

NEET CHEMICAL KINETICS — AVERAGE AND INSTANTANEOUS RATE OF REACTION — PYQS

Max. Marks: 36
Questions: 9

Section A (MCQ) — 9 questions

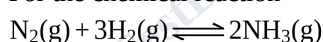
Q.1 For a chemical reaction


Rate of formation of C is $6 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and rate of disappearance of A is $4 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$. The rate of reaction and amount of B consumed in interval of 10 seconds, respectively will be :

[NEET (UG) 2022 (Phase 2)]

- (1) $10 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $30 \times 10^{-2} \text{ mol L}^{-1}$
- (2) $1 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $30 \times 10^{-2} \text{ mol L}^{-1}$
- (3) $10 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $10 \times 10^{-2} \text{ mol L}^{-1}$
- (4) $1 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $10 \times 10^{-2} \text{ mol L}^{-1}$

Scan or tap for the full solution


Q.2 For the chemical reaction


the correct option is :

[NEET (UG) 2019]

- (1) $-\frac{d[\text{N}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$
- (2) $-\frac{d[\text{N}_2]}{dt} = \frac{1}{2} \frac{d[\text{NH}_3]}{dt}$
- (3) $3 \frac{d[\text{H}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$
- (4) $-\frac{1}{3} \frac{d[\text{H}_2]}{dt} = -\frac{1}{2} \frac{d[\text{NH}_3]}{dt}$

Scan or tap for the full solution


Q.3 The rate of the reaction: $2\text{N}_2\text{O}_5 \longrightarrow 4\text{NO}_2 + \text{O}_2$ can be written in three ways.

$$\frac{-d[\text{N}_2\text{O}_5]}{dt} = k[\text{N}_2\text{O}_5]$$

$$\frac{d[\text{NO}_2]}{dt} = k'[\text{N}_2\text{O}_5]; \quad \frac{d[\text{O}_2]}{dt} = k''[\text{N}_2\text{O}_5]$$

The relationship between k and k' and between k and k'' are

[AIPMT 2011 (Mains)]

- (1) $k' = 2k$; $k'' = k$
- (2) $k' = 2k$; $k'' = k/2$
- (3) $k' = 2k$; $k'' = 2k$
- (4) $k' = k$; $k'' = k$

Scan or tap for the full solution


Q.4 For the reaction $\text{N}_2\text{O}_5(\text{g}) \longrightarrow 2\text{NO}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$ the value of rate of disappearance of N_2O_5 is given as $6.25 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$. The rate of formation of NO_2 and O_2 is given respectively as

[AIPMT 2010 (Prelims)]

- (1) $6.25 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$ and $6.25 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$
- (2) $1.25 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $3.125 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$
- (3) $6.25 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$ and $3.125 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$
- (4) $1.25 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $6.25 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$

Scan or tap for the full solution


Q.5 For the reaction, $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$, if

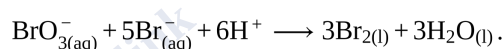
$$\frac{d[\text{NH}_3]}{dt} = 2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1},$$

the value of $-\frac{d[\text{H}_2]}{dt}$ would be

[AIPMT 2009]

- (1) $4 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- (2) $6 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- (3) $1 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- (4) $3 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$

Scan or tap for the full solution


Q.6 In the reaction,


The rate of appearance of bromine (Br_2) is related to rate of disappearance of bromide ions as

[AIPMT 2009]

- (1) $\frac{d[\text{Br}_2]}{dt} = -\frac{5}{3} \frac{d[\text{Br}^-]}{dt}$
- (2) $\frac{d[\text{Br}_2]}{dt} = \frac{5}{3} \frac{d[\text{Br}^-]}{dt}$
- (3) $\frac{d[\text{Br}_2]}{dt} = \frac{3}{5} \frac{d[\text{Br}^-]}{dt}$
- (4) $\frac{d[\text{Br}_2]}{dt} = -\frac{3}{5} \frac{d[\text{Br}^-]}{dt}$

Scan or tap for the full solution


Q.7 Consider the reaction : $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \longrightarrow 2\text{NH}_3(\text{g})$

The equality relationship between $\frac{d[\text{NH}_3]}{dt}$ and $-\frac{d[\text{H}_2]}{dt}$ is

[AIPMT 2006]

- (1) $\frac{d[\text{NH}_3]}{dt} = -\frac{d[\text{H}_2]}{dt}$
 (2) $\frac{d[\text{NH}_3]}{dt} = -\frac{1}{3} \frac{d[\text{H}_2]}{dt}$
 (3) $+\frac{d[\text{NH}_3]}{dt} = -\frac{2}{3} \frac{d[\text{H}_2]}{dt}$
 (4) $+\frac{d[\text{NH}_3]}{dt} = -\frac{3}{2} \frac{d[\text{H}_2]}{dt}$

Scan or tap for the
full solution



Q.8 For the reaction, $2\text{A} + \text{B} \longrightarrow 3\text{C} + \text{D}$, which of the following does not express the reaction rate?

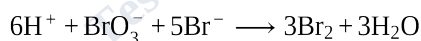
[AIPMT 2006]

- (1) $-\frac{d[\text{A}]}{2dt}$ (2) $-\frac{d[\text{C}]}{3dt}$ (3) $-\frac{d[\text{B}]}{dt}$ (4) $\frac{d[\text{D}]}{dt}$

Scan or tap for the
full solution



Q.9 For the reaction



which of the following relation correctly represents the consumption and formation of products.

[AIPMT 2000]

- (1) $\frac{d[\text{Br}_2]}{dt} = -\frac{3}{5} \frac{d[\text{Br}^-]}{dt}$
 (2) $\frac{d[\text{Br}_2]}{dt} = \frac{3}{5} \frac{d[\text{Br}^-]}{dt}$
 (3) $\frac{d[\text{Br}_2]}{dt} = -\frac{5}{3} \frac{d[\text{Br}^-]}{dt}$
 (4) $\frac{d[\text{Br}_2]}{dt} = \frac{5}{3} \frac{d[\text{Br}^-]}{dt}$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9		
Ans.	2	2	2	2	4	4	3	2	1		