OBJECTIVE TYPE QUESTIONS

1. With passage of time the molar concentrations of reactants:
   (*A*) Decreases (*B*) Increases (*C*) Remains constant (*D*) None of these
2. The molecularity of a reaction:
   (*A*) Is a fraction (*B*) A whole number
   (*C*) May be fraction or whole number (*D*) None of these
3. The order of a reaction depends on:
   (*A*) The stoichrometric representation
   (*B*) Number of molecules involves in the slowest step

(C) Number of molecules involves in the relatively faster step

(D) None of the above

4. The role of a catalyst is to:

(A) Decrease activation energy (B) Increase activation energy

(C) Decrease internal energy (D) Increase enthalpy

5. The activation energy is primarily dependent on:

(A) Nature of reactants (B) Nature of products

(C) Temperature (D) Concentration of reactants and products

6. Molecularity of a reaction is:

(A) Number of reacting species take part in slowest step

(B) The sum of reactants and products

(C) The number of reactants in each step

(D) None of the above

7. A zero order reaction is:

(A) Independent of initial concentration (B) Dependent on initial concentration

(C) Varies inversely with initial concentration (D) None of these

8. The characteristics of first order reaction is:

(A) It get completed in a short time (B) It never get completed

(C) It may be completed within hundred years

(D) None of these

9. Hydrolysis of ethyl acetate (acid catalyzed) is an example of:

(A) First order reaction (B) Second order reaction

(C) Pseudo first order reaction (D) Zero order reaction

10. Order of a reaction rarely exceeds:

(A) One (B) Two (C) Three (D) Four

11. The unit of rate constant for first order reaction is:

(A) Time^{-1} (B) Litre mol^{-1} sec^{-1} (C) Litre mol^{-1} (D) Litre mol^{-2} sec^{-1}

12. For an effective collision between the molecules the barrier can be:

(A) Only energy barrier (B) Only orientation barrier

(C) Both (A) and (B) (D) None of these

13. For most of the reactions the temperature coefficient is:

(A) 2 to 3 (B) 1 to 2 (C) 3 to 4 (D) zero

14. The rate constant of a reaction depends on:

(A) Time (B) Mass (C) Temperature (D) Volume

15. The minimum energy required for the reactants to undergo reaction is:

(A) Kinetic energy (B) Potential energy

(C) Activation energy (D) Thermal energy

16. For an exothermic reaction the energy of activation is:

(A) Positive (B) Negative (C) Zero (D) Cannot be predicted

17. For an endothermic reaction the energy of activation is:

(A) Zero (B) Positive (C) Negative (D) Cannot be predicted

18. For the hypothetical reaction, $2A \rightarrow 3C$, the reaction rate 'r' in terms of the rate of change of concentration is given by:

(A) $r = -\frac{d[A]}{dt}$ (B) $r = \frac{1}{2}\frac{d[A]}{dt}$ (C) $r = \frac{1}{3}\frac{d[C]}{dt}$ (D) $r = \frac{d[C]}{dt}$

19. The rate constant of a reaction depends upon:

(A) temperature (B) initial concentration

(C) time of reaction (D) extent of reaction

20. If the concentration of a reactant A is quadruples and the rate of the reaction is doubled, the order of reaction w.r.t. A is:

(A) first (B) one-half

(C) zero (D) second

21. For the half-life period of a first order reaction, which one of the following statements is generally *false*?

(A) It is independent of initial concentration

(B) It is independent of temperature

(C) It decreases with the introduction of a catalyst

(D) It increases with increase of temperature

22. The reaction : $2NO_2(g) \longrightarrow 2NO(g) + O_2(g)$ obeys the second order rate law. When the partial pressure of NO_2 in the reaction mixture is doubled, the rate would:

(A) remain unchanged (B) get doubled

(C) would become four times the original rate

(D) would decreases

23. The unit of rate constant for a zero order reaction is:

(A) litre sec^{-1} (B) litre $mole^{-1}$ sec^{-1}

(C) mole $litre^{-1}$ sec^{-1} (D) mole sec^{-1}

24. The second order rate constant is usually expressed as:

(A) mole litre sec (B) $mole^{-1}$ $litre^{-1}$ sec^{-1}

(C) mole $litre^{-1}$ sec^{-1} (D) $mole^{-1}$ litre sec^{-1}

25. The time taken for the completion of 99% of a first order reaction, whose half-life period is 0.693 day, is:

(A) 2×0.693 days (B) 0.3010×0.693 days

(C) 2×2.303 days (D) 2.303×0.693 days

26. For the first order reaction, half-life is 14 s. The time required for the initial concentration to reduce to $\frac{1}{8}$ th of its value is:

(A) 28 s (B) 42 s (C) $(14)^3$ s (D) $(14)^2$ s

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

(A) $E_f > E_r$ (B) $E_f < E_r$ (C) $E_f = E_r$

(D) no relation can be given between E_f and E_r as data are not sufficient.

28. The activation energy of reaction is zero. The rate constant of this reaction:

(A) increases with increase of temperature

(B) decrease with an increase of temperature

(C) decrease with decrease of temperature

(D) is nearly independent of temperature

29. The activation of the forward and reverse reaction are 30.5 and 45.4 kJ $mole^{-1}$ respectively. The reaction is:

(A) exothermic (B) endothermic

(C) neither exothermic nor endothermic (D) independent of temperature

30. Two reactions occurring at the same temperature and same concentrations of similar reactants have different rates. The faster reaction has:

(A) higher activation energy (B) lower activation energy

(C) higher collision number (D) lower collision number

Answers

1. (A)	2. (B)	3. (B)	4. (A)	5. (C)	6. (C)
7. (A)	8. (B)	9. (C)	10. (C)	11. (A)	12. (C)
13. (A)	14. (C)	15. (C)	16. (D)	17. (D)	18. (C)
19. (A)	20. (B)	21. (B)	22. (C)	23. (B)	24. (C)
25. (C)	26. (B)	27. (B)	28. (C)	29. (A)	30. (B).