

# RATE OF CHEMICAL REACTION-1

Name ----- date----- group -----

1. Express rate law for the reaction:  $4\text{Fe}_{(s)} + 3\text{O}_{2(g)} \rightarrow 2\text{Fe}_2\text{O}_3$

- a.  $V = k[\text{SO}_2]$
- b.  $V = k [\text{O}_2]^3$
- c.  $V = k [\text{S}]$
- d.  $V = k [\text{S}] [\text{O}_2]$

2. What is the rate law for the reaction:  $\text{A} + 2\text{B} + \text{C} \rightarrow \text{D}$

- a.  $V = K[\text{A}][\text{B}]$
- b.  $V = K[\text{A}][\text{B}]^2[\text{C}]$
- c.  $V = K[\text{A}][\text{B}]^2$
- d.  $V = K[\text{A}]^2[\text{B}]$

3. What is the rate law for the reaction:  $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightarrow 2\text{SO}_{3(g)}$

- a.  $V = K[\text{SO}_2]$
- b.  $V = K[\text{SO}_2]^2[\text{O}_2]$
- c.  $V = K[\text{O}_2]$
- d.  $V = K[\text{O}_2]^2$

4. In the following reaction :  $\text{CO}_{(g)} + \text{Cl}_{2(g)} \rightleftharpoons \text{COCl}_{2(g)}$

what would be effect of doubling the concentration of  $\text{Cl}_2$ ?

- a. The rate of reaction double
- b. The rate of reaction does not change
- c. The rate of reaction drops by half
- d. The rate of reaction quadruples

5.  $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$        $V = k [\text{N}_2] [\text{H}_2]^3$

what would be effect of doubling the concentration of  $\text{H}_2$ ?

- a. The rate of reaction double
- b. The rate of reaction does not change
- c. The rate of reaction increases 8 time
- d. The rate of reaction quadruples

6.  $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$  what would be effect of doubling pressure of a system ?

- a. The rate of reaction double
- b. The rate of reaction does not change
- c. The rate of reaction increases 8 time
- d. The rate of reaction quadruples

7. Which factors increase the rate of reaction?

- a. Increasing temperature
- b. Increasing concentration
- c. Increasing surface area
- d. All of these

8. A reaction has rate law:  $V=k[\text{A}]^2[\text{B}]$

What will happen to the rate of reaction if the concentration of A is doubled and the concentration of B tripled?

- a. increases by a factor of 3
- b. increases by a factor of 4
- c. increases by a factor of 8
- d. increases by a factor of 12

9. Which one of the following equations is an example of homogenous catalysis?

- a.  $2\text{H}_2\text{O}_{2(\text{L})} \rightarrow 2\text{H}_2\text{O}_{(\text{L})} + \text{O}_{2(\text{g})}$       *catalyst:  $\text{MnO}_2(\text{s})$*
- b.  $\text{N}_{2(\text{g})} + 3\text{H}_{2(\text{g})} \rightleftharpoons 2\text{NH}_{3(\text{g})}$       *catalyst:  $\text{Fe}(\text{s})$*
- c.  $2\text{H}_{2(\text{g})} + \text{O}_{2(\text{g})} \rightarrow 2\text{H}_2\text{O}_{(\text{L})}$       *catalyst:  $\text{Pt}(\text{s})$*
- d.  $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$       *catalyst:  $\text{NO}(\text{g})$*

10. In the catalytic converter in an automobile is used Pt metal to speed the combustion of CO to  $\text{CO}_2$ . This is an example of:

- a. homogeneous catalysis
- b. heterogeneous catalysis
- c. acid hydrolysis
- d. enzyme catalysis

ANSWERS:

1	2	3	4	5	6	7	8	9	10
b	b	b	a	c	c	d	d	d	b