CHEMISTRY

BOOKS - MBD CHEMISTRY (ODIA ENGLISH)

CHEMICAL KINETICS

Question Bank

1. Prove that time required for the completion of 3/4 of reaction of the 1st order reaction is twice the time required for the completion of half of the reaction.

Watch Video Solution

2. The half life period of 1st order reaction of A is 2 minutes. How long will it take to reach at 25% of its initial concentration.

Watch Video Solution

3. Define rate of reaction .

Watch Video Solution

4. Define order of reaction.

Watch Video Solution

5. Explain molecularity of a reaction.

Watch Video Solution

6. Calculate the unit of 1st order rate constant

Watch Video Solution

7. Give one example of unimolecular reaction.

Watch Video Solution

8. Give one example of bimolecular reaction.

Watch Video Solution

9. Write relationship between the rate constant and its activation energy.

Watch Video Solution

10. The minimum energy which molecules need to acquire before they can react by collision is known as what ?

Watch Video Solution

11. The slowest step is called the rate determining step of the multistep reaction. (True/False)

Watch Video Solution

12. How catalyst affects the rate of reaction ?

Watch Video Solution

13. Give example of zero order reaction

Watch Video Solution

14. Define threshold energy.

Watch Video Solution

15. If activation energy of a reaction is zero, how does rate constant of the reaction change with temperature ?

Watch Video Solution

16. Unit of the rate constant for first order reaction is_____.

Watch Video Solution

17. The rate constant of 1st order is $0.0005 \min^{-1}$. Find its half life period.

Watch Video Solution

18. The half life period of a 1st order reaction is 30 seconds. Calculate its rate constant.

Watch Video Solution

19. How average K.E. of a gas molecule is related to the temperature ?

Watch Video Solution

20. Define activation energy of a reaction.

Watch Video Solution

21. Name the reaction when hydrolysis of ester in an alkaline medium takes place.

Watch Video Solution

22. What is unit of rate of reaction?

Watch Video Solution

23. Activation energy for a chemical reaction depends on the nature of the reactant. (True/False)

Watch Video Solution

24. Molecularity of a reaction can never be zero.(True/False)

Watch Video Solution

25. Write the integrated rate equation for 1st order reaction.

Watch Video Solution

26. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

27. What is the order of reaction if the unit of rate constant is $litre\ mol^{-1} \sec^{-1}$?

Watch Video Solution

28. What is the half-life period of a reaction having rate constant $6.93 \times 10^{-4} \sec^{-1}$.

Watch Video Solution

29. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

30. What is order of reaction ?

Watch Video Solution

31. What is the unit of rate constant of the first order reaction?

Watch Video Solution

32. Write two factors which influence the rate of reaction.

Watch Video Solution

33. What is the expression for rate constant for 1st order reaction ?

Watch Video Solution

34. Rate constant of a 1st order reaction is 0.5 s^{-1}. What is the half-life period ?

Watch Video Solution

35. Write Arrhenius equation relating activation energy (E_a),temperature(T) and rate const.(K).

Watch Video Solution

36. Define molecularity of a reaction.

Watch Video Solution

37. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

38. If unit of the rate constant is $\sec^{-1}$ the order of reaction is______.

Watch Video Solution

39. Unit of the rate constant for first order reaction is_____.

Watch Video Solution

40. Rate of reaction is influenced by____.

Watch Video Solution

41. Acid hydrolysis of ester is a ____ order reaction

Watch Video Solution

42. Alkali hydrolysis of ester is a _____ order reaction having molecularity_____.

Watch Video Solution

43. Rusting of iron is a _____ reaction.

Watch Video Solution

44. Unit of the rate of reaction is_____.

Watch Video Solution

45. Rate of reaction____as tempersture increases.

Watch Video Solution

46. Arrhenius equation is given by____.

Watch Video Solution

47. Acid hydrolysis of ester having molecularity ____ .

Watch Video Solution

48. Alkali hydrolysis of ester is a ____ order reaction having molecularity____.

Watch Video Solution

49. Alkali hydrolysis of ester is a first order reaction .is it true or false

Watch Video Solution

50. Rusting of iron is a _____ reaction.

Watch Video Solution

51. Unit of the rate of reaction is $mol^{-1}\sec^{-1}$

Watch Video Solution

52. Rate of reaction decreases as temperature increases.is it true or false

Watch Video Solution

53. If unit of rate constant is mol^{-1} lit $\sec^{-1}$ order of the reaction is ____

Watch Video Solution

54. Unit of the rate constant for first order reaction is______.

Watch Video Solution

55. Acid hydrolysis of ester is a second order reaction.

Watch Video Solution

56. Derive an expression for the rate constant of first order reaction. The rate constant of first order reaction is 0.346 min^{-1}. What is the half-life?

Watch Video Solution

57. The half-life period of a reaction is 60 s. Calculate its rate constant.

Watch Video Solution

58. The rate constant of a first order reaction is $k = 7.39 \times 10^{-5} \text{ s}^{-1}$. Find the half-life of the reaction.

Watch Video Solution

59. The rate constant of a first order reaction is 0.60 sec^{-1}. What is its half-life period?

Watch Video Solution

60. Calculate the half life of the first order reaction from their rate constants given as:

Watch Video Solution

61. Activation energy of a reaction is:

Watch Video Solution

62. Write the rate law for a first order reaction.

Watch Video Solution

63. Rate of which reactions increases with temperature:

Watch Video Solution

64. Find the rate of reaction of the given reaction $2NO + 2H_2 \rightarrow N_2 + 2H_2O$

Watch Video Solution

Watch Video Solution

65. What is order of reaction ?

Watch Video Solution

66. Explain molecularity of a reaction.

Watch Video Solution

67. What is the effect of catalyst on activation energy?

Watch Video Solution

68. Why do reaction rates depend on temperature? Explain.

Watch Video Solution

69. A first order reaction is 30% completed in 30 minutes. Calculate the half-life.

Watch Video Solution

70. Rate of reaction is influenced by_____.

Watch Video Solution

71. What is the half life period of a first order reaction having rate constant $10^{-2} \sec^{-1}$?

Watch Video Solution

72. Calculate the rate constant of a reaction (first order) which is 90% complete in 10 min.

Watch Video Solution

73. Activation energy is low for fast reactions. Explain.

Watch Video Solution

74. What is zero order reaction? Give one example.

Watch Video Solution

75. Name any two factors which influence the rate of reaction.

Watch Video Solution

76. The rate constant of a first order reaction is $k = 7.39 \times 10^{-5} \text{ s}^{-1}$. Find the half-life of the reaction.

Watch Video Solution

77. The half-life period of a first order reaction is 60 seconds. Calculate the rate constant.

Watch Video Solution

78. The rate of reaction is doubled when the temperature changes from $27^{\circ}C$ to $37^{\circ}C$. Calculate the energy of activation.

Watch Video Solution

79. For a first order reaction, it takes 16 min to complete 50% reaction. How much time does it take to complete 75% reaction?

Watch Video Solution

80. The rate constant of a reaction is $1.5 \times 10s^{-1}$ at $100^{\circ} C$. Calculate the value of activation energy for the reaction.

View Text Solution

81. A 1st order reaction is 20% complete in 20 minutes. Calculate the time it will take the reaction to complete 80%.

Watch Video Solution

82. State the role of activated complex in a reaction and state its relation with activation energy.

Watch Video Solution

83. For a first order reaction, it takes 16 min to complete 50% reaction. How much time does it take to complete 75% reaction?

Watch Video Solution

84. The rate of most reactions become double when their temperature is raised from 298 K to 308 K. Calculate their activation energy.

(Given, $R = 8.314 \text{ J mol}^{-1}$)

Watch Video Solution

85. State the rate equation for a first order reaction. Derive the half-life period from the rate equation. A first order reaction takes 69.3 minutes for 50% completion. How much time will be needed for 80% completion?

Watch Video Solution

86. Define the following terms.

Pseudo first order reaction.

Watch Video Solution

87. What do you mean by molecularity and order of reaction? Give one example each of the first and second order reaction.

Watch Video Solution

88. Derive the half life period from the 1st order rate equation.

Watch Video Solution

89. State the rate equation for a first order reaction. Derive the half-life period from the rate equation. A first order reaction takes 69.3 minutes for 50% completion. How much time will be needed for 80% completion?

Watch Video Solution

90. What is zero order reaction? Give one example.

Watch Video Solution

91. Write notes on half-life period.

Watch Video Solution

92. What are the various factors affecting the rate of reaction.

Watch Video Solution

93. Give distinction between order and molecularity.

Watch Video Solution

94. Discuss collision theory with its limitations.

Watch Video Solution

95. Write notes on: Arrhenius equation

Watch Video Solution

96. Write short notes on :

activation energy

Watch Video Solution

97. The sum of the power to which the concentration of substance appears in the rate expression is known as:

A. Rate of reaction

B. Molecularity of reaction

C. Order of reaction

D. None of the above

Answer: C

Watch Video Solution

98. If concentration of reactants is increased by 'X', the rate constant K becomes:

A. $e^{K/X}$

B. (K/X)

C. K

D. $\left(\frac{X}{K}\right)$

Answer: C

Watch Video Solution

99. 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

Answer: A

Watch Video Solution

100. The rate for the reaction, $RCl + NaOH(aq) \rightarrow ROH + NaCl$ is given by rate= $K_1[RCl]$. The rate of the reaction is:

A. Doubled on doubling the concentration of NaOH

B. Halved on reducing the concentration of RCl to half

C. Decreased on increasing the temperature of the reaction

D. Unaffected by increasing the temperature of the reaction

Answer: B

Watch Video Solution

101. The rate of chemical reaction depends on the nature of chemical reactions, because:

A. The threshold energy level differs from one reaction to another

B. Some of the reactant are solid at room temperature

C. Some of the reactants are coloured

D. All

Answer: A

Watch Video Solution

102. Which statement is correct:

A. Reactions with low activation energy are usually exothermic

B. The rate law sometimes enables to deduce the mechanism of a reaction

C. The rate law for a reaction is an algebraic ,expression relating the forward reaction rate to product concentration

D. Increase in the total pressure of a gas phase reaction increase the fraction of collisions effective in producing reactions

Answer: D

Watch Video Solution

103. For the reaction $2NO_2 + F_2 \rightarrow 2NO_2F$, following mechanism has been provided:

$NO_2 + F_2 \xrightarrow{slow} NO_2F + F$

$NO_2 + F \xrightarrow{FAST} NO_2F$

Thus rate expression of the above reaction can be written as:

A. $r = k[NO_2]^2[F_2]$

B. $r = k[NO_2][F_2]$

C. $r = k[NO_2]$

D. $r = k[F_2]$

Answer: B

Watch Video Solution

104. For a reaction for which the activation energies of forward and reverse reactions are equal:

A. $\Delta H = O$

B. $\Delta S = O$

C. The order is zero

D. There is no catalyst

Answer: A

Watch Video Solution

105. The threshold energy of a chemical reaction depends upon:

A. Nature of reacting species

B. Temperature

C. Concentration of species

D. Number of collisions per unit time or collision frequency

Answer: A

Watch Video Solution

106. The order of reaction can be deduced from

A. Chemical equation

B. Experiments

C. Rate constant

D. Thermochemical equation

Answer: B

Watch Video Solution

107. Which rate expression suggests an over all order of 0.5 for the reaction involving substances X, Y, Z:

A. Rate = $K[X][Y][Z]$

B. Rate $= K[X]^{0.5}[Y]^{0.5}[Z]^{0.5}$

C. Rate $= K[X]^{1.5}[Y]^{-1}[Z]^{0}$

D. Rate $= K[X]\frac{[Y]^{0}}{[Z]^{2}}$

Answer: C

Watch Video Solution

108. For a chemical reaction $A \rightarrow B$, it is found that the rate of reaction doubles when the conc, of 'A' is increased four times. The order of reaction is

A. 2

B. 1

C. $1/2$

D. Zero order

Answer: C

Watch Video Solution

109. 75% of a first order reaction was completed in 32 minutes, 50% of the reaction will be completed in

A. 24 minute

B. 16 minute

C. 8 minute

D. 4 minute

Answer: B

Watch Video Solution

110. The rate constant (K) for the reaction $2A \rightarrow$ Product was found to be $2.5X10^{-5}Lmol^{-1}\sec^{-1}$ after15 sec, $2.5X10^{-5}Lmol^{-1}\sec^{-1}$ after 30 sec and $2.55X10^{-5}Lmol^{-1}\sec^{-1}$ after 50sec. The order of reaction is:

A. 2

B. 3

C. Zero

D. 1

Answer: A

Watch Video Solution

111. The rate of reaction becomes 2 times for every $10^\circ C$ rise in temperature. How the rate of reaction will increases when temperature is increased from $30^\circ C$ to $80^\circ C$

A. 16

B. 32

C. 64

D. 128

Answer: B

Watch Video Solution

112. A first order reaction has a half life period of 69.3 sec. At $0.10 mol litre^{-1}$ reactant concentration, rate will be:

A. $10^{-4} M \sec^{-1}$

B. $10^{-3} M \sec^{-1}$

C. $10^{-1} M \sec^{-1}$

D. $6.93 X 10^{-1} M \sec^{-1}$

Answer: B

Watch Video Solution

113. The rate of a reaction $A \rightarrow$ product, increases by a factor of 100, when cone, of 'A' is increased 10 fold. The order of the reaction is

A. 1

B. 2

C. 10

D. 100

Answer: B

Watch Video Solution

114. The rate of reaction between two reactants A and B is expressed as rate = $K[A][B]^2$. On doubling the concentration of both the reactants A and B, the reaction rate increases by

A. 3 times

B. 4 times

C. 6 times

D. 8 times

Answer: C

Watch Video Solution

115. When ethyl acetate was hydrolysed in presence of $0.1 NHCI$, the rate constant was found to be $5.40 X 10^{-5} \sec^{-1}$ But when $0.1 NH_2SO_4$ was used for hydrolysis, the rate was used for hydrolysis, the rate to be $6.25X10^{-5}\sec^{-1}$. Thus it may be concluded that:

A. H_2SO_4 is stronger than HCl

B. H_2SO_4 is weaker than HCl

C. H_2SO_4 and HCl both have the same strength

D. The data are not sufficient to compare the strength of H_2SO_4 and HCl

Answer: A

View Text Solution

116. The rate constant of a first order reaction is $4X10^{-3}\sec^{-1}$At a reactant concentration of $0.02M$, the rate of reaction would be:

A. $8X10^{-5}M\sec^{-1}$

B. $4X10^{-3}M\sec^{-1}$

C. $2X10^{-1}M\sec^{-1}$

D. $4X10^{-1}M\sec^{-1}$

Answer: A

Watch Video Solution

117. The rate constant of n^{th}order reaction has units :

A. $litre^{1-n}mol^{1-n}\sec^{-1}$

B. $mol^{1-n}mol^{1-n}\sec^{-1}$

C. $mol^{1-n} litre^{n-1} \sec^{-1}$

D. None of these

Answer: C

Watch Video Solution

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

A. $k = \frac{E_a}{RT}$

B. $k = Ae^{-Ea/RT}$

C. $k = \log_e\left[\frac{E_a}{RT}\right]$

D. $k = e^{-Ea}/RT$

Answer: B

Watch Video Solution

119. Which one of the following does not influence the rate of reaction?

A. Pressure

B. Concentration of reactant

C. Temperature

D. Molecularity

Answer: D

Watch Video Solution

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

A. Instantaneously

B. With a measurable speed

C. Slowly

D. None

Answer: A

Watch Video Solution

121. The temperature coefficient of a reaction is:

A. The rate constant at a fixed temperature

B. The ratio of rate constant at two temperature

C. The ratio of rate constant at two different temperatures differing by 10^0 preferably $25^0 C$ and $35^0 C$

D. None of these

Answer: C

Watch Video Solution

122. In a reaction, the rate expression is, rate = $k[A][B]^{2/3}[C]^0$,the order of reaction is:

A. 1

B. 2

C. $5/3$

D. Zero

Answer: C

Watch Video Solution

123. The elementary step of the reaction $2Na + Cl_2 = 2NaCl$ is found to follow III order kinetics, its molecularity is:

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

124. If 'a' is the initial concentration of a substance which reacts according to zero order kinetic and k k'is rate constant, the time for the reactant to go to completion is,

A. a / K

B. $2 / k$

C. K / a

D. $2K / a$

Answer: A

Watch Video Solution

125. A reaction varies independent to the concentration of reactant, then the order of reaction is:

A. Zero

B. 1

C. 2

D. 3

Answer: C

Watch Video Solution

126. The rate law for the single step reaction $2A + B \rightarrow 2C$ is given by

A. Rate=K[A].[B]

B. $Rate = K[A]^2.[B]$

C. Rate = K[2A].[B]

D. $Rate = K[A]^2[B]^o$

Answer: B

Watch Video Solution

127. The reaction $L \rightarrow M$ is started with $10g$ of L. After 30 and 90 minute, $5g$and $1.25g$ of L are left respectively. The order of reaction.is:

A. 0

B. 2

C. 1

D. 3

Answer: C

Watch Video Solution

128. The activation energy for a reaction is $9.0 Kcal / mol$. The increase in the rate constant when its temperature is increased from $298K$ to $308K$ is:

A. 10%

B. 100%

C. 50%

D. 63%

Answer: D

Watch Video Solution

129. In a first order reaction, the concentration of the reactant is decreased from $1.0M$ 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}

Answer: D

Watch Video Solution

130. The rate of a chemical reaction doubles for every $10^{\circ} C$ rise in temperature. If the rate is increased by $60^{\circ} C$, the rate of reaction increases by:

A. 29 times

B. 32 times

C. 64 times

D. 128 times

Answer: C

Watch Video Solution

131. The rate of first order reaction $A \rightarrow$ Products, is 7.5×10^{-4} mole $litre^{-1}\sec^{-1}$.If the concentration of A is 0.5 mole $litre - $1the rate constant is:

A. $3.75 \times 10^{-4}\sec^{-1}$

B. $2.5 \times 10^{-5}\sec^{-1}$

C. $1.5 \times 10^{-3}\sec^{-1}$

D. $8.0 \times 10^{-4}\sec^{-1}$

Answer: C

Watch Video Solution

132. Consider the reaction 2A+B $\rightarrow$ C+D. If the rate expression is rate=$K[A]^2[B]^1$ and if concentration of the reactants are increased by three times, the rate of the reaction will increase by:

A. 9 times

B. 81 times

C. 64 times

D. 27 times

Answer: D

Watch Video Solution

133. An endothermic reaction $A \rightarrow B$ have an activation energy $15 kcal / mol$ and the heat of the reaction is

$5kcal/mol$. The activation energy of the reaction $B \to A$ is

:

A. $20kcal/mol$

B. $15kcal/mol$

C. $10kcal/mol$

D. $Zero$

Answer: C

Watch Video Solution

134. The rate of a reaction is doubled for every $10^{\circ}C$ rise in temperature. The increase in rate as a result of increase in temperature from $10^{\circ}C$ to $100^{\circ}C$ is:

A. 112

B. 512

C. 400

D. 256

Answer: B

Watch Video Solution

135. How much faster would a reaction proceed at $25^{\circ}C$ than at $0^{\circ}C$ if the activation energy is $65kJ$:

A. 2 times

B. 16 times

C. 11 times

D. 6 times

Answer: C

Watch Video Solution

136. For a reaction A+B $\rightarrow$ Products, it is observed that doubling the concentration of B causes the reaction rate to increase four times, but doubling the concentration of A has no effect on the rate of reaction. The rate equation is threfore

A. $Rate = K[A]^2$

B. $Rate = K[B]^2$

C. $Rate = K[A][B]$

D. $Rate = K[A]$

Answer: B

Watch Video Solution

137. The minimum energy which molecules need to acquire before they can react by collision is known as what ?

A. Kinetic energy

B. Potential energy

C. Threshold energy

D. Activation energy

Answer: C

Watch Video Solution

138. Which statement is correct ?

A. Molecularity of a reaction is same as the order of reaction

B. In some cases order of reaction may be same as the. molecularity of the reaction

C. Both (a) and (b) are correct

D. All are incorrect

Answer: B

Watch Video Solution

139. Collision theory satisfactorilly explains for:

A. First order reactions

B. Zero order reactions

C. Bimolecular reactions

D. Any order reactions

Answer: C

Watch Video Solution

140. 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. $1/T$

D. $\log 1/T$

Answer: C

Watch Video Solution

141. The inversion of cane sugar into glucose and fructose is:

A. I order

B. IIorder

C. III order

D. Zero order

Answer: A

Watch Video Solution

142. Number of mole of a substance present in 1 litre volume is known as:

A. Activity

B. Molar concentration

C. Active mass

D. None of the above

Answer: B

Watch Video Solution

143. The number of molecules of the reactants taking part in a single step of the reaction tells about:

A. Molecularity of the reaction

B. Mechanism, of the reaction

C. Order of reaction

D. All

Answer: A

Watch Video Solution

144. Rate of a chemical reaction can be kept constant by:

A. Stirring the compounds

B. Keeping the temperature constant

C. Both (a) and (b)

D. None

Answer: B

Watch Video Solution

145. Which statement about molecularity of a reaction is wrong:

A. It is the number of molecules of the reactants taking part in a single step of reaction

B. It is calculated from the reaction mechanism

C. It may be either whole number or fractional

D. None

Answer: C

Watch Video Solution

146. Inversion of a sugar follows first order rate equation which can be followed by noting the change in rotation of the plane of polarization of light in the polarimeter if r_{∞}, r_t and $t = \infty$, t=t and t=0, then, first order reaction can be written as:

A. $K = \frac{1}{t}\log\frac{r_1 - r_{\infty}}{r_0 - r_{\infty}}$

B. $K = \frac{1}{t}In\frac{r_0 - r_{\infty}}{r_t - r_{\infty}}$

C. $K = \frac{1}{t}In\frac{r_{\infty} - r_0}{r_{\infty} - r_t}$

D. $K = \frac{1}{t} In \frac{r_{\infty} - r_1}{r_{\infty} - r_0}$

Answer: B

Watch Video Solution

147. At $250^{\circ} C$ the half life for the decomposition of N_2O_5 is 5.7 hr and is independent of initial pressure of N_2O_5. The specific rate constant is:

A. $0.693 / 5.7$

B. 0.693×5.7

C. $5.7 / 0.693$

D. None

Answer: A

Watch Video Solution

148. For a given reaction .of first order, it takes 20 minute for the concentration to drop from $1.0 M litre^{-1}$ to $0.6M$ litre^-1

$time required f$ or $the concentration \rightarrow drop o m 0.6M$

litre^-1 $\rightarrow$ 0.36M $litre^{-1}$ will be:

A. More than 20 minute

B. Less than 20 minute

C. Equal to 20 minute

D. Infinity

Answer: C

Watch Video Solution

149. In a first order reaction $a/(a-x)$ was found to be 8 after l0minute. The rate constant is

A. $(2.303 \times 3 \log 2)/10$

B. $(2.303 \times 2 \log 3)/10$

C. $10 \times 2.303 \times 2 \log 3$

D. $10 \times 2.303 \times 3 \log 2$

Answer: A

Watch Video Solution

150. For the reaction A + B $\rightarrow$ Product, it is found that the order of A is 2 and of B is 3 in the rate expression. When concentration of both is doubled, the rate will increase by:

A. 10

B. 6

C. 32

D. 16

Answer: C

Watch Video Solution

151. The rate law of the reaction, $2A + B \rightarrow 2AC$ is represented as Rate $= K[A]^2[B]$. If A is taken in large excess, the order of the reaction will be,

A. Zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

152. If a reaction with $t_1/_2 = 69.3$ second, has a rate constant 10^{-2} per second, the order is:

A. Zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

153. The specific reaction rate constant for a first, order reaction is $60 \times 10^{-4} \sec^{-1}$ If the initial concentration of the reaction is 0.01 mole per litre, the rate is:

A. $60 \times 10^{-6} M \sec^{-1}$

B. $36 \times 10^{-4} M \sec^{-1}$

C. $60 \times 10^{-2} M \sec^{-1}$

D. $36 \times 10^{-1} M \sec^{-1}$

Answer: A

Watch Video Solution

154. K for a zero order reaction $2 \times 10^{-2} mol L^{-1} \sec^{-1}$ If the concentration of the reactant after 25 sec is 0.5 M, the initial concentration must have been:

A. 0.5M

B. 1.25M

C. 12.5M

D. 1.0M

Answer: A

Watch Video Solution

155. A first order reaction is carried out with an initial concentration of 10 mole per litre and 80% of the reactant changes into the product. Now if the same - reaction is carried out with an initial concentration of 5 mol per litre the percentage of the reactant changing to the product is:

A. 40

B. 80

C. 160

D. Cannot be calculated

Answer: B

Watch Video Solution

156. What fraction of a reactant showing first order remains after 40 minute if $t_1 /_2$ is 20 minute ?

A. $1/4$

B. $1/2$

C. $1/8$

D. $1/6$

Answer: A

Watch Video Solution

157. Radioactive decay follows.....order kinetics.

A. Zero

B. I

C. II

D. III

Answer: B

Watch Video Solution

158. In the reaction, A+ 2B $\rightarrow$ 3C+D which of the following expression does not describe changes in the. concentration of various species as a function of. time:

A. $\frac{d[C]}{dt} = \frac{-3d[A]}{dt}$

B. $\frac{3d[D]}{dt} = \frac{d[C]}{dt}$

C. $\frac{3d[B]}{dt} = \frac{-2d[C]}{dt}$

D. $\frac{2d[B]}{dt} = \frac{d[A]}{dt}$

Answer: D

Watch Video Solution

159. The decomposition of N_2O_5 by $2N_2O_5 \rightarrow 4NO_2 + O_2$ follows first order kinetics. Select the incorrect statement.

A. The reaction is bimolecular

B. The reaction is unimolecular

C. $t_{1/2} \infty a^{\circ}$

D. None of the above

Answer: C

Watch Video Solution

160. For an endothermic reaction where, ΔH represent the enthalpy of the reaction in $\mathrm{kJ/mol}$, the minimum value for energy of activation will be

A. Less than ΔH

B. Zero

C. More than ΔH

D. Equal to ΔH

Answer: C

Watch Video Solution

161. The half life for a reaction is.....of temperature:

A. Independent

B. increase with increase

C. Decreased with increase

D. Dependent

Answer: C

Watch Video Solution

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

A. Decreases from moment to moment

B. Remains constant, throughout

C. Independent of the order of reaction

D. None of the above

Answer: A

Watch Video Solution

163. Acid hydrolysis of ester is a _____ order reaction

A. I order reaction

B. Bimolecular reaction

C. Pseudo unimolecular reaction

D. All

Answer: D

Watch Video Solution

164. For a reaction of II order kinetics, $t_{1/2}$ is:

A. $\propto a$

B. $\propto a^{-3}$

C. $\propto a^2$

D. $\propto a^{-1}$

Answer: D

Watch Video Solution

165. The reaction,

$$CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$$

is:

A. Bimolecular reaction

B. II order reaction

C. Both (a) and (b)

D. None of the above

Answer: C

Watch Video Solution

166. The rate for a first order reaction is $0.6932 \times 10^{-2} mol L^{-1} \min^{-1}$ and the initial concentration of the reactant is 1 M, $t_{1/2}$ is equal to:

A. 0.6932×10^{-2} min

B. 0.6932×10^{-2}

C. 100minute

D. 6.932minute

Answer: C

Watch Video Solution

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

A. $8.665x10^3$ minute

B. $8xIO^{-5}$ minute

C. $1.25x10^4$ minute

D. $4x10^{-5}$minute

Answer: C

Watch Video Solution

168. For a first order reaction A $\rightarrow$ Products, the rate of reaction at [A] = 0.2 M is $10^{-2} mollitre^{-1} \min^{-1}$. The half life period for the reaction is:

A. 832 min

B. 440 min

C. 416 min

D. 14 min

Answer: A

Watch Video Solution

169. For $A + B \rightarrow C + D, \Delta H = -20kJmol^{-1}$, The activation energy of the forward reaction is 85 kJ mol^{-1}. The activation energy for backward reaction is.......kJ mol^{-1}:

A. 65

B. 105

C. 85

D. 40

Answer: B

Watch Video Solution

170. In a reaction 2A $\rightarrow$ Products: the concentration of A decreases from $0.5 mollitre^{-1}$ to $0.4 mollitre^{-1}$ in 10 minutes. The rate of reaction during this interval is:

A. $0.05M \min^{-1}$

B. $0.005M \min^{-1}$

C. $0.5M \min^{-1}$

D. $5M \min^{-1}$

Answer: B

Watch Video Solution

171. The rate constant is numerically same for three reactions of 1st, 2nd and 3rd order respectively. If conc, of the reactant is more than 1M, which one is true for the rates of the three reactions ?

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: C

Watch Video Solution

172. In the above problem if concentration of reactant is less than 1 M then:

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: B

View Text Solution

173. In the above problem if concentration of reactant is 1 M then:

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: A

View Text Solution

174. The unit of rate constant for the reaction obeying rate expression, $r = K[A]^1[B]^{2/3}$ is:

A. $Mol^{-2/3} litre^{2/3} time^{-1}$

B. $Mol^{2/3} litre^{-2/3} time^{-1}$

C. $Mol^{-5/3} litre^{-2/3} time^{-1}$

D. None of these

Answer: A

Watch Video Solution

175. For a reaction, $2A + B \to C + D$, $\frac{d[A]}{dt} = K[A]^2[B]$

The expression for $\frac{d[B]}{dt}$ will be:

A. $K[A]^2[B]$

B. $\left(\frac{1}{2}\right)K[A]^2[B]$

C. $K[A]^2[2B]$

D. $K[2A]^2[B]$

Answer: B

Watch Video Solution

176. The rate constant K_a of one reaction is found to be double than that of rate constant K_a'' of another reaction. Then the relation between the corresponding activation energies of the two reactions E_a' and E_a'' can be represented as,

A. $E_1 > E_2$

B. $E_1 < E_2$

C. $E_1 = E_2$

D. None of the above

Answer: D

Watch Video Solution

177. In many reactions, the reaction proceeds in a sequence of steps, so the overall rate is determined by:

A. Outer of different steps

B. Slowest step

C. Molecularity of the steps

D. Fastest step

Answer: B

Watch Video Solution

178. Which statement is true ?

A. Endothermic reactions have higher activation energies than exotlhermic reactions

B. The specific rate constant for a reaction is independent of the concentration of the reacting species

C. There is a single rate determining step in any reaction mechanism

D. None of the above

Answer: B

View Text Solution

179. The rate law of the reaction, $2A + B \rightarrow 2AC$ is represented as Rate $= K[A]^2[B]$. If A is taken in large excess, the order of the reaction will be,

A. zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

180. The rate of the elementary reaction, $2NO + O_2 \rightarrow 2NO_2$ when the volume of the reaction

vessel is doubled:

A. Will grow eight times of its initial rate

B. Reduce to one-eight of its initial rate

C. Will grow four times of its initial rate

D. Reduce to one-fourth of its initial-rate

Answer: B

Watch Video Solution

181. Which statement is correct ?

A. Law of mass action and rate law expressions are same for single step reactions

B. Order of the slowest elementary reaction of a complex reaction, gives the order of the complex reaction

C. Both order and molecularity have normally a maximum value of 3

D. All

Answer: D

Watch Video Solution

182. Rate of which reactions increases with temperature:

A. Of any reaction

B. Of exothermic reactions

C. Of endothermic reactions

D. Of none

Answer: A

Watch Video Solution

183. Which will lead to a change in the rate constant K of a reaction:

A. A change in the pressure

B. Change in temperature

C. Change in the volume of the reaction vessel

D. All

Answer: B

Watch Video Solution

184. For a given reaction half life period was found to be directly proportional to the initial concentration of the reactant. The order is:

A. Zero

B. 1

C. 2

D. 3

Answer: A

Watch Video Solution

185. The reaction $2NO + Br_2 \rightarrow 2NOBr$, obey.s the following mechanism:

A. $r = [NO]^2[Br_2]$

B. $r = K[NO][Br_2]$

C. $r = K[NO][Br_2]^2$

D. $r = K[NOBr_2]$

Answer: A

Watch Video Solution

186. 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

Answer: C

Watch Video Solution

187. According to law of mass action, the rate of reaction is directly proportional to:

A. Active masses of reactants

B. Equilibrium constant

C. Active masses of products

D. Pressure

Answer: A

Watch Video Solution

188. According to Histogen theory, plerome gives rise to:

A. Collisions are sufficiently violent

B. All collision are responsible for reaction

C. All collisions are effective

D. Only highly energies molecules have enough energy to react

Answer: D

Watch Video Solution

189. Point out the incorrect statement:

A. Rate law is an experimental value

B. Law of mass action is a theoretical proposal

C. Rate law is more informative .than law of mass action for developing mechanism

D. Rate law is always different from, the expression of law of mass action

Answer: D

Watch Video Solution

190. For the hydrolysis of esters in alkaline medium rate expression is : $-\frac{d[ester]}{dt}$=K[Ester][Alkali] In case alkali used is in excess, then the overall order of the reaction is:

A. Zero

B. First

C. Same

D. Third

Answer: B

Watch Video Solution

191. The rate of reaction, $A + B + C \rightarrow P$ is given by:

$r = -\frac{d[A]}{dt} = K[A]^{1/2}[B]^{1/2}[C]^{1/4}$. The order of the reaction is:

A. 1

B. 2

C. $1/2$

D. $5/4$

Answer: D

Watch Video Solution

192. On increasing the temperature by 10 K in the case of slow reactions:

A. No. of collisions get doubled

B. Value of rate constant increase

C. Energy of activation increases

D. None of the above

Answer: D

Watch Video Solution

193. At room temperature, the reaction between NO and O_2 to give NO_2 is the 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 then $2CO + O_2 \rightarrow 2CO_2$

D. None of these

Answer: C

Watch Video Solution

194. The reaction, $2A \rightarrow B + C$ follow zero order kinetics. The differential rate equation for the reaction is:

A. $\frac{dx}{dt} = K[A]^0$

B. $\frac{dx}{dt} = K[A]^2$

C. $\frac{dx}{dt} = K[B][C]$

D. $\frac{dx}{dt} = K[A]$

Answer: A

Watch Video Solution

195. Given that K is the rate constant for some order of any reaction at temp T then the value of $T^{\lim} \rightarrow \infty^{\log K}$_____. (where A is the arrhenius constant):

A. $A/2.303$

B. A

C. 2.303A

D. log A

Answer: D

Watch Video Solution

196. In the following first order competing reactions:

A + Reagent $\rightarrow$ Product

B + Reagent $\rightarrow$ Product

The ratio of $\frac{K_1}{K_2}$ if only 50% of B will have been reacted.when 94% of A has been reacted is:

A. 4.06

B. 0.246

C. 2.06

D. 0.06

Answer: A

Watch Video Solution

197. In gaseous reactions important for-the understanding of the upper atmosphere H_2O and O react bimolecularly to form two OH radicals. ΔH for this reaction is 72 kJ at 500 K and E_a is 77 kJ mol^{-1}, then E_b for the bimolecular recombination of two OH radicals to form H_2O and O is::

A. 3kjmol^{-1}

B. 4kj $moll^{-1}$

C. 5kj $moll^{-1}$

D. 7kjmol^{-1}

Answer: C

Watch Video Solution

198. From the following data, the activation energy for the reaction (cal/mol):

A. 4×10^4

B. 2×10^4

C. 8×10^4

D. `3xx10^4

Answer: A

View Text Solution

199. The hydrolysis of ester was carried out separately with 0.05 N HCl and 0.05 N H_2SO_4. Which of the following will be true:

A. $K_{HCI} > K_{H_2SO_4}$

B. $K_{H_2SO_4} > K_{HCL}$

C. $K_{H_2SO_4} = 2K_{HCL}$

D. $K_{H_2SO_4} = K_{HCL}$

Answer: B

Watch Video Solution

200. For a reaction $A + B \rightarrow$ 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

Answer: C

Watch Video Solution

201. The time for half of a first order reaction is l hr. What is the time taken for 87.5% completion of the reaction:

A. 1 hour

B. 2 hour

C. 3 hour

D. 4 hour

Answer: C

Watch Video Solution

202. The rate constant, the activation energy and the Arrhenius parameter of a chemical reaction at $25^\circ C$ are $3.0 \times 10^{-4} S^{-1}, 104.4 kjmol^{-1}$ and $6.0 \times 10^{14} s^{-1}$ respectively. The value of the rate constant as T $\rightarrow \infty$ is:

A. $2.0 \times 10^{18} s^{-1}$

B. $6.0 \times 10^{14} s^{-1}$

C. Infinity

D. $3.6 \times 10^{30} s^{-1}$

Answer: B

Watch Video Solution

203. In a gaseous phase reaction:

$A_2(g) \rightarrow B(g) + (1/2)C(g),)$, the increases in pressure from 100 mm to 120 mm is noticed in 5 minute. The total of disappearance of A_2$mm \min^{-1}$ is : is:

A. 4

B. 8

C. 16

D. 2

Answer: B

Watch Video Solution

204. The term (-dC/dt) in rate equation refers to:

A. The concentration of a reactant

B. The decrease in concentration of the reactant with time

C. The velocity constant of reaction

D. None

Answer: B

Watch Video Solution

205. Two reaction A $\rightarrow$ products and B $\rightarrow$ 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 temperature k_A will be greater than K_B and $K_A > K_B$

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

Answer: D

Watch Video Solution

206. The rate of reaction:

A. Decreases with time

B. Decreases with decrease in concentration of reactant

C. Decreases, with increase in time and decrease in concentration of reactant

D. None

Answer: C

Watch Video Solution

207. Which order of reaction obeys the relation $t_{1/2} = 1/ka$:

A. First

B. Second

C. Third

D. Zero

Answer: B

Watch Video Solution

208. Plot of log (a- x) vs time t is straight line. This indicates that the reaction is of:

A. Second order

B. First order

C. Zero order

D. Third order

Answer: B

Watch Video Solution

209. A graph, ploted between concentration of reactant consumed at any time (x) and time t is found to be a straight line passing through the origin. Thus reaction is of:

A. First order

B. Second order

C. Zero order

D. None

Answer: B

Watch Video Solution

210. Combustion of carbon is exothermic, but coal stored in coal depots does not bum automatically because of:

A. High threshold energy barrier

B. Kinetic stability of coal

C. .Higher energy of activation needed for burning

D. All of the above

Answer: D

Watch Video Solution

211. The rate constant for a reaction is 10.8×10^{-5} mole $litre^{-1} \sec^{-1}$. The reaction obeys:

A. First order

B. Zero order

C. Second order

D. Half order

Answer: B

Watch Video Solution

212. The unit of rate constant and that of rate of reaction are same for:

A. First order

B. Zero order

C. Second order

D. Half order

Answer: B

Watch Video Solution

213. 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}

Answer: B

Watch Video Solution

214. According to collision theory:

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

Answer: D

Watch Video Solution

215. Which statement is not correct ?

A. For endothermic reactions, heat of reaction is lesser than energy of activation

B. For exothermic reactions, heat of reaction is more than energy of activation

C. For exothermic reactions energy of activation is .less in forward reaction than in backward reaction

D. For endothermic reactions energy of activation is more in forward reaction than in backward reaction

Answer: B

Watch Video Solution

216. Which of the following statement is correct for a reaction $2X+Y \rightarrow$ Products:

A. The rate of disappearance of X = twice the rate of disappearance of Y

B. The rate of disappearance of X = 1/2 rate of appearance of products

C. The rate of apperance of products = $1/2$ the rate of disapperance of Y

D. The rate of apperance of products = $1/2$ the rate of disapperance of X

Answer: C

Watch Video Solution

217. Select the intermediate in the following reaction mechanism:

$O_3(g) \Leftrightarrow O_2(g) + O(g)$

$O(g) + O_3(g) \rightarrow 2O_2$

A. $O_3(g)$

B. $O(g)$

C. $O_2(g)$

D. None of the above

Answer: B

Watch Video Solution

218. If the concentration units are reduced by n times, then the value of rate constant of first order will:

A. Increase by n times

B. Decrease by factor of n

C. Not change

D. None of the above

Answer: C

Watch Video Solution

219. The reaction $NO + (1/2)O_2 \rightarrow NO_2$ exhibits:

A. Small negative temperature coefficient

B. Decrease in value of K with, temperature

C. Decrease in value of rate^ivith temperature

D. none

Answer: B

Watch Video Solution

220. For the reaction, $4A + B \rightarrow 2C + 2D$,The statement not correct is:

A. The rate of disappearance of B is one fourth the rate of disappearance of A

B. The rate of appearance of C is half the rate of disappearance of B

C. The rate of formation of D is half the rate of consumption of A

D. The rates of formation of C and D are equal

Answer: B

Watch Video Solution

221. The rate constant of a reaction depends upon

A. Temperature

B. Initial concentration of the reactants

C. Time of reaction

D. Extent of reaction

Answer: A

Watch Video Solution

222. A large increase in rate of reaction for a rise of tempeature is due to

A. Increase in the number of collisions

B. Increase in the number of activated molecules

C. Lowering of activation energy

D. Shortening of the mean free path

Answer: B

Watch Video Solution

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

A. $t_{1/4} = \frac{2.303}{K} \log 4$

B. $t_{1/4} = \frac{2.303}{K} \log 2$

C. $t_{1/4} = \frac{2.303}{K} \log \frac{4}{3}$

D. $t_{1/4} = \frac{2.303}{K} \log \frac{3}{4}$

Answer: C

Watch Video Solution

224. The rate constant for the reaction $2N_2O_5 \rightarrow 2N_2O_4 + O_2$ is $3 \times 10^{-5} \sec^{-1}$. If the rate is

2.4×10^{-5} M $\sec^{-1}$, the concentration of N_2O_5 is

A. 1.4

B. 1.2

C. 0.04

D. 0.8

Answer: D

Watch Video Solution

225. For a given reaction rate = K $(A)^1(B)^{2/3}$, the unit of rate constant K can be given as

Watch Video Solution

226. The inversion of cane sugar proceeds with half life of 500 minute at pH = 5 for any concentration of sugar. However, if pH=6, the half life changes to 50 minute. The rate law expression for the sugar inversion can be written as

A. $r = k(sugar)^2(H^+)^0$

B. $r = k(sugar)^1(H^+)^0$

C. $r = k(sugar)^1(H^+)^1$

D. $r = k(sugar)^0(H^+)^1$

Answer: B

Watch Video Solution

227. Two substances A and B are present such that [A]= 4 [B] and half life of A is 5 minute and of B is 15 minute. If they start decaying at the same time following first order, how much time later will the concentration of both of them would be same

A. 15 minute

B. 10 minute

C. 5minute

D. 12 minute

Answer: A

Watch Video Solution

228. Milk turns sour at $40^\circ C$ three times as faster as at $0^\circ C$. The energy of activation for souring of milk is:

A. 4.693 kcal

B. 2.6 kcal

C. 6.6kcal

D. None of these

Answer: A

Watch Video Solution

229. The order of a gaseous phase reaction for which rate becomes half if volume of-container having same amount of reactant is doubled is:

A. 1

B. 2

C. $1/2$

D. $1/3$

Answer: A

Watch Video Solution

230. For the non-equilibrium process, $A+B \rightarrow$ products, the rate is first order with respect to A and second order with respect to B. If 1.0 mol each of A and B are introduced into a 1 litre vessel,and the initial rate were 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. 1.2×10^{-4}

D. None of the above

Answer: A

Watch Video Solution

231. Hydrogenation of vegetable ghee at $25^{\circ}C$ reduces pressure of H_2 from 2 atm to 1.2 atm in 50 minute. The pressure of $H_2$from 2 atm to 1.2 atm in 50 minute. The rate of reaction in terms of molarity per second is :

A. 1.09×10^{-6}

B. 1.09×10^{-5}

C. 1.09×10^{-7}

D. 1.09×10^{-5}

Answer: B

Watch Video Solution

232. Ethylene is produced by $C_4H_8 \xrightarrow{\Delta} 2C_2H_4$ Cyclobutane. The rate constant is $2.48 \times 10^{-4} \text{sec}^{-1}$. In what time will the molar ratio of the ethylene to cyclobutane in reaction mixture attain the value 1:

A. 27.25 minute

B. 28.25 minute

C. 25 minute

D. 20 minute

Answer: A

Watch Video Solution

233. 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

Answer: D

Watch Video Solution

234. For the elementary step

$(CH_3)_3CBr(aq) \rightarrow (CH)_3)_3C^+(aq) + Br^-(aq)$ the molecularity is :

A. Zero

B. 1

C. 2

D. Cannot ascertained

Answer: B

Watch Video Solution

235. For a reaction ,the rate of reaction was found to increase about .1.8 times when the temperature was increased by $10^{\circ}C$. The increase in rate is due to :

A. Increase in number of active molecules

B. Increase in activation energy of reactants

C. Decrease in activation energy of reactants

D. Increase in the number of collisions between reacting molecules

Answer: A

Watch Video Solution

236. A reaction proceeds in three stages. The first stage is a slow and involves two molecules of reactants .The second and third stage are fast .The overall order of the reaction is :

A. First order

B. Second order

C. Third order

D. Zero order

Answer: B

Watch Video Solution

237. The rate of a reaction can be increased in general by all the factors except:

A. Using a catalyst

B. Increasing the temperature

C. Increasing the activation energy

D. Increasing the concentration of reactants

Answer: C

Watch Video Solution

238. Which is not used in the determination of reaction rates ?

A. Reaction temperature

B. Reactant concentration

C. Specific rate constant

D. None of the above

Answer: D

Watch Video Solution

239. The enzyme catalysed reaction is faster than metal catalysed reaction because its activation energy is :

A. Greater

B. Lower

C. Same

D. None of the above

Answer: B

Watch Video Solution

Watch Video Solution

240. The given reaction $2FeCl_3 + SnCl_2 \rightarrow SnCl_4 + 2FeCl_2$ is an example of :

A. First order reaction

B. Third order reaction

C. Second order reaction

D. None of above

Answer: B

Watch Video Solution

241. For producing the effective collisions the colliding molecules must have :

A. A certain minimum amount of energy

B. Energy lesser than threshold energy

C. Improper orientation

D. Proper orientation and energy equal or greater than threshold energy

Answer: D

Watch Video Solution

242. Equation for the half life period in first order reaction is

:

A. $\frac{t_1}{2}=\frac{0.602}{k}$

B. $\frac{t_1}{2}=\frac{0.693}{K}$

C. $\frac{t_1}{2}=\frac{K}{0.693}$

D. $\frac{t_1}{2}=\frac{K}{0.602}$

Answer: B

Watch Video Solution

243. 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

Answer: C

Watch Video Solution

244. If the rate of reaction between A and B is. given by,rate $= K[A][B]^n$, then the reaction is :

A. First order in A

B. nthorder in B

C. Overall order is (1+n)

D. All are correct

Answer: D

Watch Video Solution

245. Which statement about the order of reaction is correct:

A. The order .of reaction must be a positive integer

B. A second order reaction is also bimolecular

C. The order of reaction increases with increasing temperature

D. The order of reaction can only be determined by experiment

Answer: D

Watch Video Solution

Watch Video Solution

246. $\frac{K_{f(+10)}}{K_t}$ is known as :

A. Ratio of equilibrium constants

B. Temperature coefficient

C. Difference in temperature of reversible reactions

D. None of the above

Answer: D

Watch Video Solution

247. 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

Answer: A

Watch Video Solution

248. The rate of reaction, $A + B \rightarrow$ product, is proportional to the first power of concentration of A and second power of concentration B. The overall order of the reaction is :

A. 1

B. 2

C. 3

D. Zero

Answer: C

Watch Video Solution

249. The following equation for the rate constant: indicates that the reaction is of :$K = \frac{2.303}{t}\log.\frac{a}{a-x}$

A. Second order

B. First order

C. Third order

D. Zero order

Answer: B

Watch Video Solution

250. For the reaction $A - - \rightarrow B$, the rate law is, rate=K[A].Which of the following statement is incorrect ?

A. The reaction follows first order kinetics

B. The $\frac{t_1}{2}$ of reaction depends upon initial concentration of reactant

C. K is constant for the reaction at at constant temperature

D. The rate law provides a simple way of predicting the concentration of reactants and product at any time after the start of the reaction

Answer: B

Watch Video Solution

251. The correct expression the rate of reaction of elementary reaction ,$A+B---\to C$ is:

A. $d\frac{[C]}{dt}=K[A]$

B. $\frac{d[C]}{dt}=K[B]$

C. $\frac{-d[A]}{dt}=K[A][B]$

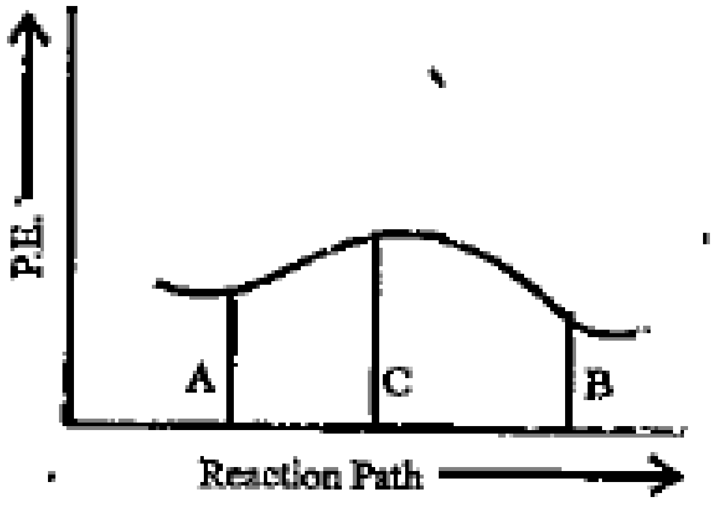
D. $\frac{-d[A]}{dt}=K[A]$

Answer: C

Watch Video Solution

Watch Video Solution

252. With respect to the figure given below which of the following statement is correct:



A. ΔE for the forward reaction is C-B

B. ΔE for the forward reaction is B-A

C. $\Delta E_{\text{forward}} > \Delta E_{backward}$

D. ΔE(for reverse reaction)=C-A

Answer: B

View Text Solution

253. A drop of solution (volume 0.05 mL) contains 3.0×10^{-6}mole of H^{+}If the rate constant of disappearance of H^{+} is 10^{7}mol$litre^{-1}\sec^{-1}$ How long would it take for H^{+} in drop to disappear :

A. 6×10^{-8} sec.

B. 6×10^{-7} sec.

C. 6×10^{-9} sec.

D. 6×10^{-10} sec.

Answer: C

Watch Video Solution

254. Which of the following theory, is not related to chemical kinetics ?

A. Collision theory

B. Activated complex theory

C. Absolute reaction rate theory

D. VSEPR theory

Answer: D

Watch Video Solution

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

A. K vs T

B. 1/K vs T

C. In K vs. T

D. $\ln K vs \frac{1}{T}$

Answer: D

Watch Video Solution

256. The burning of coal represented by the equation, $C(s) + O_2(g) \rightarrow CO_2(g)$.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

Answer: B

Watch Video Solution

257. Following mechanism has been proposed for a reaction

,

$$2A + B \longrightarrow D + E$$
$$A + B \longrightarrow C + D \text{ .... (slow)}$$
$$A + C \longrightarrow E \text{ .... (fast)}$$

A. $r = K[A]^2[B]$

B. $r = K[A][B]$

C. $r = K[A]^2$

D. r=K[A][C]

Answer: B

Watch Video Solution

258. If order of reaction ,$A + B \xrightarrow{hv} AB$is zero .If means that :

A. Rate of reaction is independent of temperature

B. Rate of reaction is independent of the. concentration of the reacting species

C. ,The rate of formation of activated complex is zero

D. Rate of decomposition of activated complex is zero

Answer: B

Watch Video Solution

259. The chemical reaction,$2O_3 \rightarrow 3O_2$proceeds as follows:

$O_3 \Leftrightarrow O_2 + ...(f*)$

$O + O_3 \rightarrow 2O_2 ......(slow)$The rate law expression should be :

A. $r = K[O_3]^2$

B. $r = K[O_3]^2[O_2]^{-1}$

C. $r = K[O_3][O_2]$

D. Unpredictable.

Answer: B

Watch Video Solution

260. A hypothetical reaction, $A_2 + B_2 \rightarrow 2AB$ follows the mechanism as given below ,$A2 \rightarrow A + A$....... . (fast)

$A + B2 \rightarrow AB + B$....... $(slow)$

$A + B \rightarrow AB$....... (fast) The order of the reaction is :

A. 2

B. 1

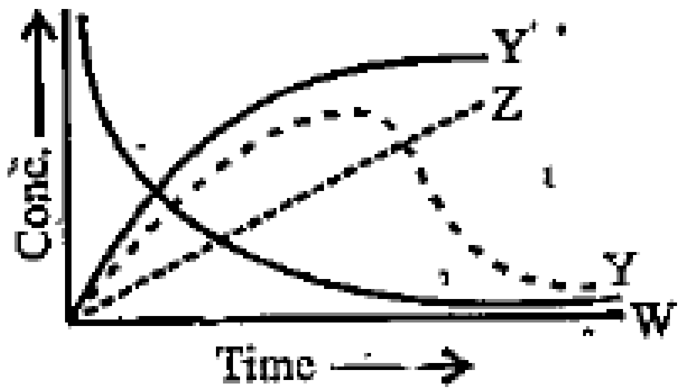
C. $1\frac{1}{2}$

D. Zero

Answer: C

Watch Video Solution

261. For the reaction ,$A + B \rightarrow C + D$. The variation of the concentration of the products is given by the curve:



A. X

B. Y

C. Z

D. W

Answer: B

Watch Video Solution

Watch Video Solution

262. If the first order reaction involves gaseous reactants and gaseous-products the units of its rate are:

A. atm

B. atm-sec

C. $atm\sec^{-1}$

D. $atm^2 - \sec^2$

Answer: C

Watch Video Solution

263. The branch of chemistry which deals with the reaction rates and. reaction mechanism is called :

A. Thermochemistry

B. Photochemistry

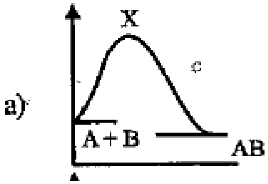
C. both a and b

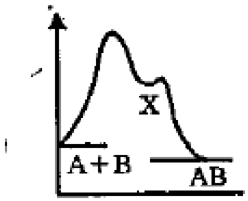
D. Chemical kinetics

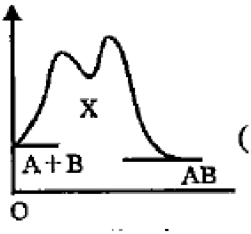
Answer: D

Watch Video Solution

264. For an exothermic chemical process occuring in two steps as $: A + B \rightarrow X(slow)$,$A + B \rightarrow X(slow)$The progress of the reaction can be described by :

A. 

B. 

C. 

D. All are correct

Answer: A

Watch Video Solution

265. Among the following reaction the fastest one is :

A. Burning of coal

B. Rusting of iron in moist car

C. Conversion of monoclinic sulphur to rhombic

D. Precipitation of silver chloride by mixing silver nitrate and sodium chloride solutions

Answer: D

Watch Video Solution

266. In acidic medium the rate of reaction between $(BrO_3)^-$ and Br^- ions is given by the expression. $-\frac{d(BrO_3^-)}{dt} = K[BrO_3^-][Br^-][H^+]^2$ It means:

A. Rate constant of overall reaction is $4\sec^{-1}$

B. Rate of reaction is independent of the conc.of acid

C. The change in pH of the solution will not affect the rate

D. Doublic the conc, of $H+$ ions will increase the reaction rate by 4'times

Answer: D

Watch Video Solution

267. Chemical reaction occurs as a result of collisions between reacting molecules. Therefore, the reaction rate is given by:

A. Total number of collisions occuring in a unit volume per second

B. Fraction of molecules which possess energy less than the threshold energy

C. Total number of effective collisions

D. None of the above

Answer: C

Watch Video Solution

268. The activation energies of two reactions are E_a and E_a with $E_a > E_a$ if the temperature of the reacting systems is increased from T_1 to T_2, predict which alternative is correct k are rate constants at higher temperature. Assume A being same for both the reactions:

A. $\frac{k_1}{k_2} = \frac{k_2}{k_2}$

B. $k_1 < k_2$ and $k_1 < k_2$

C. $k_1 > k_2$ and $k_1 > k_2$

D. $\frac{k_1}{k_2} = \frac{2k_2}{k_2}$

Answer: B

Watch Video Solution

269. For the decomposition of $N_2O_5(g)$, it is given that :

$2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$,Activation energy

$E_a N_2O_5(g) \rightarrow 2NO_2(g) + \left(\frac{1}{2}\right)O_2(g)$,Activation energy $E_a$then:

A. $E_a = E_a$

B. $E_a > E_a$

C. $E_a < E_a$

D. $E_a = 2E_a$

Answer: A

Watch Video Solution

270. For the reaction: $\left[Cu(NH_3)_4\right]^{2+} + H_2O \rightarrow \left[Cu(NH_3)_3 H_2O^{2++} NH_3\right.$the net rate of reaction at any time is given by :net rate =

$2.0 \times 10^{-4}\left[\left[Cu(NH_3)_4\right]^{2+} - 3.0 \times 10^5\left[\left[Cu(nh_3)_3H_2O\right]^{2+}\right]\right.$

$.[NH_3]$Then correct statement is (are):

A. Rate constant for forward reaction $= 2 \times 10^4$

B. Rate constant for backward reaction $= 3 \times 10^5$

C. Equilibrium constant for the reaction $= 6.6 \times 10^{10}$

D. All

Answer: B

Watch Video Solution

271. Which is correct relation in between $\frac{dC}{dt}, \frac{dn}{dt}$ and $\frac{dP}{dt}$ where C,n,P, represents concentration ,mole and pressure terms for gaseous phase reactant A(g)rarr product.

A. $-\frac{dC}{dt} = -\frac{1}{V}\frac{dn}{dt} = -\frac{1}{RT}\frac{dP}{dt}$

B. $\frac{dC}{dt} = \frac{dn}{dt} = -\frac{dP}{dt}$

C. $\frac{dC}{dt} = \frac{RT}{V}\frac{dn}{dt} = -(dP)dt$

D. All

Answer: A

Watch Video Solution

272. Rate of a reaction :

A. Increases with increase in temperature

B. Decreases with increase in temperature

C. Does not depend on temperature

D. Does not depend on concentration

Answer: A

Watch Video Solution

273. The dimensions of the rate constant of a second order reaction involves :

A. Neither time nor concentration

B. Time and concentration

C. Time and square of concentration

D. Only time

Answer: B

Watch Video Solution

274. The rate constant is given by the equation $K = Ae^{-Ea/RT}$ which factor should register a decrease for the reaction to proceed rapidly:

A. T

B. Z

C. A

D. E_a

Answer: D

275. For the reaction ,$H_2(g) + Br(g) = 2HBr(g)$,the reaction$rate = K[H_2][Br_2]^{\frac{1}{2}}$. Which statement is true about this reaction:

A. The reaction is of second order

B. Molecularity of the reaction is 3/2

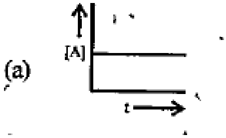
C. The unit of K is $\sec^{-1}$

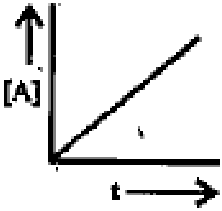
D. Molecularity of the reaction is 2

Answer: D

Watch Video Solution

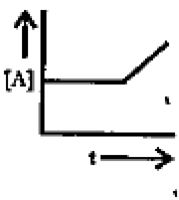
276. A zero order reaction is one

A. 

B. 

C.

D.



Answer: C

Watch Video Solution

277. Rate equation for a second order reaction is :

A. $K = \frac{2.303}{t}\log\left(\frac{a}{a-x}\right)$

B. $K = \frac{1}{t}\log\left(\frac{a}{a(a-x)}\right)$

C. $K = \frac{1}{t}.\ \frac{x}{a(a-x)}$

D. $K = \frac{1}{t^2}.\ \frac{a}{(a-x)}$

Answer: C

Watch Video Solution

278. In Arrhenius equation $K = Ae^{-E}a / RT$,the quantity-E_a / RT is referred as :

A. Boltzmann factor

B. Frequency factor

C. Activation factor

D. None of the above

Answer: A

Watch Video Solution

279. The temperature coefficient of most of the reaction lies between:

A. 1 and 3

B. 2 and 3

C. 1 and 4

D. 2 and 4

Answer: B

Watch Video Solution

280. Which one is unimolecular reaction :

A. $NH_4NO_2 \rightarrow N_2 + 2H_2O$

B. $2HI \Leftrightarrow H_2 + I_2$

C. $2NO_2 \rightarrow 2NO + O_2$

D. $2NO + O_2 \rightarrow 2NO_2$

Answer: A

Watch Video Solution

281. Rate equation is the expression that gives the relation between rate of reaction and :

A. Temperature

B. Concentration of products

C. Concentration of reactants

D. None of the above

Answer: C

Watch Video Solution

282. A 1st order reaction has K value 1.5×10^{-6} at $200^{\circ} C$. The reaction is allowed to continue for 10 hours. Calculate the percentage of initial concentration that would have changed in the product and also calculate half life period.

Watch Video Solution

283. Thermal decomposition of a compound is of first order. If 50% of a sample of the compound is decomposed in 120 min. How long would it take for 90% of the compound to decompose?

Watch Video Solution

284. Prove that time required for the completion of 3/4 of reaction of the 1st order reaction is twice the time required for the completion of half of the reaction.

Watch Video Solution

285. The half life period of 1st order reaction of A is 2 minutes. How long will it take to reach at 25% of its initial concentration.

Watch Video Solution

286. Define rate of reaction .

Watch Video Solution

287. Define order of reaction.

Watch Video Solution

288. Explain molecularity of a reaction.

Watch Video Solution

289. Calculate the unit of 1st order rate constant

Watch Video Solution

290. Give one example of unimolecular reaction.

Watch Video Solution

291. Give one example of bimolecular reaction.

Watch Video Solution

292. Write relationship between the rate constant and its activation energy.

Watch Video Solution

293. The minimum energy which molecules need to acquire before they can react by collision is known as what ?

Watch Video Solution

294. The slowest step is called the rate determining step of the multistep reaction. (True/False)

Watch Video Solution

295. How catalyst affects the rate of reaction ?

Watch Video Solution

296. Give example of zero order reaction

Watch Video Solution

297. Define threshold energy.

Watch Video Solution

298. If activation energy of a reaction is zero, how does rate constant of the reaction change with temperature ?

Watch Video Solution

299. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

300. The rate constant of 1st order is 0.0005 min^{-1} . Find its half life period.

Watch Video Solution

301. The half life period of a 1st order reaction is 30 seconds. Calculate its rate constant.

Watch Video Solution

302. How average K.E. of a gas molecule is related to the temperature ?

Watch Video Solution

303. Define activation energy of a reaction.

Watch Video Solution

304. Name the reaction when hydrolysis of ester in an alkaline medium takes place.

Watch Video Solution

305. What is unit of rate of reaction?

Watch Video Solution

306. Activation energy for a chemical reaction depends on the nature of the reactant. (True/False)

Watch Video Solution

307. Molecularity of a reaction can never be zero. (True/False)

Watch Video Solution

308. Write the integrated rate equation for 1st order reaction.

Watch Video Solution

309. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

310. What is the order of reaction if the unit of rate constant is $litre\ mol^{-1}\sec^{-1}$?

Watch Video Solution

311. What is the half-life period of a reaction having rate constant $6.93 \times 10^{-4}\sec^{-1}$.

Watch Video Solution

312. What is the unit of rate constant for a second order reaction ?

Watch Video Solution

313. What is order of reaction ?

Watch Video Solution

314. What is the unit of rate constant of the first order reaction?

Watch Video Solution

315. Write two factors which influence the rate of reaction.

Watch Video Solution

316. What is the expression for rate constant for 1st order reaction ?

Watch Video Solution

317. Rate constant of a 1st order reaction is 0.5 s^{-1}. What is the half-life period ?

Watch Video Solution

318. Write Arrhenius equation relating activation energy (E_a),temperature(T) and rate const.(K).

Watch Video Solution

319. Define molecularity of a reaction.

Watch Video Solution

320. Unit of the rate constant for first order reaction is_____.

Watch Video Solution

321. If unit of the rate constant is $\sec^{-1}$ the order of reaction is_____.

Watch Video Solution

322. Unit of the rate constant for first order reaction is_____.

Watch Video Solution

323. Rate of reaction is influenced by____.

Watch Video Solution

324. Alkali hydrolysis of ester is a ____ order reaction having molecularity____.

Watch Video Solution

325. Alkali hydrolysis of ester is a ____ order reaction having molecularity____.

Watch Video Solution

326. Rusting of iron is a _____ reaction.

Watch Video Solution

327. Unit of the rate of reaction is_____.

Watch Video Solution

328. Rate of reaction_____as tempersture increases.

Watch Video Solution

329. Arrhenius equation is given by_____.

Watch Video Solution

330. Alkali hydrolysis of ester is a _____ order reaction having molecularity_____.

Watch Video Solution

331. Alkali hydrolysis of ester is a _____ order reaction having molecularity_____.

Watch Video Solution

332. Alkali hydrolysis of ester is a first order reaction .is it true or false

Watch Video Solution

333. Rusting of iron is a fast reaction.

True / False

Watch Video Solution

334. Unit of the rate of reaction is $mol^{-1}\sec^{-1}$

Watch Video Solution

335. Rate of reaction decreases as temperature increases.is it true or false

Watch Video Solution

336. If unit of rate constant is mol^{-1} lit $\sec^{-1}$ order of the reaction is ____

Watch Video Solution

337. Unit of the rate constant for first order reaction is______.

Watch Video Solution

338. Acid hydrolysis of ester is a second order reaction.

Watch Video Solution

339. Derive an expression for the rate constant of first order reaction. The rate constant of first order reaction is 0.346 min^{-1}. What is the half-life?

Watch Video Solution

340. The half-life period of a reaction is 60 s. Calculate its rate constant.

Watch Video Solution

341. The rate constant of a first order reaction is $k = 7.39 \times 10^{-5} \text{ s}^{-1}$. Find the half-life of the reaction.

Watch Video Solution

342. The rate constant of a first order reaction is $0.60 \quad \sec^{-1}$. What is its half-life period?

Watch Video Solution

343. Calculate the half life of the first order reaction from their rate constants given as:

Watch Video Solution

344. What is activation energy?

Watch Video Solution

345. Write the rate law for a first order reaction.

Watch Video Solution

346. Rate of which reactions increases with temperature:

Watch Video Solution

347. Find the rate of law of the given reaction $2NO + 2H_2 \rightarrow N_2 + 2H_2O$

Watch Video Solution

348. What is order of reaction ?

Watch Video Solution

Watch Video Solution

349. Explain molecularity of a reaction.

Watch Video Solution

350. What is the effect of catalyst on activation energy?

Watch Video Solution

351. Why do reaction rates depend on temperature? Explain.

Watch Video Solution

352. A first order reaction is 25% complete in 30 minutes. Calculate the

specific reaction rate.

Watch Video Solution

353. Rate of reaction is influenced by_____.

Watch Video Solution

354. What is the half life period of a first order reaction having rate constant $10^{-2} \sec^{-1}$?

Watch Video Solution

355. Calculate the rate constant of a reaction (first order) which is 90% complete in 10 min.

Watch Video Solution

356. Activation energy is low for fast reactions. Explain.

Watch Video Solution

357. What is zero order reaction? Give one example.

Watch Video Solution

358. Write two factors which influence the rate of reaction.

Watch Video Solution

359. The rate constant of a first order reaction is $k = 7.39 \times 10^{-5} \text{ s}^{-1}$. Find the half-life of the reaction.

Watch Video Solution

360. The half-life period of a first order reaction is 60 seconds. Calculate the rate constant.

Watch Video Solution

361. The rate of reaction is doubled when the temperature changes from $27^\circ C$ to $37^\circ C$. Calculate the energy of activation.

Watch Video Solution

362. For a first order reaction, it takes 16 min to complete 50% reaction. How much time does it take to complete 75% reaction?

Watch Video Solution

363. The rate constant of a reaction is $1.5 \times 10^7 s^{-1}$ at $50^\circ C$ and $4.5 \times 10^7 s^- 1$ at $100^\circ C$. Calculate the Arrhenius parameter for the reaction.

Watch Video Solution

364. A 1st order reaction is 20% complete in 20 minutes. Calculate the time it will take the reaction to complete 80%.

Watch Video Solution

365. State the role of activated complex in a reaction and state its relation with activation energy.

Watch Video Solution

366. For a first order reaction, it takes 16 min to complete 50% reaction. How much time does it take to complete 75% reaction?

Watch Video Solution

367. The rate of most reactions become double when their temperature is raised from 298 K to 308 K. Calculate their activation energy.

(Given, $R = 8.314 \text{ J mol}^{-1}$)

Watch Video Solution

368. Define an expression for the rate constant of a 1st order reaction. Define half life period. A first order reaction takes 69.3 minutes for 50% completion. How much time will be needed for 80% completion?

Watch Video Solution

369. Define the following terms.

Pseudo first order reaction.

Watch Video Solution

370. Explain the term 'molecularity' and 'order' of a reaction. Give one example from each of first and second order reaction.

Watch Video Solution

371. State the rate equation for a first order reaction. Derive the half-life period from the rate equation. A first order reaction takes 69.3 minutes for 50% completion. How much time will be needed for 80% completion?

Watch Video Solution

372. Define an expression for the rate constant of a 1st order reaction. Define half life period. A first order reaction takes 69.3 minutes for 50% completion. How much time will be needed for 80% completion?

Watch Video Solution

373. What is zero order reaction? Give one example.

Watch Video Solution

374. Write notes on half-life period.

Watch Video Solution

375. What are the various factors affecting the rate of reaction.

Watch Video Solution

376. Give distinction between order and molecularity.

Watch Video Solution

377. Discuss collision theory with its limitations.

Watch Video Solution

378. Write notes on: Arrhenius equation

Watch Video Solution

379. Write short notes on :

activation energy

Watch Video Solution

380. The sum of the power to which the concentration of substance appears in the rate expression is known as:

A. Rate of reaction

B. Molecularity of reaction

C. Order of reaction

D. None of the above

Answer: C

Watch Video Solution

381. If concentration of reactants is increased by ‘X’, the rate constant K becomes:

A. $e^{K/X}$

B. (K/X)

C. K

D. $\left(\frac{X}{K}\right)$

Answer: C

Watch Video Solution

382. 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

Answer: A

Watch Video Solution

383. The rate for the reaction, $RCl + NaOH(aq) \rightarrow ROH + NaCl$ is given by rate= $K_1[RCl]$. The rate of the reaction is:

A. Doubled on doubling the concentration of NaOH

B. Halved on reducing the concentration of RCl to half

C. Decreased on increasing the temperature of the reaction

D. Unaffected by increasing the temperature of the reaction

Answer: B

Watch Video Solution

384. The rate of chemical reaction depends on the nature of chemical reactions, because:

A. The threshold energy level differs from one reaction to another

B. Some of the reactant are solid at room temperature

C. Some of the reactants are coloured

D. All

Answer: A

Watch Video Solution

385. Which statement is correct:

A. Reactions with low activation energy are usually exothermic

B. The rate law sometimes enables to deduce the mechanism of a reaction

C. The rate law for a reaction is an algebraic ,expression relating the forward reaction rate to product concentration

D. Increase in the total pressure of a gas phase reaction increase the fraction of collisions effective in producing reactions

Answer: D

Watch Video Solution

386. For the reaction $2NO_2 + F_2 \to 2NO_2F$, following mechanism has been provided:

$$NO_2 + F_2 \xrightarrow{slow} NO_2F + F$$

$$NO_2 + F \xrightarrow{FAST} NO_2F$$

Thus rate expression of the above reaction can be written as:

A. $r = k[NO_2]^2[F_2]$

B. $r = k[NO_2][F_2]$

C. $r = k[NO_2]$

D. $r = k[F_2]$

Answer: B

Watch Video Solution

387. For a reaction for which the activation energies of forward and reverse reactions are equal:

A. $\Delta H = O$

B. $\Delta S = O$

C. The order is zero

D. There is no catalyst

Answer: A

Watch Video Solution

388. The threshold energy of a chemical reaction depends upon:

A. Nature of reacting species

B. Temperature

C. Concentration of species

D. Number of collisions per unit time or collision frequency

Answer: A

Watch Video Solution

389. The order of reaction can be deduced from

A. Chemical equation

B. Experiments

C. Rate constant

D. Thermochemical equation

Answer: B

Watch Video Solution

390. Which rate expression suggests an over all order of 0.5 for the reaction involving substances X, Y, Z:

A. Rate=K[X][Y][Z]

B. Rate $= K[X]^{0.5}[Y]^{0.5}[Z]^{0.5}$

C. Rate $= K[X]^{1.5}[Y]^{-1}[Z]^{0}$

D. Rate $= K[X][Y]^{0/}[Z]^{2}$

Answer: C

Watch Video Solution

391. For a chemical reaction $A \rightarrow B$, it is found that the rate of reaction doubles when the conc, of 'A' is increased four times. The order of reaction is

A. 2

B. 1

C. $1/2$

D. Zero order

Answer: C

Watch Video Solution

392. 50% of a first order reaction was found to complete in 16 minute. When will 75% of the same reaction complete:

A. 32 minute

B. 16 minute

C. 8 minute

D. 4 minute

Answer: B

Watch Video Solution

393. The rate constant (K) for the reaction $2A \rightarrow$ Product was found to be $2.5X10^{-5}Lmol^{-1}\sec^{-1}$ after15 sec,

$2.5X10^{-5}Lmol^{-1}\sec^{-1}$ after 30 sec and $2.55X10^{-5}Lmol^{-1}\sec^{-1}$ after 50sec. The order of reaction is:

A. 20

B. 3

C. Zero

D. 1

Answer: A

Watch Video Solution

394. The rate of reaction becomes 2 times for every $10^{\circ}C$ rise in temperature. How the rate of reaction will increases when temperature is increased from $30^{\circ} C$ to $80^{\circ} C$

A. 16

B. 32

C. 64

D. 128

Answer: B

Watch Video Solution

395. A first order reaction has a half life period of 69.3 sec. At $0.10 mol litre^{-1}$ reactant concentration, rate will be:

A. $10^{-4} M \sec^{-1}$

B. $10^{-3} M \sec^{-1}$

C. $10^{-1} M \sec^{-1}$

D. $6.93 X 10^{-1} M \sec^{-1}$

Answer: B

Watch Video Solution

396. The rate of a reaction $A \rightarrow$ product, increases by a factor of 100, when cone, of 'A' is increased 10 fold. The order of the reaction is

A. 1

B. 2

C. 10

D. 100

Answer: B

Watch Video Solution

397. The rate of reaction between two reactants A and B is expressed as rate = $K[A][B]^2$. On doubling the concentration of both the reactants A and B, the reaction rate increases by

A. 4 times

B. 3 times

C. 3 time

D. 6 times

Answer: C

Watch Video Solution

398. When an allele fails to express itself in presence of the other allele, the former is said to be -----

A. H_2SO_4 is stronger than HCl

B. H_2SO_4 is weaker than HCl

C. H_2SO_4 and HCl both have the same strength

D. The data are not sufficient to compare the strength of H_2SO_4 and HCl

Answer: A

Watch Video Solution

399. The rate constant of a first order reaction is $4X10^{-3}\sec^{-1}$At a reactant concentration of $0.02M$, the rate of reaction would be:

A. $8X10^{-5}M\sec^{-1}$

B. $4X10^{-3}M\sec^{-1}$

C. $2X10^{-1}M\sec^{-1}$

D. $4X10^{-1}M\sec^{-1}$

Answer: A

Watch Video Solution

400. The rate constant of n^{th}order reaction has units :

A. $litre^{1-n}mol^{1-n}\sec^{-1}$

B. $mol^{1-n}mol^{1-n}\sec^{-1}$

C. $mol^{1-n}litre^{n-1}\sec^{-1}$

D. None of these

Answer: C

Watch Video Solution

401. 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. $k = e^{-E}a/RT$

Answer: B

Watch Video Solution

402. Which does not influence the rate of a reaction ?

A. Pressure

B. Concentration of reactant

C. Temperature

D. Molecularity

Answer: D

Watch Video Solution

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

A. Instantaneously

B. With a measurable speed

C. Slowly

D. Slowly

Answer: A

Watch Video Solution

404. The temperature coefficient of a reaction is:

A. The rate constant at a fixed temperature

B. The ratio of rate constant at two temperature

C. The ratio of rate constant differing by 10^{O} preferably 25^{O} and $35^{O}C$

D. None of these

Answer: C

Watch Video Solution

405. In a reaction, the rate expression is, rate = $k[A][B]^{2/3}[C]^{0}$,the order of reaction is:

A. 1

B. 2

C. $5/3$

D. Zero

Answer: C

Watch Video Solution

406. The elementary step of the reaction $2Na + Cl_2 = 2NaCl$ is found to follow III order kinetics, its molecularity is:

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

407. If 'a' is the initial concentration of a substance which reacts according to zero order kinetic and k k'is rate constant, the time for the reactant to go to completion is,

A. a/K

B. $2/k$

C. K/a

D. $2K/a$

Answer: A

Watch Video Solution

408. A reaction varies independent to the concentration of reactant, then the order of reaction is:

A. Zero

B. 1

C. 2

D. 3

Answer: C

Watch Video Solution

409. The rate law for the single step reaction $2A + B \to 2C$ is given by

A. Rate=K[A].[B]

B. $Rate = K[A]^2.[B]$

C. Rate = K[2A].[B]

D. $Rate = K[A]^2[B]^o$

Answer: B

Watch Video Solution

410. The reaction $L \to M$ is started with $10g$ of L. After 30 and 90 minute, $5g$and $1.25g$ of L are left respectively. The order of reaction.is:

A. 0

B. 2

C. 1

D. 3

Answer: C

Watch Video Solution

411. The activation energy for a reaction is $9.0 Kcal / mol$. The increase in the rate constant when its temperature is increased from $298K$ to $308K$ is:

A. 10%

B. 100%

C. 50%

D. 63%

Answer: D

Watch Video Solution

412. In a first order reaction, the concentration of the reactant is decreased from $1.0M$ 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}

Answer: D

Watch Video Solution

413. The rate of a chemical reaction doubles for every $10^{\circ} C$ rise in temperature. If the rate is increased by $60^{\circ} C$, the rate of reaction increases by:

A. 29 times

B. 32 times

C. 64 times

D. 128 times

Answer: C

Watch Video Solution

414. The rate of first order reaction $A \rightarrow$ Products, is 7.5×10^{-4} mole $litre^{-1}\sec^{-1}$.If the concentration of A is 0.5 mole $litre - 1$the rate constant is:

A. $3.75 \times 10^{-4}\sec^{-1}$

B. $2.5 \times 10^{-5}\sec^{-1}$

C. $1.5 \times 10^{-3}\sec^{-1}$

D. $8.0 \times 10^{-4}\sec^{-1}$

Answer: C

Watch Video Solution

415. Consider the reaction 2A+B $\rightarrow$ C+D. If the rate expression is rate=$K[A]^2[B]^1$ and if concentration of the reactants are increased by three times, the rate of the reaction will increase by:

A. 9 times

B. 81 times

C. 64 times

D. 27 times

Answer: D

Watch Video Solution

416. An endothermic reaction $A \rightarrow B$ have an activation energy $15kcal/mol$ and the heat of the reaction is

$5 kcal / mol$. The activation energy of the reaction $B \rightarrow A$ is

:

A. $20 kcal / mol$

B. $15 kcal / mol$

C. $10 kcal / mol$

D. Zero

Answer: C

Watch Video Solution

417. The rate of a reaction is doubled for every $10^{\circ} C$ rise in temperature. The increase in rate as a result of increase in temperature from $10^{\circ} C$ to $100^{\circ} C$ is:

A. 112

B. 512

C. 400

D. 256

Answer: B

Watch Video Solution

418. How much faster would a reaction proceed at $25^\circ C$ than at $0^\circ C$ if the activation energy is $65 kJ$:

A. 2 times

B. 16 times

C. 11 times

D. 6 times

Answer: C

Watch Video Solution

419. For a reaction A+B $\rightarrow$ Products, it is observed that doubling the concentration of B causes the reaction rate to increase four times, but doubling the concentration of A has no effect on the rate of reaction. The rate equation is threfore

A. $Rate = K[A]^2$

B. $Rate = K[B]^2$

C. Rate=K[A][B]

D. Rate = K[A]

Answer: B

Watch Video Solution

420. The minimum energy, required for molecules to enter into chemical reaction is called:

A. Kinetic energy

B. Potential energy

C. Threshold energy

D. Activation energy

Answer: C

Watch Video Solution

Watch Video Solution

421. Which statement is correct ?

A. Molecularity of a reaction is same as the order of reaction

B. In some cases order of reaction may be same as the. molecularity of the reaction

C. Both (a) and (b) are correct

D. All are incorrect

Answer: B

Watch Video Solution

422. Collision theory satisfactorilly explains for:

A. First order reactions

B. Zero order reactions

C. Bimolecular reactions

D. Any order reactions

Answer: C

Watch Video Solution

423. 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. $1/T$

D. $\log 1/T$

Answer: C

Watch Video Solution

424. The inversion of cane sugar into glucose and fructose is:

A. I order

B. IIorder

C. III order

D. Zero order

Answer: A

Watch Video Solution

425. Number of mole of a substance present in 1 litre volume is known as:

A. Activity

B. Molar concentration

C. Active mass

D. None of the above

Answer: B

Watch Video Solution

426. The number of molecules of the reactants taking part in a single step of the reaction tells about:

A. Molecularity of the reaction

B. Mechanism, of the reaction

C. Order of reaction

D. All

Answer: A

Watch Video Solution

427. Rate of a chemical reaction can be kept constant by:

A. Stirring the compounds

B. Keeping the temperature constant

C. Both (a) and (b)

D. None

Answer: B

Watch Video Solution

428. Which statement about molecularity of a reaction is wrong:

A. It is the number of molecules of the reactants taking part in a single step of reaction

B. It is calculated from the reaction mechanism

C. It may be either whole number of fractional

D. None

Answer: C

Watch Video Solution

429. Inversion of a sugar follows first order rate equation which can be followed by noting the change in rotation of the plane of polarization of light in the polarimeter if r_{∞}, r_t and $t = \infty$, t=t and t=0, then, first order reaction can be written as:

A. $K = \frac{1}{t}\text{log\_e}\frac{r_1 - r_{\infty}}{r_0 - r_{\infty}}$

B. $K = \frac{1}{t}In\frac{r_0 - r_{\infty}}{r_t - r_{\infty}}$

C. $K = \frac{1}{t}In\frac{r_{\infty} - r_0}{r_{\infty} - r_t}$

D. $K = \frac{1}{t} In \frac{r_{\infty} - r_1}{r_{\infty} - r_0}$

Answer: B

Watch Video Solution

430. At $250^{\circ} C$ the half life for the decomposition of N_2O_5 is 5.7 hr and is independent of initial pressure of N_2O_5. The specific rate constant is:

A. $0.693 / 5.7$

B. 0.693×5.7

C. `5.7//0.693

D. None

Answer: A

Watch Video Solution

431. For a given reaction .of first order, it takes 20 minute for the concentration to drop from $1.0 M litre^{-1}$ to $0.6 M$ litre^-1

$timerequiredf$ or $theconcentration \rightarrow dropom 0.6 M$ litre^-1 $\rightarrow$ 0.36M $litre^{-1}$will be:

A. More than 20 minute

B. Less than 20 minute

C. Equal to 20 minute

D. Infinity

Answer: C

Watch Video Solution

432. In a first order reaction $a/(a-x)$ was found to be 8 after l0minute. The rate constant is

A. $(2.303 \times 3 \log 2)/10$

B. $(2.303 \times 2 \log 3)/10$

C. $10 \times 2.303 \times 2 \log 3$

D. $10 \times 2.303 \times 3 \log 2$

Answer: A

Watch Video Solution

433. For the reaction A + B $\rightarrow$ Product, it is found that the order of A is 2 and of B is 3 in the rate expression. When concentration of both is doubled, the rate will increase by:

A. 10

B. 6

C. 32

D. 16

Answer: C

Watch Video Solution

434. The rate law of the reaction, $2A + B \rightarrow 2AC$ is represented as Rate $= K[A]^2[B]$. If A is taken in large excess, the order of the reaction will be,

A. Zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

435. If a reaction with $t_1/_2 = 69.3$ second, has a rate constant 10^{-2} per second, the order is:

A. Zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

436. The specific reaction rate constant for a first, order reaction is $60 \times 10^{-4} \sec^{-1}$ If the initial concentration of the reaction is 0.01 mole per litre, the rate is:

A. $60 \times 10^{-6} M \sec^{-1}$

B. $36 \times 10^{-4} M \sec^{-1}$

C. $60 \times 10^{-2} M \sec^{-1}$

D. $36 \times 10^{-1} M \sec^{-1}$

Answer: A

Watch Video Solution

437. K for a zero order reaction $2 \times 10^{-2} mol L^{-1} \sec^{-1}$ If the concentration of the reactant after 25 sec is 0.5 M, the initial concentration must have been:

A. 0.5M

B. 1.25M

C. 12.5M

D. 1.0M

Answer: A

Watch Video Solution

438. A first order reaction is carried out with an initial concentration of 10 mole per litre and 80% of the reactant changes into the product. Now if the same - reaction is carried out with an initial concentration of 5 mol per litre the percentage of the reactant changing to the product is:

A. 40

B. 80

C. 160

D. Cannot be calculated

Answer: B

Watch Video Solution

439. What fraction of a reactant showing first order remains after 40 minute if $t_1 /_2$ is 20 minute ?

A. $1/4$

B. $1/2$

C. $1/8$

D. $1/6$

Answer: A

Watch Video Solution

440. Radioactive decay follows.....order kinetics.

A. Zero

B. I

C. II

D. III

Answer: B

Watch Video Solution

441. In the reaction, A+ 2B $\rightarrow$ 3C+D which of the following expression does not describe changes in the. concentration of various species as a function of. time:

A. $\frac{d[C]}{dt} = \frac{-3d[A]}{dt}$

B. $\frac{3d[D]}{dt} = \frac{d[C]}{dt}$

C. $\frac{3d[B]}{dt} = \frac{-2d[C]}{dt}$

D. $\frac{2d[B]}{dt}=\frac{d[A]}{dt}$

Answer: D

Watch Video Solution

442. The decomposition of N_2O_5 by $2N_2O_5 \rightarrow 4NO_2 + O_2$ follows first order kinetics. Select the incorrect statement.

A. The reaction is bimolecular

B. The reaction is unimolecular

C. $t_{1/2} \infty a^\circ$

D. None of the above

Answer: C

443. For an endothermic reaction where, ΔH represent the enthalpy of the reaction in $\mathrm{kJ/mol}$, the minimum value for energy of activation will be

A. Less than ΔH

B. Zero

C. More than ΔH

D. Equal to ΔH

Answer: C

444. The half life for a reaction is.....of temperature:

A. Independen

B. increase with increase

C. Decreased with increase

D. Dependent

Answer: C

Watch Video Solution

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

A. Decreases from moment to moment

B. Remains constant, throughout

C. Independent of the order of reaction

D. None of the above

Answer: A

Watch Video Solution

446. The acid hydrolysis of ester is:

A. First order reaction

B. Bimolecular reaction

C. Pseudo unimolecular reaction

D. All

Answer: D

Watch Video Solution

447. For a reaction of II order kinetics, $t_{1/2}$ is:

A. ∞a

B. ∞a^{-3}

C. ∞a^{2}

D. ∞a^{-1}

Answer: D

Watch Video Solution

448. The reaction,

$CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

is:

A. Bimolecular reaction

B. II order reaction

C. Both (a) and (b)

D. None of the above

Answer: C

Watch Video Solution

449. The rate for a first order reaction is $0.6932 \times 10^{-2} molL^{-1} \min^{-1}$ and the initial concentration of the reactant is 1 M, $t_{1/2}$ is equal to:

A. $0.6932x10^{-2} \min ute$

B. $0.6932xx10^{-2}$

C. 100minute

D. 6.932minute

Answer: C

Watch Video Solution

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

A. $8.665x10^3$ minute

B. $8xIO^{-5}$ minute

C. $1.25xJO^4$ minute

D. $4x10^{-5}$minute

Answer: C

Watch Video Solution

451. For a first order reaction A $\rightarrow$ Products, the rate of reaction at [A] = 0.2 M is $10^{-2} mollitre^{-1} \min^{-1}$. The half life period for the reaction is:

A. 832 sec

B. 440 sec

C. 416 sec

D. 14 sec

Answer: A

Watch Video Solution

452. For $A + B \rightarrow C + D, \Delta H = -20 kJ mol^{-1}$, The activation energy of the forward reaction is 85 kJ mol^{-1}. The activation energy for backward reaction is.......kJ mol^{-1}:

A. 65

B. 105

C. 85

D. 40

Answer: B

Watch Video Solution

453. In a reaction 2A $\rightarrow$ Products: the concentration of A decreases from $0.5 mollitre^{-1}$ to $0.4 mollitre^{-1}$ in 10 minutes. The rate of reaction during this interval is:

A. $0.05 M \min^{-1}$

B. $0.005 M \min^{-1}$

C. $0.5 M \min^{-1}$

D. $5 M \min^{-1}$

Answer: B

Watch Video Solution

454. The rate constant is numerically same for three reactions of 1st, 2nd and 3rd order respectively. If conc, of the reactant is more than 1M, which one is true for the rates of the three reactions ?

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: C

Watch Video Solution

455. In the above problem if concentration of reactant is less than 1 M then:

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: B

View Text Solution

456. In the above problem if concentration of reactant is 1 M then:

A. $r_2 = r_2 = r_3$

B. $r_1 > r_2 > r_3$

C. $r_1 < r_2 < r_3$

D. All

Answer: A

View Text Solution

457. The unit of rate constant for the reaction obeying rate expression, $r = K[A]^1[B]^{2/3}$ is:

A. $Mol^{-2/3}litre^{2/3}time^{-1}$

B. $Mol^{2/3}litre^{-2/3}time^{-1}$

C. $Mol^{-5/3}litre^{-2/3}time^{-1}$

D. None of these

Answer: A

Watch Video Solution

458. For a reaction, $2A + B \rightarrow C + D$, $\frac{d[A]}{dt} = K[A]^2[B]$

The expression for $\frac{d[B]}{dt}$ will be:

A. $K[A]^2[B]$

B. $\left(\frac{1}{2}\right)K[A]^2[B]$

C. $K[A]^2[2B]$

D. $K[2A]^2[B]$

Answer: B

Watch Video Solution

459. The rate constant K_a of one reaction is found to be double than that of rate constant $K_a{''}$ of another reaction. Then the relation between the corresponding activation energies of the two reactions $E_a{'}$ and $E_a{''}$ can be represented as,

A. $E_1 > E_2$

B. $E_1 < E_2$

C. $E_1 = E_2$

D. None of the above

Answer: D

Watch Video Solution

460. In many reactions, the reaction proceeds in a sequence of steps, so the overall rate is determined by:

A. Outer of different steps

B. Slowest step

C. Molecularity of the steps

D. Fastest step

Answer: B

Watch Video Solution

461. Which statement is true ?

A. Endothermic reactions have higher activation energies than exotlhermic reactions

B. The specific rate constant for a reaction is independent of the concentration of the reacting species

C. There is a single rate determining step in any reaction mechanism

D. None of the above

Answer: B

Watch Video Solution

462. The rate law of the reaction, $2A + B \rightarrow 2AC$ is represented as Rate $= K[A]^2[B]$. If A is taken in large excess, the order of the reaction will be,

A. zero

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

463. The rate of the elementary reaction, $2NO + O_2 \rightarrow 2NO_2$ when the volume of the reaction vessel is doubled:

A. Will grow eight times of its initial rate

B. Reduce to one-eight of its initial rate

C. Will grow four times of its initial rate

D. Reduce to one-fourth of its initial-rate

Answer: B

Watch Video Solution

464. Which statement is correct ?

A. Law of mass action and rate law expressions are same for single step reactions

B. Order of the slowest elementary reaction of a complex reaction, gives the order of the complex reaction

C. Both order and molecularity have normally a maximum value of 3

D. All

Answer: D

Watch Video Solution

465. Rate of which reactions increases with temperature:

A. Of any

B. Of exothermic reactions

C. Of endothermic reactions

D. Of none

Answer: A

Watch Video Solution

466. Which will lead to a change in the rate constant K of a reaction:

A. A change in the pressure

B. Change in temperature

C. Change in the volume of the reaction vessel

D. All

Answer: B

Watch Video Solution

467. For a given reaction half life period was found to be directly proportional to the initial concentration of the reactant. The order is:

A. Zero

B. 1

C. 2

D. 3

Answer: A

Watch Video Solution

468. The reaction $2NO + Br_2 \rightarrow 2NOBr$, obey.s the following mechanism:

A. $r = [NO]^2[Br_2]$

B. $r = K[NO][Br_2]$

C. $r = K[NO][Br_2]^2$

D. $r = K[NOBr_2]$

Answer: A

Watch Video Solution

469. 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

Answer: C

Watch Video Solution

470. According to law of mass action, the rate of reaction is directly proportional to:

A. Active masses of reactants

B. Equilibrium constant

C. Active masses of products

D. Pressure

Answer: A

Watch Video Solution

471. According to collision theory:

A. Collisions are sufficiently violent

B. All collision are responsible for reaction

C. All collisions are effective

D. Only highly energies molecules have enough energy to react

Answer: D

Watch Video Solution

472. Point out the incorrect statement:

A. Rate law is an experimental value

B. Law of mass action is a theoretical proposal

C. Rate law is more informative .than law of mass action for developing mechanism

D. Rate law is always different from, the expression of law of mass action

Answer: D

Watch Video Solution

Watch Video Solution

473. For the hydrolysis of esters in alkaline medium rate expression is : $-\frac{d[ester]}{dt}$=K[Ester][Alkali] In case alkali used is in excess, then the overall order of the reaction is:

A. Zero

B. First

C. Same

D. Third

Answer: B

Watch Video Solution

474. The rate of reaction, $A + B + C \rightarrow P$ is given by:

$r = -\frac{d[A]}{dt} = K[A]^{1/2}[B]^{1/2}[C]^{1/4}$. The order of the reaction is:

A. 1

B. 2

C. $1/2$

D. $5/4$

Answer: D

Watch Video Solution

475. On increasing the temperature by 10 K in the case of slow reactions:

A. No. of collisions get doubled

B. Value of rate constant increase

C. Energy of activation increases

D. None of the above

Answer: D

Watch Video Solution

476. At room temperature, the reaction between NO and O_2 to give NO_2 is the 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 then $2CO + O_2 \rightarrow 2CO_2$

D. None of these

Answer: C

Watch Video Solution

477. The reaction, $2A \rightarrow B + C$ follow zero order kinetics.

The differential rate equation for the reaction is:

A. $\frac{dx}{d}o = K[A]^0$

B. $\frac{dx}{d}o = K[A]^2$

C. $\frac{dx}{d}o = K[B][C]$

D. $\frac{dx}{d}o = K[A]$

Answer: A

Watch Video Solution

478. Given that K is the rate constant for some order of any reaction at temp T then the value of $T^{\lim} \to \infty^{\log K}$_____. (where A is the arrhenius constant):

A. $A / 2.303$

B. A

C. 2.303A

D. log A

Answer: D

Watch Video Solution

479. In the following first order competing reactions:

A + Reagent $\rightarrow$ Product

B + Reagent $\rightarrow$ Product

The ratio of $\frac{K_1}{K_2}$ if only 50% of B will have been reacted.when 94% of A has been reacted is:

A. 4.06

B. 0.246

C. 2.06

D. 0.06

Answer: A

Watch Video Solution

480. In gaseous reactions important for-the understanding of the upper atmosphere H_2O and O react bimolecularly to form two OH radicals. ΔH for this reaction is 72 kJ at 500 K and E_a is 77 kJ mol^{-1}, then E_b for the bimolecular recombination of two OH radicals to form H_2O and O is::

A. 3kjmol^{-1}

B. 4kj $moll^{-1}$

C. 5kj $moll^{-1}$

D. 7kjmol^{-1}

Answer: C

Watch Video Solution

481. From the following data, the activation energy for the reaction is (cal/mol): $H_2 + I_2$---->2HI

A. 4×10^4

B. 2×10^4

C. 8×10^4

D. 3×10^4

Answer: A

View Text Solution

482. The hydrolysis of ester was carried out separately with 0.05 N HCl and 0.05 N H_2SO_4. Which of the following will be true:

A. $K_{HCI} > K_{H_2SO_4}$

B. $K_{H_2SO_4} > K_{HCL}$

C. K_(H_2SO_4)=2K_(HCL)`

D. $K_{H_2SO_4} = K_{HCL}$

Answer: B

Watch Video Solution

483. For a reaction $A + B \rightarrow$ 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

Answer: C

Watch Video Solution

484. The time for half of a first order reaction is l hr. What is the time taken for 87.5% completion of the reaction:

A. 1 hour

B. 2 hour

C. 3 hour

D. 4 hour

Answer: C

Watch Video Solution

485. The rate constant, the activation energy and the Arrhenius parameter of a chemical reaction at $25^{\circ}C$ are $3.0 \times 10^{-4}S^{-1}, 104.4kjmol^{-1}$ and $6.0 \times 10^{14}s^{-1}$ respectively. The value of the rate constant as T $\rightarrow \infty$ is:

A. $2.0 \times 10^{18}s^{-1}$

B. $6.0 \times 10^{14}s^{-1}$

C. Infinity

D. $3.6 \times 10^{30}s^{-1}$

Answer: B

Watch Video Solution

486. In a gaseous phase reaction:

$A_2(g) \rightarrow B(g) + (1/2)C(g),)$, the increases in pressure from 100 mm to 120 mm is noticed in 5 minute. The total of disappearance of A_2$mm \min^{-1}$ is : is:

A. 4

B. 8

C. 16

D. 2

Answer: B

Watch Video Solution

487. The term (-dC/dt) in rate equation refers to:

A. The concentration of a reactant

B. The decrease in concentration of the reactant with time

C. The velocity constant of reaction

D. None

Answer: B

Watch Video Solution

488. Two reaction A $\rightarrow$ products and B $\rightarrow$ 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 temperature $khan$ will be greater than K_B and $K_A > K_B$

B. At lower temperature k_A and kg 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

Answer: D

Watch Video Solution

489. The rate of reaction:

A. Decreases with time

B. Decreases with decrease in concentration of reactant

C. Decreases, with increase in time and decrease in concentration of reactant

D. None

Answer: C

Watch Video Solution

490. Which order of reaction obeys the relation $t_{1/2} = 1/ka$:

A. First

B. Second

C. Third

D. Zero

Answer: B

Watch Video Solution

491. Plot of log (a- x) vs time t is straight line. This indicates that the reaction is of:

A. Second order

B. First order

C. Zero order

D. Third order

Answer: B

Watch Video Solution

492. A graph, ploted between concentration of reactant consumed at any time (x) and time t is found to be a straight line passing through the origin. Thus reaction is of:

A. First order

B. Second order

C. Third order

D. All

Answer: B

Watch Video Solution

493. Combustion of carbon is exothermic, but coal stored in coal depots does not bum automatically because of:

A. High threshold energy barrier

B. Kinetic stability of coal

C. 'Higher energy of activation needed for burning

D. Half order

Answer: D

Watch Video Solution

494. The rate constant for a reaction is 10.8×10^{-5} mole $litre^{-1} \sec^{-1}$. The reaction obeys:

A. First order

B. Zero order

C. Second order

D. Half order

Answer: B

Watch Video Solution

495. The unit of rate constant and that of rate of reaction are same for:

A. First order

B. Zero order

C. Second order

D. Half order

Answer: B

Watch Video Solution

496. 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}

Answer: B

Watch Video Solution

497. According to collision theory:

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

Answer: D

Watch Video Solution

498. Which statement is not correct ?

A. For endothermic reactions, heat of reaction is lesser than energy of activation

B. For exothermic reactions, heat of reaction is more than energy of activation

C. For exothermic reactions energy of activation is .less in forward reaction than in backward reaction

D. For endothermic reactions energy of activation is more in forward reaction than in backward reaction

Answer: B

Watch Video Solution

499. Which of the following statement is correct?

A. The rate of disappearance of X = twice the rate of disappearance of Y

B. The rate of disappearance of X = 1/2 rate of appearance of products

C. The rate of apperance of products = $1/2$ the rate of disapperance of Y

D. The rate of apperance of products = $1/2$ the rate of disapperance of X

Answer: C

Watch Video Solution

500. Select the intermediate in the following reaction mechanism:

$O_3(g) \Leftrightarrow O_2(g) + O(g)$

$O(g) + O_3(g) \rightarrow 2O_2$

A. $O_3(g)$

B. O(g)

C. $O_2(g)$

D. None of above

Answer: B

Watch Video Solution

501. If the concentration units are reduced by n times, then the value of rate constant of first order will:

A. Increase by n times

B. Decrease by factor of n

C. Not change

D. None of the above

Answer: C

Watch Video Solution

502. The reaction $NO + (1/2)O_2 \rightarrow NO_2$ exhibits:

A. Small negative temperature coefficient

B. Decrease in value of K with, temperature

C. Decrease in value of rate^ivith temperature

D. All

Answer: B

Watch Video Solution

503. For the reaction, $4A + B \rightarrow 2C + 2D$,The statement not correct is:

A. The rate of disappearance of B is one fourth the rate of disappearance of A

B. The rate of appearance of C is half the rate of disappearance of B

C. The rate of formation of D is half the rate of consumption of A

D. The rates of formation of C and D are equal

Answer: B

Watch Video Solution

504. The rate constant of a reaction depends upon

A. Temperature

B. Initial concentration of the reactants

C. Time of reaction

D. Extent of reaction

Answer: A

Watch Video Solution

505. A large increase in rate of reaction for a rise of tempeature is due to

A. Increase in the number of collisions

B. Increase in the number of activated molecules

C. Lowering of activation energy

D. Shortening of the mean free path

Answer: B

Watch Video Solution

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

A. $t_{1/4} = \frac{2.303}{K} \log 4$

B. $t_{1/4} = \frac{2.303}{K} \log 2$

C. $t_{1/4} = \frac{2.303}{K} \log \frac{4}{3}$

D. $t_{1/4} = \frac{2.303}{K} \log \frac{3}{4}$

Answer: C

Watch Video Solution

507. The rate constant for the reaction $2N_2O_5 \rightarrow 2N_2O_4 + O_2$ is $3 \times 10^{-5} \sec^{-1}$. If the rate is

2.4×10^{-5} M $\sec^{-1}$, the concentration of N_2O_5 is

A. 1.4

B. 1.2

C. 0.04

D. 0.8

Answer: D

Watch Video Solution

508. For a given reaction rate = K $(A)^1(B)^{2/3}$, the unit of rate constant K can be given as

A. $mol^{-1/3}litre^{2/3}time^{-1}$

B. $mol^{1/3}litre^{-2/3}time^{-1}$

C. $mol^{-1/3}litre^{-2/3}time^{-1}$

D. None of the above

Answer: A

Watch Video Solution

509. The inversion of cane sugar proceeds with half life of 500 minute at pH = 5 for any concentration of sugar. However, if pH=6, the half life changes to 50 minute. The rate law expression for the sugar inversion can be written as

A. $r = k(sugar)^2(H^+)^0$

B. $r = k(sugar)^1(H^+)^0$

C. $r = k(sugar)^1(H^+)^1$

D. $r = k(sugar)^0 (H^+)^1$

Answer: B

Watch Video Solution

510. Two substances A and B are present such that [A]= 4 [B] and half life of A is 5 minute and of B is 15 minute. If they start decaying at the same time following first order, how much time later will the concentration of both of them would be same

A. 15 minute

B. 10 minute

C. 5minute

D. minute

Answer: A

Watch Video Solution

511. Milk turns sour at $40^{\circ}C$ three times as faster as at $0^{\circ}C$. The energy of activation for souring of milk is:

A. 4.693 kcal

B. 2.6 kcal

C. 6.6kcal

D. None of these

Answer: A

Watch Video Solution

512. The order of a gaseous phase reaction for which rate becomes half if volume of-container having same amount of reactant is doubled is:

A. 1

B. 2

C. $1/2$

D. $1/3$

Answer: A

Watch Video Solution

513. For the non-equilibrium process, $A + B \rightarrow$ products, the rate is first order with respect to A and second order with respect to B. If 1.0 mol each of A and B are introduced into a 1 litre vessel,and the initial rate were 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. 1.2×10^{-4}

D. None of the above

Answer: A

Watch Video Solution

514. Hydrogenation of vegetable ghee at $25^{\circ}C$ reduces pressure of H_2 from 2 atm to 1.2 atm in 50 minute. The pressure of $H_2$from 2 atm to 1.2 atm in 50 minute. The rate of reaction in terms of molarity per second is :

A. 1.09×10^{-6}

B. 1.09×10^{-5}

C. 1.09×10^{-7}

D. 1.09×10^{-5}

Answer: B

Watch Video Solution

515. Ethylene is produced by $C_4H_8 \xrightarrow{\Delta} 2C_2H_4$ Cyclobutane. The rate constant is $2.48 \times 10^{-4} \text{sec}^{-1}$. In what time will the molar ratio of the ethylene to cyclobutane in reaction mixture attain the value 1:

A. 27.25 minute

B. 28.25 minute

C. 25 minute

D. 20 minute

Answer: A

Watch Video Solution

516. 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

Answer: D

Watch Video Solution

517. For the elementary step $(CH_3)_3 CBr(aq) \rightarrow (CH)_3)_3 C^+(aq) + Br^-(aq)$ the molecularity is :

A. Zero

B. 1

C. 2

D. Cannot ascertained

Answer: B

Watch Video Solution

518. For a reaction ,the rate of reaction was found to increase about .1.8 times when the temperature was increased by $10^{\circ}C$. The increase in rate is due to :

A. Increase in number of active molecules

B. Increase in activation energy of reactants

C. Decrease in activation energy of reactants

D. Increase in the number of collisions between reacting molecules

Answer: A

Watch Video Solution

519. A reaction proceeds in three stages. The first stage is a slow and involves two molecules of reactants .The second and third stage are fast .The overall order of the reaction is :

A. First order

B. Second order

C. Third order

D. Zero order

Answer: B

Watch Video Solution

520. The rate of a reaction can be increased in general by all the factors except:

A. Using a catalyst

B. Increasing the temperature

C. Increasing the activation energy

D. Increasing the concentration of reactants

Answer: C

Watch Video Solution

521. Which is not used in the determination of reaction rates ?

A. Reaction temperature

B. Reactant concentration

C. Specific rate constant

D. None of the above

Answer: D

Watch Video Solution

522. The enzyme catalysed reaction is faster than metal catalysed reaction because its activation energy is :

A. Greater

B. Lower

C. Same

D. None of the above

Answer: B

Watch Video Solution

523. The given reaction $2FeCl_3 + SnCl_2 \rightarrow SnCl_4 + 2FeCl_2$ is an example of :

A. First order reaction

B. Third order reaction

C. Second order reaction

D. None of above

Answer: B

Watch Video Solution

524. For producing the effective collisions the colliding molecules must have :

A. A certain minimum amount of energy

B. Energy lesser than threshold energy

C. Improper orientation

D. Proper orientation and energy equal or greater than threshold energy

Answer: D

Watch Video Solution

525. Equation for the half life period in first order reaction is

:

A. $\frac{t_1}{2} = \frac{0.602}{k}$

B. $\frac{t_1}{2} = \frac{0.693}{K}$

C. $\frac{t_1}{2} = \frac{K}{0.693}$

D. $\frac{t_1}{2} = \frac{K}{0.602}$

Answer: B

Watch Video Solution

526. 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

Answer: C

Watch Video Solution

527. If the rate of reaction between A and B is. given by,rate $= K[A][B]^n$, then the reaction is :

A. First order in A

B. $n^t h$order in B

C. Overall order is (1+n)

D. All are correct

Answer: D

Watch Video Solution

528. Which statement about the order of reaction is correct:

A. The order 'of reaction must be a positive integer

B. A second order reaction is also bimolecular

C. The order of reaction increases with increasing temperature

D. The order of reaction can only be determined by experiment

Answer: D

Watch Video Solution

529. $\dfrac{K_{f(+10)}}{K_t}$ is known as :

A. Ratio of equilibrium constants

B. Temperature coefficient

C. Difference in temperature of reversible reactions

D. None of the above

Answer: D

Watch Video Solution

530. 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

Answer: A

Watch Video Solution

531. The rate of reaction, $A + B \rightarrow$ product, is proportional to the first power of concentration of A and second power of concentration B. The overall order of the reaction is :

A. 1

B. 2

C. 3

D. Zero

Answer: C

Watch Video Solution

532. The following equation for the rate constant: indicates that the reaction is of : $K = \frac{2.303}{t} \log. \frac{a}{a-x}$

A. Second order

B. First order

C. Third order

D. Zero order

Answer: B

Watch Video Solution

533. For the reaction $A - - \rightarrow B$, the rate law is, rate=K[A].Which of the following statement is incorrect ?

A. The reaction follows first order kinetics

B. The $\frac{t_1}{2}$ of reaction depends upon initial concentration of reactant

C. K is constant for the reaction at at constant temperature

D. The rate law provides a simple way of predicting the concentration of reactants and product at any time after the start of the reaction

Answer: B

Watch Video Solution

534. The correct expression the rate of reaction of elementary reaction ,$A + B - - - \rightarrow C$ is:

A. $d\frac{[C]}{dt} = K[A]$

B. $\frac{d[C]}{dt} = K[B]$

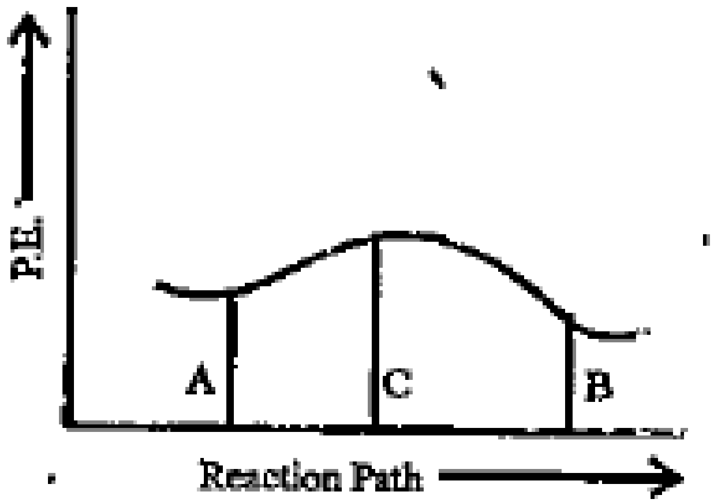
C. $\dfrac{-d[A]}{dt} = K[A][B]$

D. $\dfrac{-d[A]}{dt} = K[A]$

Answer: C

Watch Video Solution

535. With respect to the figure given below which of the following statement is correct:



A. $\Delta E$for the forward reaction is C-B

B. ΔE for the forward reaction is B-A

C. $E_{\text{forward}} > E_{backward}$

D. E(for reverse reaction)=C-A

Answer: B

View Text Solution

536. A drop of solution (volume 0.05 mL) contains 3.0×10^{-6}mole of H^{+}If the rate constant of disappearance of H^{+} is 10^{7}mol$litre^{-1}\sec^{-1}$ How long would it take for H^{+} in drop to disappear :

A. 6×10^{-8} sec.

B. 6×10^{-7} sec.

C. 6×10^{-9} sec.

D. 6×10^{-10} sec.

Answer: C

Watch Video Solution

537. Which of the following theory, is not related to chemical kinetics ?

A. Collision theory

B. Activated complex theory

C. Absolute reaction rate theory

D. VSEPR theory

Answer: D

Watch Video Solution

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

A. K vs T

B. 1/K vs T

C. In K vs. T

D. $InKvs\frac{1}{T}$

Answer: D

Watch Video Solution

539. The burning of coal represented by the equation, $C(s) + O_2(g) \rightarrow CO_2(g)$.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

Answer: B

Watch Video Solution

540. Following mechanism has been proposed for a reaction

,

$2A + B \longrightarrow D + E$

$A + B \xrightarrow{I} C + D$ .... (slow)

$A + C \longrightarrow E$ .... (fast)

, The rate law expression for the reaction

A. $r = K[A]^2[B]$

B. $r = K[A][B]$

C. $r = K[A]^2$

D. r=K[A][C]

Answer: B

Watch Video Solution

541. If order of reaction ,$A + B \xrightarrow{hv} AB$is zero .If means that :

A. Rate of reaction is independent of temperature

B. Rate of reaction is independent of the' concentration of the reacting species

C. ,The rate of formation of activated complex is zero

D. Rate of decomposition of activated complex is zero

Answer: B

Watch Video Solution

542. The chemical reaction,$2O_3 \rightarrow 3O_2$proceeds as follows:

$O_3 \Leftrightarrow O_2 + ...(f*)$

$O + O_3 \rightarrow 2O_2.......(slow)$The rate law expression should be :

A. $r = K[O_3]^2$

B. $r = K[O_3]^2[O_2]^{-1}$

C. $r = K[O_3][O_2]$

D. Unpredictable'

Answer: B

Watch Video Solution

543. A hypothetical reaction, $A_2 + B_2 \to 2AB$ follows the mechanism as given below , $A2 - - - \to A + A.......(f*)$A+B2----->AB+B.......(slow) A+BrarrAB.......(fast) The order of the reaction is :

A. 2

B. 1

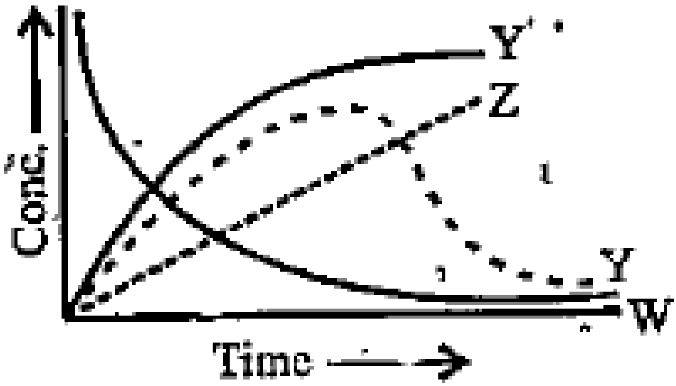
C. $1\frac{1}{2}$

D. Zero

Answer: C

Watch Video Solution

544. For the reaction ,$A + B \rightarrow C + D$. The variation of the concentration of the products is given by the curve:



A. X

B. Y

C. Z

D. W

Answer: B

Watch Video Solution

545. If the first order reaction involves gaseous reactants and gaseous-products the units of its rate are:

A. atm

B. atm-sec

C. $atm\,\sec^{-1}$

D. $atm^2 - \sec^2$

Answer: C

Watch Video Solution

546. The branch of chemistry which deals with the reaction rates and. reaction mechanism is called :

A. Thermochemistry

B. Photochemistry

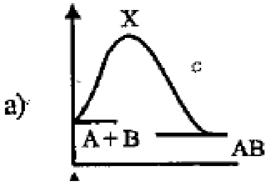
C. Analytical chemistry

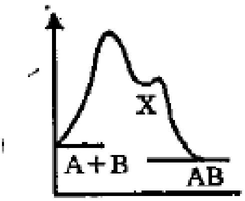
D. Chemical kinetics

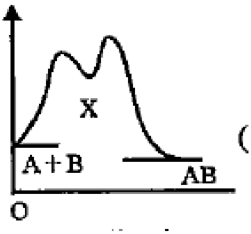
Answer: D

Watch Video Solution

547. For an exothermic chemical process occuring in two steps as :$A + B \rightarrow X(slow)$,$A + B \rightarrow X(slow)$The progress of the reaction can be described by :

A. 

B. 

C. 

D. All are correct

Answer: A

Watch Video Solution

548. Among the following reaction the fastest one is :

A. Burning of coal

B. Rusting of iron in moist car

C. Conversion of monoclinic sulphur to rhombic

D. Precipitation of silver chloride by mixing silver nitrate and sodium chloride solutions

Answer: D

Watch Video Solution

549. In acidic medium the rate of reaction between $(BrO_3)^-$ and Br^- ions is given by the expression. $-\frac{d(BrO_3^-)}{dt} = K[BrO_3^-][Br^-][H^+]^2$ It means:

A. Rate constant of overall reaction is $4 \sec^{-1}$

B. Rate of reaction is independent of the cone.of acid

C. The change in pH of the solution will not affect the rate

D. Doublic the cone, ofH^+` ions will increase the reaction rate by 4’times

Answer: D

Watch Video Solution

550. Chemical reaction occurs as a result of collisions between reacting molecules. Therefore, the reaction rate is given by:

A. Total number of collisions occuring in a unit volume per second

B. Fraction of molecules which possess energy less than the threshold energy

C. Total number of effective collisions

D. None of the above

Answer: C

Watch Video Solution

551. The activation energies of two reactions are E_a and E_a with $E_a > E_a$ if the temperature of the reacting systems is increased from T_1 to T_2, predict which alternative is correct k are rate constants at higher temperature. Assume A being same for both the reactions:

A. $\frac{k_1}{k_2} = \frac{k_2}{k_2}$

B. $k_1 < k_2$ and $k_1 < k_2$

C. $k_1 > k_2$ and $k_1 > k_2$

D. $\frac{k_1}{k_2} = \frac{2k_2}{k_2}$

Answer: B

Watch Video Solution

552. For the decomposition of $N_2O_5(g)$, it is given that : $2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$,Activation energy

$E_aN_2O_5(g) \rightarrow 2NO_2(g) + \left(\frac{1}{2}\right)O_2(g)$,Activation energy $E_a$then:

A. $E_a = E_a$

B. $E_a > E_a$

C. $E_a < E_a$

D. $E_a = 2E_a$

Answer: A

Watch Video Solution

553. For the reaction: $\left[Cu(NH_3)_4\right]^{2+} + H_2O \rightarrow \left[Cu(NH_3)_3H_2O^{2++}NH_3\right.$the net rate of reaction at any time is given by :net rate =

$2.0 \times 10^{-4}\left[\left[Cu(NH_3)_4\right]^{2+} - 3.0 \times 10^5\left[\left[Cu(nh_3)_3H_2O\right]^{2+}\right]\right.$

$.[NH_3]$Then correct statement is (are):

A. Rate constant for forward reaction $= 2 \times 10^4$

B. Rate constant for backward reaction $= 3 \times 10^5$

C. Equilibrium constant for the reaction $= 6.6 \times 10^{10}$

D. All

Answer: B

Watch Video Solution

554. Which is correct relation in between $\frac{dC}{dt}, \frac{dn}{dt}$ and $\frac{dP}{dt}$ where C,n,P, represents concentration ,mole and pressure terms for gaseous phase reactant A(g)rarr product.

A. $-\frac{dC}{dt} = -\frac{1}{V}\frac{dn}{dt} = -\frac{1}{RT}\frac{dP}{dt}$

B. $\frac{dC}{dt} = \frac{dn}{dt} = -\frac{dP}{dt}$

C. $\frac{dC}{dt} = \frac{RT}{V}\frac{dn}{dt} = -(dP)dt$

D. All

Answer: A

Watch Video Solution

555. Rate of a reaction :

A. Increases with increase in temperature

B. Decreases with increase in temperature

C. Does not depend on temperature

D. Does not depend on concentration

Answer: A

Watch Video Solution

556. The dimensions of the rate constant of a second order reaction involves :

A. Neither time nor concentration

B. Time and concentration

C. Time and square of concentration

D. Only time

Answer: B

Watch Video Solution

557. The rate constant is given by the equation $K = Ae^{-Ea/RT}$ which factor should register a decrease for the reaction to proceed rapidly:

A. T

B. Z

C. A

D. E_a

Answer: D

Watch Video Solution

558. For the reaction ,$H_2(g) + Br(g) = 2HBr(g)$,the reaction` rate=K[H2][Br2]^1/2. Which statement is true about this reaction:

A. The reaction is of second order

B. Molecularity of the reaction is 3/2

C. The unit of K is $\sec^{-1}$

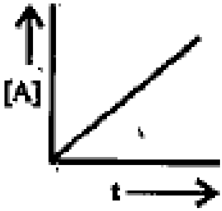
D. Molecularity of the reaction is 2

Answer: D

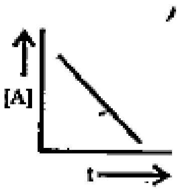
Watch Video Solution

559. Which curve represents zero order reaction:

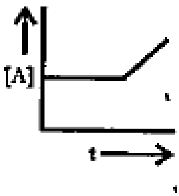
A. (a) 

B. 

C.

c) 

D.



Answer: C

Watch Video Solution

560. Rate equation for a second order reaction is :

A. $K = \frac{2.303}{t}(\log)\frac{a}{(a-x)}$

B. $K - \frac{1}{t}(\log)\frac{a}{a(a-x)}$

C. $K - \frac{1}{t}.\frac{x}{a(a-x)}$

D. $K = \frac{1}{t^2}.\frac{a}{(a-x)}$

Answer: C

Watch Video Solution

561. In Arrhenius equation $K = Ae^{-E}a/RT$,the quantity-E_a/RT is referred as :

A. Boltzmann factor

B. Frequency factor

C. Activation factor

D. None of the above

Answer: A

Watch Video Solution

562. The temperature coefficient of most of the reaction lies between:

A. 1 and 3

B. 2 and 3

C. 1 and 4

D. 2 and 4

Answer: B

Watch Video Solution

563. Alkali hydrolysis of ester is a first order reaction .is it true or false

A. $NH_4NO_2 \rightarrow N_2 + 2H_2O$

B. $2HI \Leftrightarrow H_2 + I_2$

C. $2NO_2 \rightarrow 2NO + O_2$

D. $2NO + O_2 \rightarrow 2NO_2$

Answer: A

Watch Video Solution

Watch Video Solution

564. Rate equation is the expression that gives the relation between rate of reaction and :

A. Temperature

B. Concentration of products

C. Concentration of reactants

D. None of the above

Answer: C

Watch Video Solution