Unit 5: Reaction Kinetics

25 MCQs. Correct option in bold. 1 mark each.

1. The rate of a chemical reaction is the change in the
A. concentration of a reactant or product in a given time
B. volume of the apparatus
C. mass of the container
D. colour of the solution

2. The unit of the rate of reaction is
A. $dm^3\ s^{-1}\ mol^{-1}$ B. $mol\ dm^{-3}$
C. $mol\ dm^{-3}\ s^{-1}$ D. $g\ dm^{-3}$

3. The rate of a reaction _____ as the reaction proceeds.
A. increases **B. decreases**
C. remains the same D. doubles every time

4. On a concentration-time graph, a steeper slope indicates a
A. reversed reaction B. slower reaction
C. reaction that has stopped **D. faster reaction**

5. On a concentration-time graph, a zero slope (flat line) indicates that the reaction has
A. stopped B. become faster
C. reversed D. become slower

6. If 25 mol dm^{-3} of product forms in 100 minutes, the average rate is about
A. 0.25 mol $dm^{-3}\ s^{-1}$ **B. 0.0042 mol $dm^{-3}\ s^{-1}$**
C. 25 mol $dm^{-3}\ s^{-1}$ D. 4.2 mol $dm^{-3}\ s^{-1}$

7. According to collision theory, for a reaction to occur, particles must
A. only touch
B. be heated to 100 °C
C. collide with enough energy and correct orientation
D. be of equal mass

8. The minimum amount of energy needed for a reaction to occur is called the
A. kinetic energy B. heat of reaction
C. bond energy **D. activation energy**

9. Reactions with high activation energy are usually
A. fast B. reversible
C. slow D. exothermic

10. A catalyst is a substance that
A. is used up in the reaction
B. speeds up a reaction without being used up
C. slows down a reaction
D. changes the products

11. A catalyst increases the rate of reaction by
A. providing an alternate pathway with lower activation energy
B. decreasing the temperature
C. increasing the number of particles
D. providing an alternate pathway with higher activation energy

12. In a reversible reaction, a catalyst lowers the activation energy of
A. only the forward reaction B. only the reverse reaction
C. neither reaction **D. both the forward and reverse reactions**

13. At the end of a reaction, a catalyst is
A. completely used up **B. chemically unchanged**
C. converted to a gas D. converted to product

14. Which of the following is NOT a factor affecting the rate of reaction according to collision theory?
A. Activation energy B. Number of particles per unit volume
C. Presence of a catalyst **D. Molar mass of reactants**

15. Which of these is NOT typically affected by the rate of reaction?
A. Colour of the reactants B. Change in mass
C. Temperature D. Formation of gas

16. Increasing the concentration of reactants makes the reaction
A. stop B. slower **C. faster** D. reverse

17. Increasing the surface area of a solid reactant
A. has no effect B. makes the reaction irreversible
C. decreases the rate of reaction **D. increases the rate of reaction**

18. Powdered zinc reacts faster with dilute HCl than a chunk of zinc because the powder has
A. a lower temperature **B. more exposed surface area**
C. less mass D. more activation energy

19. Raising the temperature increases the rate because particles
A. move faster and have more frequent and energetic collisions
B. lose energy
C. become larger
D. move slower

20. How does temperature affect the rate of reaction according to collision theory?
A. Higher temperature decreases the kinetic energy of particles
B. Higher temperature increases the activation energy
C. Higher temperature increases the frequency of collisions and the kinetic energy of particles
D. Higher temperature decreases the frequency of collisions

21. Increasing the pressure of a gaseous reaction mixture
A. has no effect B. stops the reaction
C. decreases the rate of reaction **D. increases the rate of reaction**

22. Enzymes are
A. biological catalysts B. carbohydrates only
C. inorganic acids D. fats only

23. Each enzyme catalyses
A. only inorganic reactions **B. only one specific reaction**
C. no reactions D. all reactions

24. Enzymes speed up reactions by holding reactant molecules in the correct
A. mass B. volume
C. orientation for successful collisions D. colour

25. In the food industry, chemical kinetics helps to
A. make food radioactive
B. determine the best time to harvest and transport produce
C. change the colour of food
D. increase the mass of food