

**NEET CHEMISTRY**

*Topic: Chemical Kinetics*

- Q.1** Which statement about molecularity of a reaction is wrong :
- (1) It is the number of molecule of the reactants taking part in a single step of reaction
  - (2) It is calculated from the reaction mechanism
  - (3) It may be either whole number or fractional
  - (4) It depends on the rate determining step in the reaction
- Q.2** The half life of a first order reaction is 69.3 S the value of the rate constant of the reaction is -
- (1)  $1.0 \text{ S}^{-1}$
  - (2)  $0.1 \text{ S}^{-1}$
  - (3)  $0.01 \text{ S}^{-1}$
  - (4)  $0.01 \text{ S}^{-1}$
- Q.3** The given reaction  
 $2\text{FeCl}_3 + \text{SnCl}_2 \rightarrow 2\text{FeCl}_2 + \text{SnCl}_4$  is an example of -
- (1) First order reaction
  - (2) Second order reaction
  - (3) Third order reaction
  - (4) None of these
- Q.4** Activation energy of a chemical reaction can be determined by -
- (1) Evaluating rate constant at standard temperature
  - (2) Evaluating velocities of reaction at two different temperatures.
  - (3) Evaluating rate constant at two different temperatures.
  - (4) Changing concentration of reactants.
- Q.5** For a first order reaction, the half life period is independent of -
- (1) Initial concentration
  - (2) Cube root of initial concentration
  - (3) First power of final concentration
  - (4) Square roots of final concentration
- Q.6** For the reaction  $2\text{N}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2$  rate and rate constant are  $1.02 \times 10^{-4}$  and  $3.4 \times 10^{-5} \text{ sec}^{-1}$  respectively then conc. of  $\text{N}_2\text{O}_5$  at the time will -
- (1) 1.732
  - (2) 3
  - (3)  $1.02 \times 10^{-4}$
  - (4)  $3.4 \times 10^5$
- Q.7** A human body required the  $0.01 \mu$  activity of radioactive substance after 24 hours. Half life of radioactive is 6 hours. Than injection of max. activity of radioactive substance that can be injected :
- (1) 0.08
  - (2) 0.04
  - (3) 0.16
  - (4) 0.32

- Q.8** When a bio chemical reaction is carried out in laboratory from out side of human body in the absence of enzyme than rate of reaction obtained is  $10^{-6}$  times, than activation energy of reaction in the presence of enzyme is :
- (1)  $6 / RT$
  - (2) P is required
  - (3) Different from,  $E_a$  obtain in laboratory
  - (4) Can't say any things
- Q.9**  $2A \rightarrow B + C$   
It would be a zero order reaction when :
- (1) The rate of reaction is proportional to square of conc. of A
  - (2) The rate of reaction remains same at any conc. of A
  - (3) The rate remains unchanged at any conc. of B and C
  - (4) The rate of reaction doubles if conc. of B is increased to double
- Q.10** For the reaction system :  
 $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$   
volume is suddenly reduced to half its value by increasing the pressure on it. If the reaction is of first order with respect to  $O_2$  and second order with respect to NO, the rate of reaction will :
- (1) Diminish to one-fourth of its initial value
  - (2) Diminish to one-eighth of its initial value
  - (3) Increase to eight times of its initial value
  - (4) Increase to four times of its initial value
- Q.11** The activation energy for a simple chemical reaction  $A \rightarrow B$  is  $E_a$  in forward direction. The activation energy for reverse reaction :
- (1) Is negative of  $E_a$
  - (2) Is always less than  $E_a$
  - (3) Can be less than or more than  $E_a$
  - (4) Is always double of  $E_a$
- Q.12** The reaction  $A \rightarrow B$  follows first order kinetics. The time taken for 0.8 mole of A to produce 0.6 mole of B is 1 hour. What is the time taken for conversion of 0.9 mole of A to produce 0.675 mole of B :
- (1) 1 hour
  - (2) 0.5 hour
  - (3) 0.25 hour
  - (4) 2 hour
- Q.13** If the rate of the reaction is equal to the rate constant, the order of the reaction is :
- (1) 0
  - (2) 1
  - (3) 2
  - (4) 3
- Q.14** For a first order reaction  $A \rightarrow B$  the reaction rate at reactant concentration of 0.01 M is found to be  $2.0 \times 10^{-5} \text{ mol L}^{-1} \text{ S}^{-1}$ . The half life period of the reaction is :
- (1) 220 s
  - (2) 30 s
  - (3) 300 s
  - (4) 347 s
- Q.15** The half-life of a radioactive isotope is three hours If the initial mass of the isotope were 256g, the mass of it remaining undecayed after 18 hours would be :
- (1) 4.0 g
  - (2) 8.0 g
  - (3) 12.0 g
  - (4) 16.0 g

- Q.16** In a first order reaction, the concentration of the reactant, decreases from 0.8 M to 0.4 M in 15 minutes. The time taken for the concentration of change from 0.1 M to 0.025 M is -  
 (1) 7.5 min                      (2) 15 min  
 (3) 30 min                        (4) 60 min
- Q.17** The rate equation for the reaction  $2A + B \rightarrow C$  is found to be : rate =  $k[A][B]$ . The correct statement in relation to this reaction is that the  
 (1) rate of formation of C is twice the rate of disappearance of A.  
 (2) Half life is a constant  
 (3) unit of k must be  $s^{-1}$   
 (4) value of k is independent of the initial concentrations of A and B
- Q.18** The half-life of a radio isotope is four hours. If the initial mass of the isotope was 200 g, the mass remaining after 24 hours undecayed is :  
 (1) 3.125 g                      (2) 2.084 g  
 (3) 1.024 g                      (4) 4.167 g
- Q.19** A reaction was found to be second order with respect to the concentration of carbon monoxide if the concentration of carbon monoxide is doubled, with everything else kept the same, the rate of reaction will :  
 (1) double  
 (2) remain unchanged  
 (3) triple  
 (4) increase by a factor of 4
- Q.20** The rate of a chemical reaction doubles for every  $10^\circ\text{C}$  rise of temperature. If the temperature is raised by  $50^\circ\text{C}$ , the rate of the reaction increase by about :  
 (1) 10 times                      (2) 24 times  
 (3) 32 times                      (4) 64 times

The following questions 21 to 30 consists of two statements each, printed as Assertion and Reason. While answering these questions you are to choose any one of the following four responses.

- (A) If both Assertion and Reason are true and the Reason is correct explanation of the Assertion.  
 (B) If both Assertion and Reason are true but Reason is not correct explanation of the Assertion.  
 (C) If Assertion is true but the Reason is false.  
 (D) If Assertion & Reason both are false

- Q.21** **Assertion :** For a first order reaction, the concentration of the reactant decreases exponentially with time.  
**Reason :** For first order reaction,  $C_t = C_0 e^{-kt}$   
 (1) A      (2) B      (3) C (4) D
- Q.22** **Assertion :** In a zero order reaction, if concentration of the reactant is doubled, half-life period is also doubled.  
**Reason :** The total time taken for a zero order reaction to complete is double of the half-life period.  
 (1) A      (2) B      (3) C (4) D
- Q.23** **Assertion :** Temperature coefficient of most of the reactions lies between 2 and 3.  
**Reason :** Increase in temperature increases the number of collisions.  
 (1) A      (2) B      (3) C (4) D
- Q.24** **Reason :** For a 1<sup>st</sup> order reaction  $t_{1/2}$  is independent of the initial concentration of reactions.  
**Reason :** For a 1<sup>st</sup> order reaction  $t_{1/2}$  is 1.5 times of  $t_{3/4}$ .  
 (1) A      (2) B      (3) C (4) D
- Q.25** **Assertion :** The rate of the reaction is the rate of change of concentration of a reactant or a product.  
**Reason :** Rate of reaction remains constant during the complete reaction.  
 (1) A      (2) B      (3) C (4) D

- Q.26 Reason :** The reaction having low value of activation energy are generally fast.  
**Reason :** Temperature coefficient for reaction having low activation energy is large.  
(1) A (2) B (3) C (4) D
- Q.27 Assertion :** Half life period is always independent of initial concentration.  
**Reason :** Half life period is directly proportional to rate concentration.  
(1) A (2) B (3) C (4) D
- Q.28 Assertion :** The molecularity of a reaction is a whole number other than zero, but generally less than 3.  
**Reason :** The order of a reaction is always whole number.  
(1) A (2) B (3) C (4) D
- Q.29 Assertion :** In a reversible endothermic reaction activation energy of the forward reaction is higher than that of the backward reaction.  
**Reason :** The threshold energy of the forward reaction is moer than that of the backward reaction.  
(1) A (2) B (3) C (4) D
- Q.30 Assertion :** Acid catalysed of ethyl acetate is a first order reaction.  
**Reason :** Water does not taken part in the reaction.  
(1) A (2) B (3) C (4) D



## ANSWER KEY

---

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	3	3	1	2	3	3	2	3
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	3	1	1	4	1	3	4	1	4	3
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	2	3	3	3	4	3	3	2

