

Morning Assignment 04 jun 2026
Chemical Kinetics Module-kin.04

Chemical Kinetics

Fill in the blanks

1. Molecularity is the number of reacting species taking part in an _____ reaction.
2. A reaction involving only one reacting species is called a _____ reaction.
3. In the reaction $\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$, the molecularity is _____.
4. A reaction involving collision between two reacting species is called a _____ reaction.
5. In the reaction $2\text{HI} \rightarrow \text{H}_2 + \text{I}_2$, the molecularity is _____.
6. Reactions involving simultaneous collision of three reacting species are called _____ reactions.
7. The reaction $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$ is an example of a _____ reaction.
8. Molecularity can never be zero or _____.
9. Complex reactions occur in several elementary _____.
10. The slowest step in a reaction mechanism is called the rate _____ step.
11. Species formed during reaction but absent in the overall balanced equation are called _____.

12. In the decomposition of hydrogen peroxide, IO^- acts as an _____.
13. Order of a reaction is an _____ quantity.
14. Molecularity is applicable only for _____ reactions.
15. For complex reactions, the overall rate depends on the _____ step.
16. Molecularity is always a positive _____ number.
17. The decomposition of hydrogen peroxide in alkaline medium is catalysed by _____ ion.
18. The rate determining step controls the overall _____ of reaction.
19. Simultaneous collision of more than three molecules is highly _____.

20. For complex reactions, molecularity of the slowest step is equal to the _____ of the overall reaction.

Short QAs

1. What is molecularity of a reaction?
2. What is a unimolecular reaction?
3. Give an example of a unimolecular reaction.
4. What is a bimolecular reaction?
5. Give an example of a bimolecular reaction.

6. Why are termolecular reactions rare?
7. What is a rate determining step?
8. What is an intermediate in a reaction?
9. How does molecularity differ from order of reaction?
10. What controls the rate of a complex reaction?

MCQs

1. **Molecularity of a reaction refers to the number of:**
 - A) Products formed
 - B) Molecules present in vessel
 - C) Reacting species colliding simultaneously
 - D) Catalysts used
2. **Molecularity is applicable only to:**
 - A) Complex reactions
 - B) Elementary reactions
 - C) Reversible reactions
 - D) Nuclear reactions
3. **The decomposition of ammonium nitrite is a:**
$$\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$$
 - A) Bimolecular reaction
 - B) Trimolecular reaction
 - C) Unimolecular reaction
 - D) Complex reaction
4. **A bimolecular reaction involves collision between:**
 - A) One species
 - B) Two species
 - C) Three species
 - D) Four species
5. **The reaction $2\text{HI} \rightarrow \text{H}_2 + \text{I}_2$ is:**

- A) Unimolecular
- B) Bimolecular
- C) Trimolecular
- D) Photochemical

6. **Trimolecular reactions involve simultaneous collision of:**

- A) One species
- B) Two species
- C) Three species
- D) Four species

7. **Which reaction is termolecular?**

- A) $\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$
- B) $2\text{HI} \rightarrow \text{H}_2 + \text{I}_2$
- C) $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$
- D) $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$

8. **Reactions with molecularity three are generally:**

- A) Very fast
- B) Very common
- C) Rare and slow
- D) Instantaneous

9. **Molecularity can never be:**

- A) Positive
- B) Whole number
- C) Fractional
- D) Integer

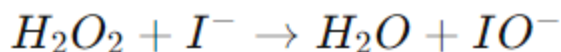
10. **Complex reactions occur in:**

- A) One step only
- B) Several elementary steps
- C) Nuclear steps
- D) No steps

11. **The slowest step in a reaction mechanism is called:**

- A) Fast step
- B) Intermediate step

- C) Rate determining step
D) Reversible step
12. **The overall rate of a complex reaction depends on:**
A) Fastest step
B) Product concentration
C) Slowest step
D) Catalyst only
13. **Species formed during reaction but absent in overall equation are called:**
A) Catalysts
B) Intermediates
C) Products
D) Inhibitors
14. **In decomposition of H_2O_2 , IO^- acts as:**



- A) Catalyst
B) Product
C) Intermediate
D) Reactant
15. **Order of a reaction is:**
A) Always whole number
B) Always positive integer
C) Experimental quantity
D) Same as molecularity always
16. **Which statement about molecularity is correct?**
A) It can be zero
B) It can be fractional
C) It is always a whole number
D) It is always negative

17. **For complex reactions, molecularity has:**
A) Great importance
B) No meaning
C) Fractional value
D) Negative value
18. **In complex reactions, overall order is determined by:**
A) Fastest step
B) Number of products
C) Slowest step
D) Catalyst concentration
19. **The decomposition of hydrogen peroxide in alkaline medium is catalysed by:**
A) Chloride ion
B) Sulphate ion
C) Iodide ion
D) Nitrate ion
20. **For the rate law:**

$$r = k[A]^{1/2}[B]^2$$

What is the overall order of the reaction?

- A) 1
B) 2
C) 5/2
D) 3

[Help → Rate of reaction Module 04](#)

