Rate law and Rate constant

119. For the reaction $A + B \rightarrow$ products, doubling the concentration of *A* the rate of the reaction is doubled, but on doubling the concentration of *B* rate remains unaltered. The over all order of the reaction is

(a) 1 (b) 0

(c) 2 (d) 3

120. Which among the following is a false statement

(a) Half life of a third order reaction is inversely proportional to the square of initial concentration of the reactant.

(b) Molecularity of a reaction may be zero or fractional

(c) For a first order reaction $t_{1/2} = \frac{0.693}{K}$

(d) Rate of zero order reaction is independent of initial concentration of reactant

121. After how many seconds will the concentration of the reactants in a first order reaction be halved, if the decay constant is $1.155 \times 10^{-3}\ sec^{-1}$

(a) 100 *sec* (b) 200 *sec*

(c) 400 *sec* (d) 600 *sec*

122. What is the order of a reaction which has a rate expression rate $= K[A]^{3/2}[B]^{-1}$

(a) 3/2

(b) 1/2

(c) 0

(d) None of these

123. Which of the following expression is correct for first order reaction? (CO) refers to initial concentration of reactant

(a) $t_{1/2} \propto CO$ (b) $t_{1/2} \propto CO^{-1}$

(c) $t_{1/2} \propto CO^{-2}$ (d) $t_{1/2} \propto CO^{0}$

124. For a reaction $2NO(g) + Cl_2(g) \rightleftharpoons 2NOCl(g)$. When concentration of Cl_2 is doubled, the rate of reaction becomes two times of the original. When the concentration of *NO* is doubled the rate becomes four times. What is the order of the reaction

(a) 1 (b) 2

(c) 3 (d) 4

125. The rate constant for a second order reaction is $8 \times 10^{-5} M^{-1} min^{-1}$. How long will it take a 1*M* solution to be reduced to 0.5 *M*

(a) $8 \times 10^{-5} min$

(b) $8.665 \times 10^{3} min$

(c) $4 \times 10^{-5} min$

(d) $1.25 \times 10^{4} min$

126. The rate for a first order reaction is $0.6932 \times 10^{-2} moll^{-1} min^{-1}$ and the initial concentration of the reactants is 1*M*, $T_{1/2}$ is equal to

(a) 6.932 *min*

(b) 100 *min*

(c) 0.6932×10^{-3} *min*

(d) 0.6932×10^{-2} *min*

127. For a given reaction $t_{1/2} = \frac{1}{Ka}$.. The order of the reaction is

(a) 1 (b) 0

(c) 3 (d) 2

128. 75% of a first order reaction is completed in 30 minutes. What is the time required for 93.75% of the reaction (in minutes)

(a) 45 (b) 120

(c) 90 (d) 60

129. A First order reaction is half completed in 45 minutes. How long does it need 99.9% of the reaction to be completed

(a) 5 hours (b) 7.5 hours

(c) 10 hours (d) 20 hours

130. A substance '*A*' decomposes by a first order reaction starting initially with [A] =2.00m and after 200 min [A] = 0.15m. For this reaction what is the value of *k*

(a) $1.29 \times 10^{-2}\ min^{-1}$

(b) $2.29 \times 10^{-2}\ min^{-1}$

(c) $3.29 \times 10^{-2}\ min^{-1}$

(d) $4.40 \times 10^{-2}\ min^{-1}$

131. Which of the following statements about zero order reaction is not true

(a) Its unit is sec^{-1}

(b) The graph between log (reactant) versus rate of reaction is a straight line

(c) The rate of reaction increases with the decrease in concentration of reactants

(d) Rate of reaction is independent of concentration of reactants

132. The given reaction $2NO + O_2 \rightarrow 2NO_2$ is an example of

(a) First order reaction

(b) Second order reaction

(c) Third order reaction

(d) None of these

133. Order of a reaction is decided by

(a) Pressure

(b) Temperature

(c) Molecularity

(d) Relative concentration of reactants

134. From the following which is a second order reaction

(a) $K = 5.47 \times 10^{-4}\, sec^{-1}$

(b) $K = 3.9 \times 10^{-3}$molelit sec^{-1}

(c) $K = 3.94 \times 10^{-4}$litmole^{-1} sec^{-1}

(d) $K = 3.98 \times 10^{-5}$litmole^{-2} sec^{-1}

135. For the reaction $A + 2B \rightarrow C$, rate is given by $R = [A][B]^2$ then the order of the reaction is

(a) 3 (b) 6

(c) 5 (d) 7

136. Units of rate constant of first and zero order reactions in terms of molarity *M* unit are respectively

(a) $sec^{-1}, Msec^{-1}$ (b) sec^{-1}, M

(c) $Msec^{-1}, sec^{-1}$ (d) M, sec^{-1}

137. The reaction $2N_2O_5 \rightleftharpoons 2N_2O_4 + O_2$ is

(a) Bimolecular and second order

(b) Unimolecular and first order

(c) Bimolecular and first order

(d) Bimolecular and zero order

138. The half-life period for a first order reaction is 693 seconds. The rate constants for this reaction would be

(a) $0.1sec^{-1}$ (b) $0.01sec^{-1}$

(c) $0.001sec^{-1}$ (d) $0.0001sec^{-1}$

139. For an elementary reaction, $2A + B \rightarrow C + D$ the molecularity is

(a) Zero (b) One

(c) Two (d) Three

140. If the order of the reaction $x + y \xrightarrow{hv} xy$ is zero, it means that the rate of

(a) Reaction is independent of temperature

(b) Formation of activated complex is zero

(c) Reaction is independent of the concentration of reacting species

(d) Decomposition of activated complex is zero

141. For a first order reaction velocity constant, $K = 10^{-3}s^{-1}$. Two third life for it would be

(a) 1100 *s* (b) 2200 *s*

(c) 3300 *s* (d) 4400 *s*

142. In a reaction, the concentration of reactant is increased two times and three times then the increases in rate of reaction were four times and nine times respectively, order of reaction is

(a) Zero (b) 1

(c) 2 (d) 3

143. For a chemical reaction....can never be a fraction

(a) Order

(b) Half-life

(c) Molecularity

(d) Rate constant