Rate law and Rate constant

74. The alkaline hydrolysis of ethyl acetate is represented by the equation

$CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

Experimentally it is found that for this reaction

$\frac{dx}{dt} = k[CH_3COOC_2H_5][NaOH]$

Then the reaction is

(a) Bimolecular and of first order

(b) Bimolecular and of second order

(c) Pseudo–bimolecular

(d) Pseudo–unimolecular

75. For the reaction $2HI \rightleftharpoons H_2 + I_2$, the rate of the reaction is proportional to $[HI]^2$. This means that the reaction is

(a) Unimolecular

(b) Bimolecular

(c) Of first order

(d) Of second order

76. Inversion of sucrose is

(a) Zero order reaction

(b) First order reaction

(c) Second order reaction

(d) Third order reaction

77. The one which is unimolecular reaction is

(a) $2HI \rightarrow H_2 + I_2$

(b) $N_2O_5 \rightarrow N_2O_4 + \frac{1}{2}O_2$

(c) $H_2 + Cl_2 \rightarrow 2HCl$

(d) $PCl_3 + Cl_2 \rightarrow PCl_5$

78. Integrated velocity equation for first order reaction is

(a) $[A]_o = [A]e^{-Kt}$

(b) $K = [A]_o e^{-A/t}$

(c) $Kt = 2.303\, log\, \frac{[A]_o}{[A]}$

(d) $log\, \frac{[A]_o}{[A]} = -2.303Kt$

79. If the surface area of the reactants increases, then order of the reaction

(a) Increases

(b) Decreases

(c) Remain constant

(d) Sometimes increases and sometimes dereases

80. Half life period $t_{1/2}$ for first order reaction is

(a) K (b) $\frac{1.303\, log\, 2}{K}$

(c) $\frac{2.303\, log\, 2}{K}$ (d) $\frac{9}{K}$

81. Molecularity of reaction of inversion of sugar is

(a) 3 (b) 2

(c) 1 (d) 0

82. For any reaction, if we plot a graph between time 't' and $log(a-x)$, a simple line is obtained. The order of reaction is

(a) Zero (b) One

(c) Two (d) Three

83. Value of velocity constant for first order reaction is $3.46 \times 10^{-3}\, min^{-1}$, the time for half change is

(a) 100 minutes (b) 400 minutes

(c) 200 minutes (d) 346 minutes

84. The unit of the velocity constant in case of zero order reaction is

(a) $Conc. \times time^{-1}$

(b) $Conc.^{-1} \times time$

(c) $Conc.^{-1} \times time^{-1}$

(d) $Conc. \times (time)^2$

85. 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) $2, \frac{3}{2}$ (b) $\frac{3}{2}, \frac{3}{2}$

(c) 1, 1 (d) $1, \frac{1}{2}$

86. The incorrect order indicated against the rate of reaction $A + B \xrightarrow{K} C$ is

	Rate	Order
(a)	$\frac{d[C]}{dt} = K[A]$	1
(b)	$\frac{d[C]}{dt} = K[A][B]$	2
(c)	$\frac{-d[A]}{dt} = K[A][B]^0$	2
(d)	$\frac{-d[A]}{dt} K[A]$	1

87. Which of the following statements regarding the molecularity of a reaction is wrong

(a) It is the number of molecules of the reactants taking part in a single step chemical reaction

(b) It is calculated from the reaction mechanism

(c) It may be either a whole number or fractional

(d) It depends on the rate determining step in the reaction

88. Diazonium salt decomposes as $C_6H_5N_2^+Cl^- \rightarrow C_6H_5Cl + N_2$

At 0^oC, the evolution of N_2 becomes two times faster when the initial

concentration of the salt is doubled. Therefore, it is

(a) A first order reaction

(b) A second order reaction

(c) Independent of the initial concentration of the salt

(d) A zero order reaction

89. In the reaction $A + B \rightarrow$Products, if B is taken in excess, then it is an example of

(a) Second order reaction

(b) Zero order reaction

(c) Pseudounimolecular reaction

(d) First order reaction

90. The half life of a first order reaction is $69.35sec$. The value of the rate constant of the reaction is

(a) $1.0s^{-1}$ (b) $0.1s^{-1}$

(c) $0.01s^{-1}$ (d) $0.001s^{-1}$

91. The half life for the reaction $N_2O_5 \rightleftharpoons 2NO_2 + \frac{1}{2}O_2$ in $24hrs$ at 30^oC . Starting with $10g$ of N_2O_5 how many grams of N_2O_5 will remain after a period of 96 *hours*

(a) $1.25g$ (b) $0.63g$

(c) $1.77g$ (d) $0.5g$

92. The half life of a first order reaction is 10 minutes. If initial amount is $0.08mol/litre$ and concentration at some instant is $0.01mol/litre$, then $t =$

(a) 10 minutes (b) 30 minutes

(c) 20 minutes (d) 40 minutes

93. Half life period of second order reaction is

(a) Proportional to the initial concentration of reactants

(b) Independent of the initial concentration of reactants

(c) Inversely proportional to initial concentration of reactants

(d) Inversely proportional to square of initial concentration of reactants

94. The reaction $2H_2O_2 \rightarrow 2H_2O + O_2$ is a

(a) Zero order reaction

(b) First order reaction

(c) Second order reaction

(d) Third order reaction

95. In a reaction involving hydrolysis of an organic chloride in presence of large excess of water

$RCl + H_2O \rightarrow ROH + HCl$

(a) Molecularity is 2, order of reaction is also 2

(b) Molecularity is 2, order of reaction is 1

(c) Molecularity is 1, order of reaction is 2

(d) Molecularity is 1, order of reaction is also 1

96. The thermal decomposition of a compound is of first order. If a sample of the compound decomposes 50% in 120 minutes, in what time will it undergo 90% decomposition

(a) Nearly 240 *minutes*

(b) Nearly 480 *minutes*

(c) Nearly 450 *minutes*

(d) Nearly 400 *minutes*