

NAME:		ROLL NO:		TIME:	50: MIN
SUB:	Chemistry	Date:		CLASS:	1 st Year
SYLLABUS	Chp. 7 (Reaction Kinetics)	T. MARKS	30	OBT. M	

Q. 1 Choose the Correct Answer. Cutting, Erasing, Double Selection is Strictly Prohibited. (1x6=6)

1. The rate of reaction:

- (A) Increase as the reaction proceeds
- (B) Decreases as the reaction proceeds
- (C) Remains the same as the reaction proceeds
- (D) May decrease and increase as the same reaction proceeds

2. On a Boltzmann distribution curve, the area under the curve represents:

- (A) Activation energy of the reaction
- (B) Total number of molecules in the sample
- (C) Average kinetic energy of the molecules.
- (D) Rate constant of the reaction

3. How does the presence of a catalyst affect the rate of a chemical reaction?

- (A) It always decreases the rate of the reaction
- (B) It always increases the rate of the reaction
- (C) It increases the rate of the forward and decreases the rate of the reverse reaction
- (D) It increases the rate of both the forward and reverse reactions

4. A first-order reaction has a half life ($t_{1/2}$) of 20 minutes. What is the value of its rate constant (k)?

- (A) 0.05 min^{-1}
- (B) 0.693 min^{-1}
- (C) 0.0347 min^{-1}
- (D) 13.86 min^{-1}

5. The reaction pathway diagram with a lower peak represents:

- (A) A slower reaction
- (B) A reaction with no catalyst
- (C) A catalyzed reaction
- (D) A reversible reaction

6. The order of a chemical reaction, that is independent of concentration is:

- (A) Second order reaction
- (B) First order reaction
- (C) Zero order reaction
- (D) Pseudo first order reaction

PART-I

Q. 2 Write Short Answers of the Following Questions (2x8=16)

- i. Differentiate clearly between order and molecularity of a reaction.
- ii. How does increase temperature affect the rate of a reaction?
- iii. What is the significance of the rate constant in a rate equation?
- iv. Can a catalyst be consumed in a chemical reaction? Why or why not?
- v. The shape of the Boltzmann distribution curve change with temperature. How?
- vi. What is the order of the reaction? Explain based on the units of the rate constant.
- vii. Calculate the rate of reaction from the following data: 0.5 mol of reactant consumed in 10 s.
- viii. A radioactive isotope decays by a first-order process with a half-life of 12 hours. Calculate the rate constant for the decay in s^{-1} .

PART-II

Write Answers of the Following Questions in Detail.

- Q. 3 (a) How does the activation energy profile of an uncatalyzed reaction compare with that of the catalyzed reaction? 4
- (b) Calculate the reaction rate if the concentration of A is 0.5 M, the concentration of B 0.2 and the rate constant k is $4.0 \text{ M}^{-2} \text{ s}^{-1}$. Given the rate law for a reaction: $\text{Rate} = k [\text{A}][\text{B}]^2$. 4



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1ST YEAR REVISION & TEST SESSION



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Answer Key

1	B	2	B	3	D	4	C
5	C	6	C				