

NEET CHEMICAL KINETICS — HALF-LIFE OF A REACTION — PYQS

Max. Marks: 60

Questions: 15

Section A (MCQ) — 15 questions

Q.1 If the half-life ($t_{1/2}$) for a first order reaction is 1 minute, then the time required for 99.9% completion of the reaction is closest to :

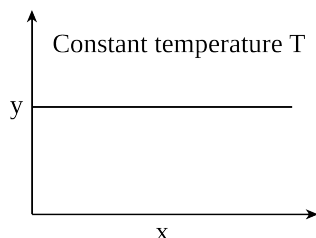
[NEET (UG) 2025]

- (1) 5 minutes (2) 10 minutes
(3) 2 minutes (4) 4 minutes

Scan or tap for the
full solution



Q.2 The given graph is a representation of kinetics of a reaction



The y and x axes for zero and first order reactions, respectively are

[NEET (UG) 2022]

- (1) zero order ($y = \text{concentration}$ and $x = \text{time}$), first order ($y = t_{1/2}$ and $x = \text{concentration}$)
(2) zero order ($y = \text{concentration}$ and $x = \text{time}$), first order ($y = \text{rate constant}$ and $x = \text{concentration}$)
(3) zero order ($y = \text{rate}$ and $x = \text{concentration}$), first order ($y = t_{1/2}$ and $x = \text{concentration}$)
(4) zero order ($y = \text{rate}$ and $x = \text{concentration}$), first order ($y = \text{rate}$ and $x = t_{1/2}$)

Scan or tap for the
full solution



Q.3 The half life of a first order reaction is 2000 years. If the concentration after 8000 years is 0.02 M, then the initial concentration was :

[NEET (UG) 2022 (Phase 2)]

- (1) 0.04 M (2) 0.16 M (3) 0.32 M (4) 0.08 M

Scan or tap for the
full solution



Q.4 The correct difference between first and second order reactions is that

[NEET 2018]

- (1) the rate of a first-order reaction does not depend on reactant concentrations; the rate of a second-order reaction does depend on reactant concentrations
(2) the half-life of a first-order reaction does not depend on $[A]_0$; the half-life of a second order reaction does depend on $[A]_0$
(3) a first-order reaction can be catalysed; a second-order reaction cannot be catalysed
(4) the rate of a first-order reaction does depend on reactant concentrations; the rate of a second-order reaction does not depend on reactant concentrations

Scan or tap for the
full solution



Q.5 When initial concentration of the reactant is doubled, the half-life period of a zero order reaction

[NEET 2018]

- (1) is halved (2) is doubled
(3) is tripled (4) remains unchanged.

Scan or tap for the
full solution



Q.6 When initial concentration of a reactant is doubled in a reaction, its half-life period is not affected. The order of the reaction is

[AIPMT 2015 (Cancelled)]

- (1) second
(2) more than zero but less than first
(3) zero
(4) first.

Scan or tap for the
full solution



Q.7 A reaction is 50% complete in 2 hours and 75% complete in 4 hours. The order of reaction is

[NEET 2013 (Karnataka)]

- (1) 1 (2) 2 (3) 3 (4) 0

Scan or tap for the
full solution



Q.8 The half-life of a substance in a certain enzyme-catalysed reaction is 138 s. The time required for the concentration of the substance to fall from 1.28 mg L^{-1} to 0.04 mg L^{-1} is

[AIPMT 2011 (Mains)]

- (1) 414 s (2) 552 s (3) 690 s (4) 276 s

Scan or tap for the full solution



Q.9 Half-life period of a first order reaction is 1386 s. The specific rate constant of the reaction is

[AIPMT 2009]

- (1) $0.5 \times 10^{-2} \text{ s}^{-1}$ (2) $0.5 \times 10^{-3} \text{ s}^{-1}$
 (3) $5.0 \times 10^{-2} \text{ s}^{-1}$ (4) $5.0 \times 10^{-3} \text{ s}^{-1}$

Scan or tap for the full solution



Q.10 In a first-order reaction $A \longrightarrow B$, if k is rate constant and initial concentration of the reactant A is 0.5 M, then the half-life is

[AIPMT 2007]

- (1) $\frac{\log 2}{k}$ (2) $\frac{\log 2}{k\sqrt{0.5}}$
 (3) $\frac{\ln 2}{k}$ (4) $\frac{0.693}{0.5k}$

Scan or tap for the full solution



Q.11 For a first order reaction $A \longrightarrow B$ the reaction rate at reactant concentration of 0.01 M is found to be $2.0 \times 10^{-5} \text{ mol L}^{-1} \text{ s}^{-1}$. The half-life period of the reaction is

[AIPMT 2005]

- (1) 30 s (2) 220 s (3) 300 s (4) 347 s

Scan or tap for the full solution



Q.12 The rate of a first order reaction is $1.5 \times 10^{-2} \text{ mol L}^{-1} \text{ min}^{-1}$ at 0.5 M concentration of the reactant. The half-life of the reaction is

[AIPMT 2004]

- (1) 0.383 min (2) 23.1 min
 (3) 8.73 min (4) 7.53 min

Scan or tap for the full solution



Q.13 The radioisotope, tritium (${}^3_1\text{H}$) has a half-life of 12.3 years. If the initial amount of tritium is 32 mg, how many milligrams of it would remain after 49.2 years?

[AIPMT 2003]

- (1) 1 mg (2) 2 mg (3) 4 mg (4) 8 mg

Scan or tap for the full solution



Q.14 A human body required 0.01 m activity of radioactive substance after 24 hours. Half life of radioactive substance is 6 hours. Then injection of maximum activity of radioactive substance that can be injected is

[AIPMT 2001]

- (1) 0.08 (2) 0.04 (3) 0.16 (4) 0.32

Scan or tap for the full solution



Q.15 A 300 g radioactive sample has a half-life of 3 hours. After 18 hours, the remaining quantity is

[AIPMT 2000]

- (1) 4.68 g (2) 2.34 g (3) 3.34 g (4) 9.37 g

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	3	3	2	2	4	1	3	2	3	4
Ques.	12	13	14	15							
Ans.	2	2	3	1							