol/L. The unit of k is

a) $L\ mol^{-1}\ s^{-1}$ b) $mol\ L^{-1}\ s^{-1}$ c) $L^2\ mol^{-2}\ s^{-1}$ d) s^{-1}

32. Observe the following reaction,

$2A + B \rightarrow C$

The rate of formation of C is $2.2\times10^{-3} mol\ L^{-1} min^{-1}$.

What is the value of $-\frac{d[A]}{dt}$ ($mol\ L^{-1} min^{-1}$) ?

a) 2.2×10^{-3} b) 1.1×10^{-3} c) 4.4×10^{-3} d) 5.5×10^{-3}

33. The unit of rate constant of a third order chemical reaction is

a) $mol^{-1}\ L\ s^{-1}$ b) $mol^{-1}\ s^{-2}$

c) $mol\ L$ d) $s^{-1}\ mol^{-2}\ L^2$

34. $CH_3COOC_2H_5 + H_2O \xrightarrow{H+} CH_3COOH + C_2H_5OH$ is an example of …… order.

a) Zero b) Second c) Third d) Pseudo first order

35. Collision theory is applicable to

a) First order reactions b) Zero order reactions

c) Bimolecular reactions d) Intra-molecular reactions

36. The efficiency of an enzyme in catalyzing a reaction is due to its capacity

a) To form a strong enzyme substrate complex
b) To decrease the bond energy of all substrate molecules
c) To change the shape of the substrate molecule
d) To lower the activation energy of the reaction

37. The reaction

$2A + B \rightarrow 3C + D$

Which of the following does not express the reaction rate?

a) $\frac{d[D]}{dt}$ b) $-\frac{d[A]}{2dt}$ c) $-\frac{d[C]}{3dt}$ d) $-\frac{d[B]}{dt}$

38. If E_f and E_r are the activation energies of the forward and reverse reactions and the reaction is known to be exothermic then

a) $E_f < E_r$

b) $E_f > E_r$

c) $E_f = E_r$

d) No relation can be given between E_f and E_r as data are not sufficient

39. Milk turns sour at 40℃ three times as faster as at 0℃. The energy of activation for souring of milk is:

a) 4.693 kcal b) 2.6 kcal c) 6.6 kcal d) None of these

40. Which plots will give the value of activation energy?

a) K vs.T b) 1/K vs.T c) ln K vs.T d) ln K vs. $\frac{1}{T}$

41. In a second order reaction when the concentration of both reactant are equal, the reaction is completed in 500 s. How long will it take for the reaction to go to 60% completion?

a) 1000 s b) 300 s c) 3000 s d) 2000 s

42. The rate constant (K) for the reaction 2A + B⟶ Product was found to be 2.5×10^{-5} litre $mol^{-1}sec^{-1}$ after 15 sec, 2.60×10^{-5} litre $mol^{-1}sec^{-1}$ after 30 sec and 2.55×10^{-5}litr $mol^{-1}sec^{-1}$ after 50 sec. The order of reaction is:

a) 2 b) 3 c) Zero d) 1

43. The differential rate expression for the reaction $H_2 + I_2 \longrightarrow 2HI$ is:

a) $\frac{-d[H_2]}{dt} = \frac{-d[I_2]}{dt} = \frac{-d[HI]}{dt}$

b) $\frac{d[H_2]}{dt} = \frac{d[I_2]}{dt} = \frac{d[HI]}{dt}$

c) $\frac{1}{2}\frac{d[H_2]}{dt} = \frac{1}{2}\frac{d[I_2]}{dt} = \frac{d[HI]}{dt}$

d) $-2\frac{d[H_2]}{dt} = -2\frac{d[I_2]}{dt} = \frac{d[HI]}{dt}$

44. For the elementary step,
$(CH_3)_3 \cdot CBr(aq) \longrightarrow (CH_3)_3C^+(aq) + Br^-(aq)$ the molecularity is:

a) Zero b) 1 c) 2 d) Cannot ascertained

45. A graph plotted between log $t_{50\%}$ vs.log a concentration is a straight line. What conclusion can you draw from the given graph?

a) $n = 1, t_{1/2} = \frac{1}{K\cdot a}$ b) $n = 2, t_{1/2} = 1/a$ c) $n = 1, t_{1/2} = \frac{0.693}{K}$ d) None of the above

46. If a is the initial concentration then time required to decompose half of the substance for nth order is inversely proportional to:

a) a^n b) a^{n-1} c) a^{1-n} d) a^{n-2}

47. The hydrolysis of ethyl acetate,
$CH_3COOC_2H_5 + H_2O \xrightarrow{H^+} CH_3COOH + C_2H_5OH$ is:

a) First order b) Second order c) Third order d) Zero order

48. The rate law for a reaction between the substances A and B is given by rate $= k[A]^n[B]^m$. On doubling the concentration of A and halving the concentration of B, the ratio of the new rate to the earlier rate of the reaction will be as

a) $\frac{1}{2^{m+n}}$ b) $(m + n)$ c) $(n - m)$ d) $2^{(n-m)}$

49. For the reaction

$H_2(g) + Br_2(g) \rightarrow 2HBr(g)$

The experimental data suggest

rate $= k[H_2][Br_2]^{1/2}$

the molecularity and order of the reaction are respectively

a) $1, \frac{1}{2}$ b) $1, 1$ c) $\frac{3}{2}, \frac{3}{2}$ d) $2, \frac{3}{2}$

50. The rate of reaction increases with temperature due to

a) Decrease in activation energy b) Increase in activation energy

c) Increase in collision frequency d) Increase in concentration

51. In a first order reaction, the concentration of the reactant is decreased from 1.0 M to 0.25 M in 20 minute. The rate constant of the reaction would be:

a) $10\ min^{-1}$ b) $6.931\ min^{-1}$ c) $0.6931\ min^{-1}$ d) $0.06931\ min^{-1}$

52. The reaction obey I order with respect to H_2 and ICl both

$H_2(g) + 2ICl(g) \rightarrow 2HCl(g) + I_2(g)$

Which of the following mechanism is in consistent with the given fact?

Mechanism A: $H_2(g) + 2ICl \rightarrow 2HCl(g) + I_2(g)$

Mechanism B: (i) $H_2(g) + ICl(g) \overset{slow}{\rightarrow} HCl(g) + HI(g)$

(ii) $HI(g) + ICl(g) \rightarrow HCl(g) + I_2$

a) A and B both b) Neither A nor B c) A only d) B only

53. Two reactions A⟶ products and B⟶ products have rate constants K_A and K_B at temperature T and activation energies E_A and E_B respectively. If $K_A > K_B$ and $E_A < E_B$ and assuming that A for both the reactions is same, then:

a) At higher temperatures K_A will be greater than K_B

b) At lower temperature K_A and K_B will differ more and $K_A > K_B$

c) As temperature rises K_A and K_B will be close to each other in magnitude

d) All of the above

54. The half life for a reaction … of temperature.

a) Independent

b) Increased with increase

c) Decreased with increase

d) Dependent

55. The following mechanism has been proposed for the reaction of NO with Br_2 to form NOBr

$NO(g) + Br_2(g) \rightleftharpoons NOBr_2(g)$

$NOBr_2(g) + NO(g) \rightarrow 2NOBr(g)$

If the second step is the rate determining step, the order of the reaction with respect to NO(g) is

a) 1 b) 0 c) 3 d) 2

56. The unit and value of rate constant and that of rate of reaction are same for

a) Zero order b) First order c) Second order d) Third order

57. According to collision theory of reaction rates:

a) Every collision between reactants leads to chemical reaction

b) Rate of reaction is proportional to velocity of molecules

c) All reactions which occur in gaseous phase are zero order reactions

d) Rate of reaction is directly proportional to collision frequency

58. Half-life of a reaction is found to be inversely proportional to the cube of initial concentration. The order of reaction is

a) 4 b) 3 c) 5 d) 2

59. A reaction involving two different reactants can never be

a) Bimolecular reaction b) Second order reaction

c) First order reaction d) Unimolecular reaction

60. For the non-equilibrium process, A + B⟶ Products, the rate is first order with respect to A and second order respect to B. If 1.0 mole each of A and B are introduced into a 1 litre vessel and the initial rate was 1.0×10^{-2} mol/litre-sec. The rate (in mol $litre^{-1}sec^{-1}$) when half of the reactants have been used:

a) 1.2×10^{-3} b) 1.2×10^{-2} c) 2.5×10^{-4} d) None of these

61. The activation energy of a reaction is zero. The rate constant for the reaction

a) Decreases with decrease of temp b) Increases with increase of temp

c) Decreases with increase of temp d) Is nearly independent of temp

62. The burning of coal represented by the equation; $C(s) + O_2(g) \longrightarrow CO_2(g)$. The rate of this reaction is increased by:

a) Decrease in the concentration of oxygen

b) Powdering the lumps of coal

c) Decreasing the temperature

d) Providing inert atmosphere for burning

63. At room temperature, the reaction between NO and O_2 to give NO_2 is fast, while that between CO and O_2 is slow. It is due to:

a) CO is smaller in size than that of NO

b) CO is poisonous

c) The activation energy for the reaction, $2NO + O_2 \rightarrow 2NO_2$ is less than $2CO + O_2 \rightarrow 2CO_2$

d) None of the above

64. The rate of 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 reaction is

a) 0.383 min b) 23.1 min c) 8.73 min d) 7.53 min

65. The rate constant of a first order reaction at 27℃ is 10^{-3} min^{-1}. The temperature coefficient of this reaction is 2. What is the rate constant (in min^{-1}) at 17℃ for this reaction?

a) 10^{-3} b) 5×10^{-4} c) 2×10^{-3} d) 10^{-2}

66. The minimum energy required for the reacting molecules to undergo reaction is

a) Potential energy b) Kinetic energy

c) Thermal energy d) Activation energy

67. The decomposition of N_2O_5 occur as $2N_2O_5 \rightarrow 4NO_2 + O_2$, and follows Ist order kinetics, hance

a) The reaction is unimolecular b) The reaction is bimolecular

c) $t_{1/2} \propto a^0$ d) None of the above

68. The rate of a chemical reaction doubles for every 10℃ rise of temperature. If the temperature is raised by 50℃, the rate of the reaction increases by about

a) 10 times b) 24 times c) 32 times d) 64 times

69. Which of the following statement is incorrect about the molecularity of a reaction?

a) Molecularity of a reaction is the number of molecules of the reactants presents in the balanced equation

b) Molecularity of a reaction is the number of molecules in the slowest step

c) Molecularity is always a whole number

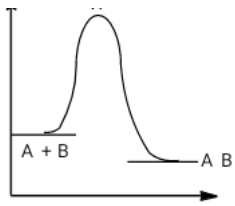
d) There is no difference between order and molecularity of a reaction

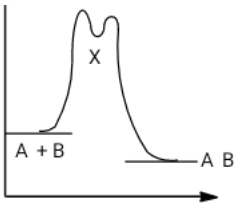
70. For a reaction A + B⟶ Products, the rate of the reaction was doubled when the

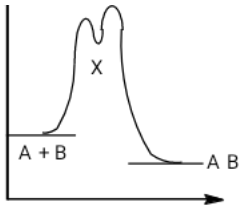
concentration of A was doubled. When the concentration of A and B were doubled, the rate was again doubled, the order of the reaction with respect to A and B are:

a) 1, 1 b) 2, 0 c) 1, 0 d) 0, 1

71. An exothermic chemical reaction occurs in two steps as follows
(I) A + B → X (fast)
(II) X → AB (slow)
The progress of the reaction can be best represented by

a) 

b) 

c) 

d) All are correct

72. According to the Arrhenius equation a straight line is to be obtained by plotting the logarithm of the rate constant of a chemical reaction (log k) against

a) T b) log T c) $\frac{1}{T}$ d) $\log \frac{1}{T}$

73. The rate constant is numerically the same for three reactions of first, second and third order respectively. Which one is true for rate of three reaction?

a) $r_1 = r_2 = r_3$ b) $r_1 > r_2 > r_3$ c) $r_1 < r_2 < r_3$ d) All of these

74. Mathematical expression for $t_{1/4}$ i.e., when (1/4)th reaction is over following first order kinetics can be given by

a) $t_{1/2} = \frac{2.303}{k}\log 4$ b) $t_{1/2} = \frac{2.303}{k}\log 2$ c) $t_{1/2} = \frac{2.303}{k}\log \frac{4}{3}$ d) $t_{1/2} = \frac{2.303}{k}\log \frac{3}{4}$

75. The rate of reaction:
$2NO + Cl_2 \longrightarrow 2NOCl$ is given by the rate, equation rate = $k[NO]^2[Cl_2]$. The value of the rate constant can be increased by:

a) Increasing the temperature

b) Increasing the concentration of NO

c) Increasing the concentration of the Cl_2

d) Doing all of these

76. A reaction was observed for 15 days and the percentage of the reactant remaining after the days indicated was recorded in the following table.

Time (days)	% Reactant remaining
0	100
2	50
4	39
6	25
8	21
10	18
12	15

14	12.5
15	10

Which one of following best describes the order and the half-life of the reaction?

Reaction order	Half-life (days)		
a) First	2	b) First	6
c) Second	2	d) Zero	6

77. In the reaction

$BrO_3^-(aq) + 5Br^-(aq) + 6H^+ \rightarrow 3Br_2(l) + 3H_2O(l)$

The rate of appearance of bromine (Br_2) is related to rate of disappearance of bromide ions as following:

a) $\frac{d(Br_2)}{dt} = \frac{3}{5}\frac{d(Br^-)}{dt}$ b) $\frac{d(Br_2)}{dt} = -\frac{3}{5}\frac{d(Br^-)}{dt}$ c) $\frac{d(Br_2)}{dt} = -\frac{5}{3}\frac{d(Br^-)}{dt}$ d) $\frac{d(Br_2)}{dt} = \frac{5}{3}\frac{d(Br^-)}{dt}$

78. Which one of the following is a second order reaction?

a) $H_2 + Br_2 \rightarrow 2HBr$ b) $NH_4NO_3 \rightarrow N_2 + 3H_2O$

c) $H_2 + Cl_2 \xrightarrow{Sunlight} 2HCl$ d) $CH_3COOCH_3 + NaOH \rightarrow CH_3COONa + H_2O$

79. The temperature coefficient of most of the reactions lies between

a) 1 and 3 b) 2 and 3 c) 1 and 4 d) 2 and 4

80. In respect of the equation $k = Ae^{-E_a/RT}$ in chemical kinetics, which one of the statement is correct?

a) R is Rydberg constant b) K is equilibrium constant

c) E_a is energy of activation d) A is adsorption factor

81. The rate of chemical reaction (except zero order):

a) Decreases from moment to moment

b) Remains constant throughout

c) Is independent of the order of reaction

d) None of the above

82. For a zero order reaction

a) $t_{1/2} \propto R_0$ b) $t_{1/2} \propto 1/R_0$ c) $t_{1/2} \propto R_0^2$ d) $t_{1/2} \propto 1/R_0^2$

83. Effect of temperature on reaction rate is given by

a) Claisen-Clapeyron equation b) Arrhenius equation

c) Gibbs Helmholtz equation d) Kirchoff's equation

84. The Arrhenius equation expressing the effect of temperature on the rate constant of reaction is:

a) $K = \frac{E_a}{RT}$ b) $K = Ae^{-E_a/RT}$ c) $K = \log_e \frac{E_a}{RT}$ d) $K = e^{-Ea/RT}$

85. Find the two third life ($t_{1/2}$)of a first order reaction in which k = 5.48×10^{-14}per second

a) 201×10^{13}s b) 2.01×10^{13}s c) 201×10^{20}s d) 0.201×10^{10}s

86. A + B → Product
If concentration of A is doubled, rate increases 4 times. If concentration of A and B are doubled, rate increases 8 times. The differential rate equation of the reaction will be

a) $\frac{dC}{dt} = kC_A \times C_B$ b) $\frac{dC}{dt} = kC_A^2 \times C_B^3$ c) $\frac{dC}{dt} = kC_A^2 \times C_B$ d) $\frac{dC}{dt} = kC_A^2 \times C_B^2$

87. For the reaction A → B, the rate expression is $r = k[A]^n$. When the concentration of A is doubled, the rate of reaction is quadrupled. The value of n is

a) 1 b) Zero c) 3 d) 2

88. The rate constant for the first order reaction is 60 s^{-1}. How much time will it take to reduce the concentration of the reaction to 1/16 M value ?

a) 4.6×10^{-2}s b) 4.6×10^{4}s c) 4.6×10^{2}s d) 4.6×10^{-4}s

89. In the reaction,
$2N_2O_5 \rightarrow 4NO_2 + O_2$ initial pressure is 500 atm and rate constant k is $3.38\times10^{-5}s^{-1}$ after 10 min the final pressure of N_2O_5 is

a) 490 atm b) 250 atm c) 480 atm d) 420 atm

90. For a chemical reaction, …… can never to a fraction

a) Order b) Half life c) Rate constant d) Molecularity

91. The time taken for the completion of 3/4 of a first order reaction is

a) (2.303/k)log 3/4 b) (2.303/k)log 4 c) (2.303/k)log 1/4 d) (2.303/0.75)log k

92. $2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$
What is the ratio of the rate of decomposition of N_2O_5 to rate of formation of O_2 ?

a) 1:2 b) 2:1 c) 1:4 d) 4:1

93. A first order reaction is 75% complete after 32 min. when was 50% of the reaction completed?

a) 16 min b) 8 min c) 4 min d) 32 min

94. For a reaction, A + 2B → C, rate is given by $+\frac{d[C]}{dt} = k[A][B]$,hence, the order of the reaction is

a) 3 b) 2 c) 1 d) 0

95. The accompanying figure depicts the change in concentration of species X and Y for the reaction X⟶Y, as a function of time. The point of intersection of the two curves represents:

a) $t_{1/2}$

b) $t_{3/4}$

c) $t_{2/3}$

d) Data is insufficient to predict

96. The rate constant of a reaction at temperature 200 K is 10 times less than the rate constant at 400 K. What is the activation energy (E_a) of the reaction?

a) 1842.4 R b) 921.2 R c) 460.6 R d) 230.3 R

97. A zero order reaction is one:

a) In which reactants do not react

b) In which one of the reactants is in large excess

c) Whose rate does not change with time

d) Whose rate increases with time

98. In a first order reaction the a/(a - x) was found to be 8 after 10 minute. The rate constant is:

a) (2.303×3log 2)/10 b) (2.303×2log 3)/10 c) 10×2.303×2log 3 d) 10×2.303×3log 2

99. If the rate of reaction $A \rightarrow B$ doubles on increasing the concentration of A by 4 times, the order of the reaction is

a) 2 b) 1 c) $\frac{1}{2}$ d) 4

100 The rate of chemical reaction

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a) Increase as the reaction proceeds b) Decrease the reaction proceeds

c) May increase or decrease during reaction d) Remains constant as the reaction proceeds