EdLoop

EdLoop EAPCET

CHEMISTRY · EAPCET (EAMCET)

Chemical Kinetics

Previous Year Questions with answers

152 questions · **142** papers · **2010–2026** · newest paper first

Step-by-step solutions for every question: free in the EdLoop EAPCET app (Google Play) · pyq.edloop.in

What is in this PDF: every Chemical Kinetics question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

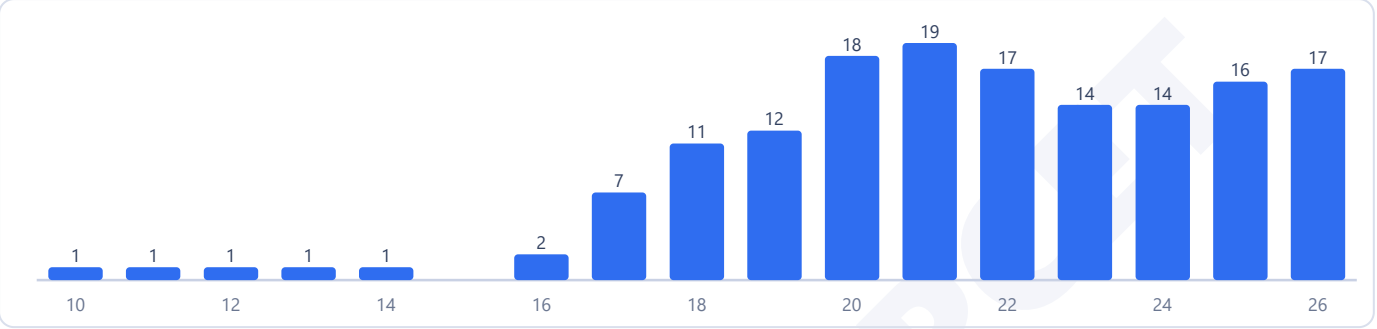
EdLoop EA

Chapter at a glance

2.5%	152	76 of 77	152 / 0
of Chemistry questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 1 questions per paper in 2024–2026 against 1 in 2022–2023.

Questions per year



Counts are the questions we hold: 152 in 142 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Integrated Rate Laws	67
Temperature Dependence & Mechanism	48
Rate of Reaction	37

How often it comes up

Chemical Kinetics occupies position 20 among all 31 chemistry chapters across the modern 2022 to 2026 testing period. Over our complete examination history from 2010 through 2026, the chapter contributed 152 questions across 149 papers, appearing in 142 of those tests to account for 2.6 percent of the subject with an average of 1.0 question per paper. In the five-year recent window from 2022 to 2026, it provided 78 questions across 77 sittings, appearing in 76 papers to maintain 1.0 question per paper and a 2.5 percent subject share.

The chapter has featured in every exam year since 2022, though it was absent from a single sitting during this five-year period. Looking at the two regional boards between 2022 and 2026, AP tests delivered 48 questions across 48 papers (appearing in 47 papers, 1.0 question per paper, 2.5 percent share), while TS papers recorded 30 questions across 29 papers (appearing in all 29 papers, 1.0 question per paper, 2.6 percent share).

During earlier testing between 2010 and 2021, papers contained 74 questions across 72 sittings (appearing in 66 tests), delivering 1.0 question per paper and a 2.6 percent subject share. Across the latest three exam years from 2024 to 2026, question banks carried 47 questions across 46 sittings (with all 46 papers containing questions), yielding 1.0 question per test and 2.6 percent share. Comparing early testing with the last three years indicates the share is about the same, and comparing the recent five-year window with the last three years shows the share is about the same. Almost every session carries exactly one kinetics problem.

Most-asked topics

Questions in this branch distribute across three main reaction dynamics areas:

- **Integrated Rate Laws** forms the principal pillar with 67 questions overall and 35 during the recent timeframe through 2026. Frequent problem formats involve first-order half-life relationships, time required for fractional decomposition, zero-order linear concentration plots, and gaseous decomposition tracked via total pressure.

- **Temperature Dependence & Mechanism** supplied 48 questions across the archive, with 23 appearing from 2022 to 2026. This area centers on the Arrhenius activation energy equation, rate constant ratios at two different temperatures, catalyst impact on activation barriers, and identifying rate-determining elementary steps.
- **Rate of Reaction** accounts for 37 questions in total and 20 in the recent window through 2026. Core topics include expressing reaction rates in terms of stoichiometric disappearance and appearance of components, deducing overall reaction orders from dimensional units of rate constants, and initial rate method tables.

What the questions look like

Most kinetics problems test algebraic substitutions into first-order and Arrhenius equations. A classic first-order problem asks for the time required to complete eighty percent of a reaction given its rate constant, or asks for the remaining concentration after twenty minutes. Another prominent format tracks gaseous decomposition of a molecule A turning into B plus C, asking you to express the rate constant in terms of initial pressure and total pressure at time t.

Temperature questions frequently provide rate constants at two temperatures and ask for the activation energy, or ask for the ratio of rate constant to pre-exponential factor when activation energy equals two point three zero three R T. In foundational rate problems, you will deduce reaction order by inspecting the dimensional units of the rate constant or finding the rate of appearance of a product from the disappearance rate of a reactant.

How to practise it

Make first-order decay relationships second nature. Remember that the half-life of a first-order process is strictly independent of initial reactant concentration, given by zero point six nine three divided by k. Connect key percentages to half-life multiples: seventy-five percent completion requires exactly two half-lives, eighty-seven point five percent requires three half-lives, and ninety-nine point nine percent requires approximately ten half-lives.

For Arrhenius calculations, write the logarithmic formula as log open parenthesis k two over k one close parenthesis equals activation energy divided by two point three zero three R times open parenthesis T two minus T one close parenthesis divided by open parenthesis T one times T two close parenthesis. Use eight point three one four joules per mole Kelvin for R when activation energy is in joules, or divide by one thousand if activation energy is in kilojoules.

EdLoop EAPCET

Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

At 1130 K, the decomposition of ammonia on Pt catalyst follows zero order kinetics. The rate of this reaction at t = 10 min is x mol L^{-1} min^{-1}. What will be its rate (in mol L^{-1} min^{-1}) at t = 20 min, at the same temperature?

(A) $\frac{x}{2}$
(B) x
(C) $2x$
(D) $\sqrt{x}$

Answer: (B) x · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

$\mathrm{N_2O_5}$ decomposes as shown below

$$\mathrm{N_2O_5} \rightarrow \mathrm{N_2O_4} + \frac{1}{2}\mathrm{O_2}$$

When $50\ mL$ of $2M$ solution of $\mathrm{N_2O_5}$ was heated, $0.28\ L$ of $\mathrm{O_2}$ was formed at STP after 30 minutes. The concentration of unreacted $\mathrm{N_2O_5}$ is $X\ M$ and average rate of reaction (in $mol\ L^{-1}min^{-1}$) is Y. What are X and Y respectively?

(molar volume = $22.4\ L$, molar mass of $\mathrm{N_2O_5}$ = $108\ g\ mol^{-1}$)

(A) $0.5,\ 1.66 \times 10^{-2}$
(B) $1.0,\ 3.33 \times 10^{-2}$
(C) $1.5,\ 1.66 \times 10^{-2}$
(D) $0.75,\ 2.50 \times 10^{-2}$

Answer: (C) $1.5,\ 1.66 \times 10^{-2}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Hydrolysis of benzene diazonium chloride follows first order kinetics. The time taken for its decomposition to $^1/_8$ and $^1/_{10}$ of its original concentration are $\left[t_{1/8}\right]$ and $\left[t_{1/10}\right]$ respectively. What is the ratio of $\left[t_{1/8}\right]$ to $\left[t_{1/10}\right]$?

[log 2 = 0.30, log 3 = 0.48, log 4 = 0.60]

(A) $9 : 10$
(B) $10 : 9$
(C) $3 : 5$
(D) $5 : 3$

Answer: (A) $9 : 10$ · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The k value of the reaction $A \rightarrow$ products is $5 \times 10^3\ s^{-1}$ at 300 K. Its activation energy is 50 kJ mol^{-1}. At T(K), its value becomes $1.0 \times 10^4\ s^{-1}$. What is the value of T (in K)?
(R = 8.3 J $mol^{-1}\ K^{-1}$), (log 2 = 0.3)

(A) 397
(B) 311
(C) 286
(D) 345

Answer: (B) 311 · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

At 300°C, decomposition of azomethane follows first order kinetics. Rate constant of this reaction at this temperature is $2.5 \times 10^{-4} s^{-1}$. If the activation energy of the reaction is 42 $kcal\ mol^{-1}$, what is the temperature (in K) at which the half-life of the reaction is 138.6 seconds?
($R = 2\ cal\ K^{-1} mol^{-1}$, $\log 20 = 1.30$)

(A) 725
(B) 425
(C) 525
(D) 625

Answer: (D) 625 · The council's preliminary key

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

Half-life of a first order reaction is 10 minutes. What is the rate of reaction after 20 minutes, if the initial concentration of the reactant is 10 M?

(A) $1.73 \times 10^{-1}\ M\ min^{-1}$
(B) $1.73 \times 10^{-2}\ M\ min^{-1}$
(C) $3.46 \times 10^{-1}\ M\ min^{-1}$
(D) $4.19 \times 10^{-2}\ M\ min^{-1}$

Answer: (A) $1.73 \times 10^{-1}\ M\ min^{-1}$ · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

In the Arrhenius equation, $\exp\left(-\frac{E_a}{RT}\right)$, is equal to

(A) Frequency factor
(B) Fraction of molecules that have energy higher than E_a
(C) Rate of the reaction
(D) Rate constant of the reaction

Answer: (B) Fraction of molecules that have energy higher than E_a · The council's preliminary key

Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

The rate constant of a first order reaction at 600 K is $1.6 \times 10^{-5} \mathrm{s}^{-1}$. If its activation energy is $198.87\ \mathrm{kJ\ mol}^{-1}$, what is the rate constant (in s^{-1}) at 700 K ?
$(\mathrm{R} = 8.3\ \mathrm{J\ mol}^{-1}\mathrm{K}^{-1})$ (antilog(0.4771) = 3.0)

(A) 4.8×10^{-4}
(B) 4.8×10^{-3}
(C) 4.8×10^{-2}
(D) 3.2×10^{-4}

Answer: (B) 4.8×10^{-3} · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

$A(g) \rightarrow$ products, follows first order kinetics. Initial concentration of A is $8 \times 10^{-3}\ mol\ L^{-1}$. For 80% decomposition of A, the time taken was 80 minutes. What is the rate constant for that reaction?
$(\log 2 = 0.3, \log 3 = 0.48, \log 4 = 0.60, \log 5 = 0.70)$

(A) $0.05\ min^{-1}$
(B) $0.04\ min^{-1}$
(C) $0.02\ min^{-1}$
(D) $0.06\ min^{-1}$

Answer: (C) $0.02\ min^{-1}$ · The council's preliminary key

Q10 AP EAPCET 2026 · 12 May · Shift 2 MCQ

At T(K), the rate constant of a reaction (A→products) is 0.02 $mol\ L^{-1}\ min^{-1}$. The initial concentration of A is 1.0 $mol\ L^{-1}$. What will be the concentration of A (in $mol\ L^{-1}$) after 20 min?
(antilog (0.8264) = 6.705)

(A) 0.6705
(B) 0.6
(C) 0.5705
(D) 0.4

Answer: (B) 0.6 · The council's preliminary key

Q11 AP EAPCET 2026 · 12 May · Shift 2 MCQ

At T(K), the following first order reaction takes place

$$\mathrm{A(g)} \rightarrow \mathrm{B(g)} + \mathrm{C(g)}$$

Initial pressure ($t = 0$ min) of $\mathrm{A(g)}$ is p_A^0. After 10 min of the reaction, the pressure is p_t. The correct equation for the rate constant of this reaction is

(A) $k = \frac{1}{t} \ln \frac{p_A^0}{(2p_A^0 - p_t)}$

(B) $k = \frac{2.303}{t} \ln \frac{p_A^0}{(2p_A^0 - p_t)}$

(C) $k = \frac{2.303}{t} \log \frac{(2p_A^0 - p_t)}{p_A^0}$

(D) $k = \frac{1}{t} \ln \frac{p_A^0}{(3p_A^0 - p_t)}$

Answer: (A) $k = \frac{1}{t} \ln \frac{p_A^0}{(2p_A^0 - p_t)}$ · The council's preliminary key

Q12 TS EAPCET 2026 · 11 May · Shift 1 MCQ

The difference between energy of an activated complex and the average energy of reactants is called?

(A) Threshold energy

(B) Lattice energy

(C) Activation energy

(D) Kinetic energy

Answer: (C) Activation energy · The council's preliminary key

Q13 TS EAPCET 2026 · 11 May · Shift 2 MCQ

At T(K), the following data is obtained for the decomposition of A(g), which follows first order kinetics

$\mathrm{A(g)} \rightarrow \mathrm{B(g)} + \mathrm{C(g)}$

Time (sec)	Total pressure (atm)
0	0.5
100	0.6
x	0.65

What is x (in sec)?

(log 1.25 = 0.097 ; log 1.4285 = 0.1549)

(A) 180

(B) 160

(C) 140

(D) 200

Answer: (B) 160 · The council's preliminary key

EdLoop EAPCET

Q14 TS EAPCET 2026 · 10 May · Shift 1 MCQ

For a first order reaction, rate constants at $50\ ^{\circ}\mathrm{C}$ and $100\ ^{\circ}\mathrm{C}$ are $1.5 \times 10^{7}\ \mathrm{s}^{-1}$ and $4.5 \times 10^{7}\ \mathrm{s}^{-1}$ respectively. What is the approximate activation energy of the reaction (in $\mathrm{kJ\,mol^{-1}}$)?

$(\log 3 = 0.48)$ $(R = 8.3\ \mathrm{J\,mol^{-1}K^{-1}})$

(A) 22
(B) 28
(C) 38
(D) 44

Answer: (A) 22 · The council's preliminary key

Q15 TS EAPCET 2026 · 10 May · Shift 2 MCQ

The activation energy for a reaction at T (K) was found to be $2.303\ \mathrm{RT\ J\ mol^{-1}}$. The ratio of rate constant to Arrhenius factor is

(A) 0.01
(B) 0.1
(C) 0.02
(D) 0.002

Answer: (B) 0.1 · The council's preliminary key

Q16 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The rate constant of a reaction is $1.5\ \mathrm{mol^{-3/2}L^{3/2}s^{-1}}$. What is the order of this reaction?

(A) 1.0
(B) 3.0
(C) 1.5
(D) 2.5

Answer: (D) 2.5 · The council's preliminary key

Q17 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Given below are two statements

Statement-I: Rate of a first order reaction ($\mathrm{A} \rightarrow \mathrm{p}$) decreases with time

Statement-II: Rate of a zero-order reaction ($\mathrm{B} \rightarrow \mathrm{p}$) decreases with time

The correct answer is

(A) Both statements I and II are correct
(B) Both statements I and II are not correct
(C) Statement I is correct, but statement II is not correct
(D) Statement I is not correct, but statement II is correct

Answer: (C) Statement I is correct, but statement II is not correct · The council's preliminary key

Q18 AP EAPCET 2025 · 27 May · Shift 1 MCQ

For a reaction, the graph of $/n\ k$ (on y-axis) and $1/T$ (on x-axis) is a straight line with a slope -2×10^4 K. The activation energy of the reaction (in kJ mol^{-1}) is ($R = 8.3\ \mathrm{J\,K^{-1}\,mol^{-1}}$)

(A) 332
(B) 432
(C) 166
(D) 216

Answer: (C) 166 · The council's preliminary key

Q19 AP EAPCET 2025 · 26 May · Shift 1 MCQ

$\mathrm{R} \longrightarrow \mathrm{P}$ is a first order reaction. The concentration of R changed from 0.04 to 0.03 $\mathrm{mol\ L^{-1}}$ in 40 min. What is the average velocity of the reaction in $\mathrm{mol\ L^{-1}\ s^{-1}}$?

(A) 2.5×10^{-4}
(B) 4.167×10^{-6}
(C) 4.167×10^{6}
(D) 2.5×10^{-5}

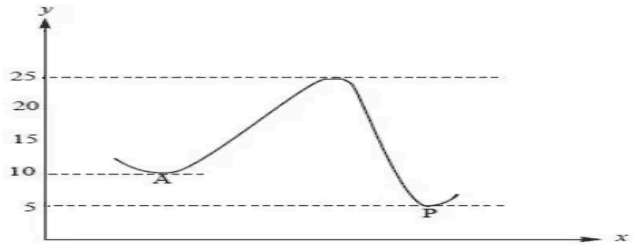
Answer: (B) 4.167×10^{-6} · The council's preliminary key

Q20 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The following graph is obtained for a first order reaction ($\mathrm{A} \rightarrow \mathrm{P}$). The activation energy ($\mathrm{E_a}$ in $\mathrm{kJ\ mol^{-1}}$) and heat of reaction ($|\Delta \mathrm{H}|$ in $\mathrm{kJ\ mol^{-1}}$) for this reaction are respectively
(x = reaction coordinate; $\mathrm{y = E}$ in $\mathrm{kJ\ mol^{-1}}$)

(see the figure above)

The following graph is obtained for a first order reaction (A → P). The activation energy (E_a in kJ mol^{-1}) and heat of reaction (| ΔH | in kJ mol^{-1}) for this reaction are respectively
(x = reaction coordinate; y = E in kJ mol^{-1})
ఒక ప్రథమ క్రమాంక చర్య (A → P) కు క్రింది గ్రాఫ్ లభించింది. ఈ చర్యకు ఉత్తేజిత శక్తి (E_a kJ mol^{-1} లలో) మరియు చర్యోష్ణము (| ΔH | in kJ mol^{-1} లలో) వరుసగా
(x = చర్య అక్షం; y = E in kJ mol^{-1})



Options :

1. 5, 15
2. 15, 5
3. 25, 5
4. 10, 25

(A) 5, 15
(B) 15, 5
(C) 25, 5
(D) 10, 25

Answer: (B) 15, 5 · The council's preliminary key

Q21 AP EAPCET 2025 · 24 May · Shift 1 MCQ

For a first order reaction, the ratio between the time taken to complete $\frac{3}{4}$th of the reaction and time taken to complete half of the reaction is

(A) 2
(B) 3
(C) 1.5
(D) 2.5

Answer: (A) 2 · The council's preliminary key

Q22 AP EAPCET 2025 · 23 May · Shift 1 MCQ

$A \rightarrow B$ is a first order reaction. The concentration of A is decreased from x mol L^{-1} to y mol L^{-1} in 100 min. What is the average velocity of the reaction in mol L^{-1} min^{-1} ?

(A) $\frac{|x-y|}{100}$
(B) $\frac{|y-x|^2}{100}$
(C) $\frac{100}{|x-y|}$
(D) $\frac{100}{|x+y|}$

Answer: (A) $\frac{|x-y|}{100}$ · The council's preliminary key

Q23 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The following equation is obtained for a first order reaction at 300 K.

$$\log_{10}\frac{k}{A} = 0.00174$$

What is the activation energy (in $\mathrm{J\,mol^{-1}}$) of the reaction ?
($R = 8.314\ \mathrm{J\,mol^{-1}\,K^{-1}}$)

(A) 10.0
(B) 100.0
(C) 0.1
(D) 1.0

Answer: (A) 10.0 · The council's preliminary key

Q24 AP EAPCET 2025 · 22 May · Shift 1 MCQ

At T(K), the following equation is obtained for a first order reaction.

$$\log\frac{k}{A} = -\frac{x}{T}$$

The activation energy for this reaction is equal to (R = gas constant)

(A) $2.303\,x\,\mathrm{R}$
(B) $\frac{2.303\,\mathrm{R}}{x}$
(C) $\frac{\frac{x}{x}}{2.303\,\mathrm{R}}$
(D) $\frac{1}{2.303\,x\,\mathrm{R}}$

Answer: (A) $2.303\,x\,\mathrm{R}$ · The council's preliminary key

Q25 AP EAPCET 2025 · 22 May · Shift 2 MCQ

In a first order reaction, the concentration of the reactant is reduced to 1/8 of the initial concentration in 75 minutes. The $t_{1/2}$ of the reaction (in minutes) is
(log 2 = 0.30, log 3 = 0.47, log 4 = 0.60)

(A) 60.2
(B) 50.2
(C) 25.1
(D) 75.1

Answer: (C) 25.1 · The council's preliminary key

Q26 AP EAPCET 2025 · 21 May · Shift 1 MCQ

$A \rightarrow$ products, is a first order reaction. The following data is obtained for this reaction at T(K). The value of x : y is

Rate (mol $L^{-1} min^{-1}$)	[A]
0.2	0.02 M
0.4	x M
1.0	y M

(A) $1:5$
(B) $2:3$
(C) $5:2$
(D) $2:5$

Answer: (D) $2:5$ · The council's preliminary key

Q27 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Consider the reaction given below

$$A + 2B \longrightarrow 3C + 2D$$

If rate of disappearance of B is $x \times 10^{-2}$ mol L^{-1} s^{-1}, the ratio of rate of reaction and rate of appearance of C is

(A) $1:3$
(B) $3:1$
(C) $1:2$
(D) $2:1$

Answer: (A) $1:3$ · The council's preliminary key

Q28 TS EAPCET 2025 · 4 May · Shift 1 MCQ

$R \rightarrow P$ is a first order reaction. For this reaction a graph of $\ln[R]$ (on y-axis) and time (on x-axis) gave a straight line with negative slope. The intercept on y-axis is equal to (k = rate constant)

EdLoop EAPCET

(A) $\ln[R]_o$
(B) $[R]_o$
(C) $k \times 2.303$
(D) $\frac{k}{2.303}$

Answer: (A) $\ln[R]_o$ · The council's preliminary key

Q29 TS EAPCET 2025 · 4 May · Shift 2 MCQ

$A \rightarrow P$ is a first order reaction. At 300 K this reaction was started with $[A] = 0.5\,mol\,L^{-1}$. The rate constant of reaction was $0.125\,min^{-1}$. The same reaction was started separately with $[A] = 1\,mol\,L^{-1}$ at 300 K. The rate constant (in min^{-1}) now is

(A) 0.25
(B) 0.50
(C) 0.125
(D) 1.00

Answer: (C) 0.125 · The council's preliminary key

Q30 TS EAPCET 2025 · 3 May · Shift 1 MCQ

For a first order decomposition of a certain reaction, rate constant is given by the equation $\log k(s^{-1}) = 7.14 - \frac{1 \times 10^4\,K}{T}$. The activation energy of the reaction (in $kJ\ mol^{-1}$) is ($R = 8.3\ J\,K^{-1}\,mol^{-1}$)

(A) 161.1
(B) 171.1
(C) 181.1
(D) 191.1

Answer: (D) 191.1 · The council's preliminary key

Q31 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The half-life of a zero order reaction $A \rightarrow$ products, is 0.5 hour. The initial concentration of A is 4 mol L^{-1}. How much time (in hr) does it take for its concentration to come from 2.0 mol L^{-1} to 1.0 mol L^{-1}?

(A) $\frac{1}{4}$
(B) $\frac{1}{8}$
(C) $\frac{1}{2}$
(D) $\frac{1}{6}$

Answer: (A) $\frac{1}{4}$ · The council's preliminary key

Q32 TS EAPCET 2025 · 2 May · Shift 1 MCQ

For the reaction $\mathrm{R} \rightarrow \mathrm{P}$, half life is independent of initial concentration of the reactant, R. Which one of the following graphs is not correct for this reaction? (slope = slope)



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (B) · The council's preliminary key

Q33 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Consider a general first order reaction

$\mathrm{A(g)} \rightarrow \mathrm{B(g)} + \mathrm{C(g)}$

If the initial pressure is 200 mm and after 20 minutes it is 250 mm, then the half-life period of the reaction (in minutes) is

(log 2 = 0.30, log 3 = 0.48, log 4 = 0.60)

(A) 40.2

(B) 50.2

(C) 20.5

(D) 60.5

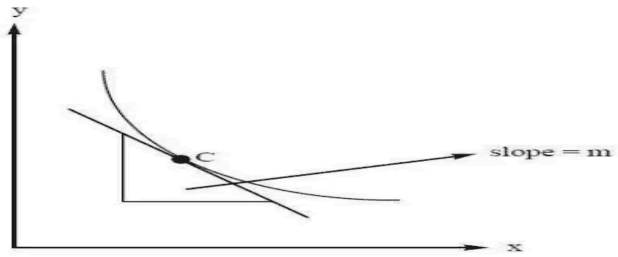
Answer: (B) 50.2 · The council's preliminary key

Q34 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$A \rightarrow P$ is a first order reaction. The following graph is obtained for this reaction. (x-axis = time; y-axis = conc. of A). The instantaneous rate of the reaction at point C is

(see the figure above)

A→P is a first order reaction. The following graph is obtained for this reaction. (x-axis = time; y-axis = conc. of A). The instantaneous rate of the reaction at point C is
A→P అనునది ఒక మొదటి క్రమాంక చర్య. ఈ చర్యకు క్రింది గ్రాఫ్ లభించింది. C బిందువు వద్ద తక్షణ రేటు ఎంత? (x-అక్షం = కాలం; y-అక్షం = A గాఢత)



Options :

1. $\frac{1}{m}$
2. m
3. $2.303\ m$
4. $\frac{1}{2.303\ m}$

(A) $\frac{1}{m}$

(B) m

(C) $2.303\ m$

(D) $\frac{1}{2.303\ m}$

Answer: (B) m · The council's preliminary key

Q35 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Isomerisation of gaseous cyclobutene to butadiene is a first order reaction. At T(K), the rate constant of the reaction is $3.3 \times 10^{-4}\ s^{-1}$. What is the time required (in min) to complete 90 % of this reaction at the same temperature? (log 2 = 0.3)

(A) 116.67

(B) 233.34

(C) 58.34

(D) 350.0

Answer: (A) 116.67 · The council's preliminary key

Q36 AP EAPCET 2024 · 22 May · Shift 2 MCQ

The rate constant of a first order reaction was doubled when the temperature was increased from 300 to 310 K. What is its approximate activation energy (in $\mathrm{kJ\ mol^{-1}}$)?

$(R = 8.3\ \text{J mol}^{-1}\text{K}^{-1}; \log 2 = 0.3)$

(A) 5.33

(B) 533.3

(C) 53333

(D) 53.33

Answer: (D) 53.33 · The council's preliminary key

Q37 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The rate constant of a first order reaction is $3.46 \times 10^{-2}\ \text{s}^{-1}$ at 298K. What is the rate constant of the reaction at 350 K if its activation energy is $50.1\ \text{kJ mol}^{-1}$? $(\text{R} = 8.314\ \text{J K}^{-1}\text{mol}^{-1})$

(log 2 = 0.3010)

(A) $0.592\ \text{s}^{-1}$

(B) $0.692\ \text{s}^{-1}$

(C) $0.792\ \text{s}^{-1}$

(D) $0.892\ \text{s}^{-1}$

Answer: (B) $0.692\ \text{s}^{-1}$ · The council's preliminary key

Q38 AP EAPCET 2024 · 21 May · Shift 2 MCQ

$\text{A} \rightarrow \text{P}$ is a zero order reaction. At 298 K the rate constant of the reaction is $1 \times 10^{-3}\ \text{mol L}^{-1}\ \text{s}^{-1}$. Initial concentration of 'A' is $0.1\ \text{mol L}^{-1}$. What is the concentration of 'A' after 10 sec?

(A) $0.09\ \text{mol L}^{-1}$

(B) $0.099\ \text{mol L}^{-1}$

(C) $0.087\ \text{mol L}^{-1}$

(D) $0.011\ \text{mol L}^{-1}$

Answer: (A) $0.09\ \text{mol L}^{-1}$ · The council's preliminary key

Q39 AP EAPCET 2024 · 20 May · Shift 1 MCQ

For a first order reaction, the concentration of reactant was reduced from $0.03\ \text{mol L}^{-1}$ to $0.02\ \text{mol L}^{-1}$ in 25 min. What is its rate (in $\text{mol L}^{-1}\text{s}^{-1}$)?

(A) 6.667×10^{-6}

(B) 4×10^{-4}

(C) 6.667×10^{-4}

(D) 4×10^{-6}

Answer: (A) 6.667×10^{-6} · The council's preliminary key

EdLoop EAPCET

Q40 AP EAPCET 2024 · 20 May · Shift 2 MCQ

At 298 K the value of $-\frac{\Delta[Br^-]}{\Delta t}$ for the reaction

$5Br^-(aq) + BrO_3^-(aq) + 6H^+(aq) \rightarrow 3Br_2(aq) + 3H_2O(l)$ is x mol L^{-1} min^{-1}. What is the rate (in mol L^{-1} min^{-1}) of this reaction?

(A) $5x$
(B) x
(C) $\frac{x}{5}$
(D) $-\frac{x}{5}$

Answer: (C) $\frac{x}{5}$ · The council's preliminary key

Q41 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The first order reaction $A_{(g)} \rightarrow B_{(g)} + 2C_{(g)}$ occurs at 25 °C. After 24 minutes the ratio of the concentration of products to the concentration of the reactant is 1:3. What is the half life of the reaction (in min)? (log 1.11 = 0.046)

(A) 150.5
(B) 142.2
(C) 157.8
(D) 15.78

Answer: (C) 157.8 · The council's preliminary key

Q42 AP EAPCET 2024 · 18 May · Shift 1 MCQ

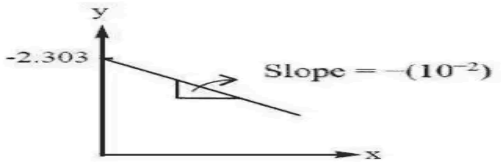
At 298 K, for a first order reaction (A→P) the following graph is obtained. The rate constant (in s^{-1}) and initial concentration (in $mol\ L^{-1}$) of 'A' are respectively

(y-axis = ln(a-x); x-axis = time in sec)

(see the figure above)

EdLoop EAPCET

At 298 K, for a first order reaction (A⟶P) the following graph is obtained. The rate constant (in s^{-1}) and initial concentration (in mol L^{-1}) of 'A' are respectively
(y-axis = ln(a-x); x-axis = time in sec)
298 K వద్ద, ఒక ప్రథమ క్రమాంక చర్యకు (A⟶P) క్రింది గ్రాఫ్ లభించింది. రేటు స్థిరాంకము (s^{-1} లలో) మరియు 'A' తొలిగాఢత (mol L^{-1} లలో) వరుసగా ఎంత?
(y-అక్షం = ln(a-x); x-అక్షం = కాలం సెకనులలో)



Options :

1. 2.303; 10^{-1}
2. 10^{-2}; 2.303
3. 10^{-1}; 10^{-2}
4. 10^{-2}; 10^{-1}

(A) $2.303;\ 10^{-1}$
(B) $10^{-2};\ 2.303$
(C) $10^{-1};\ 10^{-2}$
(D) $10^{-2};\ 10^{-1}$

Answer: (D) $10^{-2};\ 10^{-1}$ · The council's preliminary key

Q43 TS EAPCET 2024 · 11 May · Shift 1 MCQ

For the gaseous reaction, $N_2O_5 \rightarrow 2NO_2 + \frac{1}{2}O_2$, the rate can be expressed as

$$-\frac{d[N_2O_5]}{dt} = K_1[N_2O_5]$$
$$+\frac{d[NO_2]}{dt} = K_2[N_2O_5]$$
$$+\frac{d[O_2]}{dt} = K_3[N_2O_5]$$

The correct relation between K_1, K_2 and K_3 is

(A) $K_1 = 2K_2 = 4K_3$
(B) $2K_1 = K_2 = 4K_3$
(C) $2K_1 = 3K_2 = 4K_3$
(D) $4K_1 = 2K_2 = K_3$

Answer: (B) $2K_1 = K_2 = 4K_3$ · The council's preliminary key

Q44 TS EAPCET 2024 · 10 May · Shift 1 MCQ

The decomposition of benzene diazonium chloride is a first order reaction. The time taken for its decomposition to $\frac{1}{4}$ and $\frac{1}{10}$ of its initial concentration are $t_{1/4}$ and $t_{1/10}$ respectively. The value of

$\frac{t_{1/4}}{t_{1/10}} \times 100$ is

(Given: $\log 2 = 0.3$)

(A) 60

(B) 30

(C) 90

(D) 45

Answer: (A) 60 · The council's preliminary key

Q45 TS EAPCET 2024 · 10 May · Shift 2 MCQ

For a first order reaction, the graph between $\log \frac{a}{(a-x)}$ (on y-axis) and time (in min, on x-axis) gave a straight line passing through origin. The slope is $2 \times 10^{-3}\ \text{min}^{-1}$. What is the rate constant (in min^{-1})?

(A) 2×10^{-3}

(B) $\frac{2 \times 10^{-3}}{2.303}$

(C) 4.606×10^{-3}

(D) 0.5×10^{-5}

Answer: (C) 4.606×10^{-3} · The council's preliminary key

Q46 TS EAPCET 2024 · 9 May · Shift 1 MCQ

For a first order reaction, a plot of $\ln k$ (y-axis) and $\frac{1}{T}$ (x-axis) gave the straight line with slope equal to $-10^3 k$ and intercept equal to 2.303 (on y-axis). What is the activation energy (E_a in kJ mol^{-1}) of the reaction?

(Given $R = 8.314\ \text{J mol}^{-1}\text{K}^{-1}$)

(A) 8.314

(B) 2.303

(C) 2303

(D) 83.14

Answer: (A) 8.314 · The council's preliminary key

Q47 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Consider the gaseous reaction

$A_2 + B_2 \rightarrow 2AB$

The following data was obtained for the above reaction

$[A_2]_0$	$[B_2]_0$	**Initial rate of formation of AB** ($\text{mol L}^{-1}\ \text{s}^{-1}$)
0.1 M	0.1 M	2.5×10^{-4}
0.2 M	0.1 M	5.0×10^{-4}

0.2 M 0.2 M 1.0×10^{-3}

The value of rate constant for the above reaction is

(A) 1.25×10^{-2}

(B) 1.25×10^{-3}

(C) 2.5×10^{-2}

(D) 2.5×10^{-1}

Answer: (A) 1.25×10^{-2} · The council's preliminary key

Q48 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The rate constant, k for a first order reaction,

$C_2H_5I(g) \rightarrow C_2H_4(g) + HI(g)$ is $x\ s^{-1}$ at 600 K and $4x\ s^{-1}$ at 700 K.

The energy of activation of the reaction (in $kJ\ mol^{-1}$) is

($\log 4 = 0.6$, $R = 8.3\ J\ K^{-1}\ mol^{-1}$)

(A) 48.16

(B) 58.16

(C) 38.16

(D) 28.16

Answer: (A) 48.16 · The council's preliminary key

Q49 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Which of the following is correct with respect to the graph given?

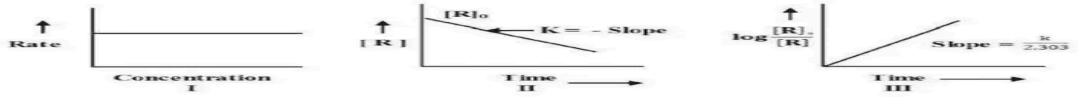
$[R]$ = Concentration at time 't'

$[R]_\circ$ = Initial concentration

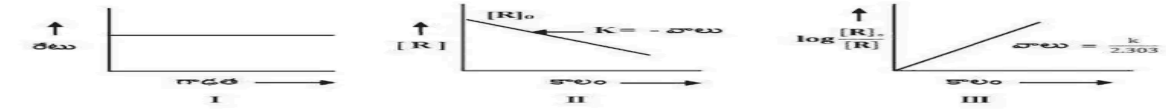
(see the figure above)

EdLoop EAPCET

Which of the following is correct with respect to the graph given?
[R] = Concentration at time 't'
$[R]_0$ = Initial concentration



ఇచ్చిన గ్రాఫ్ ల పరంగా క్రింది వాటిలో ఏది సరియైనది?
[R] = t కాలం వద్ద గాఢత
$[R]_0$ = ప్రారంభ గాఢత



Options :

1. I. III represent first order and II represents zero order reaction
I. III లు ప్రథమ క్రమాంక, II శూన్య క్రమాంక చర్యను వ్యక్తం చేస్తాయి

2. I. II represent zero order and III represents first order reaction
I. II లు శూన్య క్రమాంక మరియు III ప్రథమ క్రమాంక చర్య ను వ్యక్తం చేస్తాయి

3. I. II. III all represent zero order reactions
I. II. III లు అన్ని శూన్య క్రమాంక చర్యను వ్యక్తం చేస్తాయి

4. I. II. III all represent first order reaction
I. II. III లు అన్ని ప్రథమ క్రమాంక చర్యను వ్యక్తం చేస్తాయి

(A) I, III represent first order and II represents zero order reaction
(B) I, II represent zero order and III represents first order reaction
(C) I, II, III all represent zero order reactions
(D) I, II, III all represent first order reaction

Answer: (B) I, II represent zero order and III represents first order reaction · The council's preliminary key

Q50 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A reaction, $3X(g) \rightarrow 2Y(g) + Z(g)$ takes place in a closed vessel. What is the rate of formation of Y (in $mol\,L^{-1}s^{-1}$) if the rate of disappearance of X is $7.2 \times 10^{-3}\ mol\,L^{-1}s^{-1}$?

(A) 3.6×10^{-3}
(B) 4.8×10^{-3}
(C) 2.4×10^{-3}
(D) 1.2×10^{-3}

Answer: (B) 4.8×10^{-3} · The council's preliminary key

Q51 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Consider the reaction carried out at T(K)

$A(g) + B(g) \longrightarrow C(g)$

The rate law for this reaction is $r = k[A]^1[B]^2$. The concentration of A in experiment 2 and rate in experiment 3 shown as x and z in the table. x and z are respectively

Experiment	$[A]\ mol\,L^{-1}$	$[B]\ mol\,L^{-1}$	**Initial rate** $(mol\,L^{-1}\,s^{-1})$
1	0.05	0.05	R
2	x	0.05	2R

3	0.20	0.10	z

(A) $x = 0.10\ z = 8R$
(B) $x = 0.05\ z = 4R$
(C) $x = 0.10\ z = 16R$
(D) $x = 0.20\ z = 16R$

Answer: (C) $x = 0.10\ z = 16R$ · The council's preliminary key

---

Q52 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Consider a gas phase reaction which occurs in a closed vessel

$2\mathrm{A} \rightleftharpoons 4\mathrm{B} + \mathrm{C}$

The concentration of B is found to be increased by $5 \times 10^{-3}\ \mathrm{mol\,L^{-1}}$ in 10 seconds.

The rate of disappearance of A (in $\mathrm{mol\,L^{-1}s^{-1}}$) is

(A) 4.75×10^{-4}
(B) 7.5×10^{-4}
(C) 1.25×10^{-4}
(D) 2.5×10^{-4}

Answer: (D) 2.5×10^{-4} · The council's preliminary key

Q53 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A first order reaction has the rate constant of $1.15 \times 10^{-3}\ \mathrm{s^{-1}}$. The time required to reduce 10 g of reactant to 6 g is $\mathrm{x} \times 10^{2}$ sec. What is the approximate value of x?

(log 5 = 0.7, log 3 = 0.48)

(A) 2.2
(B) 3.3
(C) 4.4
(D) 1.1

Answer: (C) 4.4 · The council's preliminary key

Q54 AP EAPCET 2023 · 15 May · Shift 1 MCQ

For the reaction $\mathrm{A} + \mathrm{B} \rightarrow \mathrm{C}$, the following data were obtained

Expt.	Initial concentration [A] M	Initial concentration [B] M	Initial rate ($\mathrm{M\ min^{-1}}$)
1.	0.1	0.1	1.0×10^{-4}
2.	0.1	0.3	9.0×10^{-4}
3.	0.3	0.3	2.7×10^{-3}

The order of reaction with respect to A and B are respectively

EdLoop EAPCET

(A) 1, 2
(B) 2,1
(C) 1.5, 1.5
(D) 0, 3

Answer: (A) 1, 2 · The council's preliminary key

Q55 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The rate constant, k of a zero order reaction $2NH_3(g) \xrightarrow[1130\ K]{Pt} N_2(g) + 3H_2(g)$ is $y \times 10^{-4}\ mol\,L^{-1}\,s^{-1}$. The rate of formation of hydrogen (in $mol\,L^{-1}\,s^{-1}$) is

(A) $y \times 10^{-4}$
(B) $2y \times 10^{-4}$
(C) $3y \times 10^{-4}$
(D) $\frac{y}{3} \times 10^{-4}$

Answer: (C) $3y \times 10^{-4}$ · The council's preliminary key

Q56 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The rate law for the decomposition of hydrogen iodide is $-\frac{d[HI]}{dt} = k[HI]^2$. The units of rate constant k are

(A) $L\ mol^{-1}\ s^{-1}$
(B) $L^{-1}\ mol\ s^{-1}$
(C) $L^2\ mol^{-2}\ s^{-1}$
(D) $L^{1/2}\ mol^{-1/2}\ s^{-1}$

Answer: (A) $L\ mol^{-1}\ s^{-1}$ · The council's preliminary key

Q57 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A possible mechanism for the gaseous reaction $2H_2 + 2NO \rightarrow 2H_2O + N_2$ is

Step 1: $2NO \rightleftharpoons N_2O_2$

Step 2: $N_2O_2 + H_2 \longrightarrow N_2O + H_2O$ (slow)

Step 3: $N_2O + H_2 \longrightarrow N_2 + H_2O$

The rate law for this reaction is

(A) $R = k[NO]^2\,[H_2]^2$
(B) $R = k[NO]\,[H_2]^2$
(C) $R = k[NO]^{1/2}\,[H_2]$
(D) $R = k[NO]^2\,[H_2]$

Answer: (D) $R = k[NO]^2\,[H_2]$ · The council's preliminary key

EdLoop EAPCET

Q58 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The rate of a first order reaction doubles when the temperature changes from 300 K to 310 K. The activation energy of the reaction (in $\mathrm{kJ\,mol^{-1}}$) is

$(\mathrm{R} = 8.3\,\mathrm{J\,K^{-1}\,mol^{-1}}, \log 2 = 0.3)$

(A) 43.33
(B) 53.33
(C) 63.33
(D) 73.33

Answer: (B) 53.33 · The council's preliminary key

Q59 TS EAMCET 2023 · 13 May · Shift 2 MCQ

For a zero order reaction $\mathrm{A} \rightarrow$ product, a plot of $[\mathrm{A}]$ (on y-axis) and time (on x-axis) gave a straight line with slope equal to $-3 \times 10^{-3}\ \mathrm{M\ min^{-1}}$ and intercept equal to $2 \times 10^{-2}\ \mathrm{M}$ (on y-axis). What is the rate constant (in $\mathrm{M\ min^{-1}}$) of this reaction?

(A) 3×10^{-3}
(B) 5×10^{-5}
(C) 3×10^{-4}
(D) 5×10^{-4}

Answer: (A) 3×10^{-3} · The council's preliminary key

Q60 TS EAMCET 2023 · 12 May · Shift 1 MCQ

If benzene diazonium chloride undergoes first order decomposition at T(K) with a rate constant of $6.93 \times 10^{-2}\ \mathrm{min^{-1}}$, the time for completion of 90% of the reaction (in min) is (nearest integer) (log 2=0.30, log 3 =0.477)

(A) 15
(B) 30
(C) 33
(D) 43

Answer: (C) 33 · The council's preliminary key

Q61 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The graph obtained between $\ln k$ (k = Rate constant) on y-axis and $1/T$ on x-axis is a straight line. The slope of it is $-4 \times 10^{4} k$. The activation energy of the reaction (in $\mathrm{kJ\ mol^{-1}}$) is
$(\mathrm{R} = 8.3\ \mathrm{J\ K^{-1} mol^{-1}})$

EdLoop EAPCET

(A) 166
(B) 332
(C) 765
(D) 382

Answer: (B) 332 · The council's preliminary key

Q62 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Rate constants in the following reaction are
Reaction 1: A $\xrightarrow{\text{catalyst 1}}$ P_1, k_1 = 1 s^{-1}
Reaction 2: A $\xrightarrow{\text{catalyst 2}}$ P_2, k_2 = 0.1 L $mol^{-1}s^{-1}$
Reaction 3: A $\xrightarrow{\text{catalyst 3}}$ P_3, k_3 = 0.01 L^2 $mol^{-2}s^{-1}$
The correct relations between the rate of the reactions at 1 M of A are

(A) $r_1 = \frac{r_3}{100},\ r_2 = \frac{r_3}{10}$
(B) $r_1 = \frac{r_2}{10},\ r_2 = \frac{r_3}{10}$
(C) $r_1 = 100\, r_3,\ r_2 = \frac{r_3}{10}$
(D) $r_1 = 10\, r_2,\ r_3 = \frac{r_2}{10}$

Answer: (D) $r_1 = 10\, r_2,\ r_3 = \frac{r_2}{10}$ · The council's preliminary key

Q63 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

For a reaction, the threshold energy is 75 kJ/mole. If the internal energy of the reactants is 20 kJ/mole, the activation energy (in kJ/mole) is

(A) 55
(B) 20
(C) 75
(D) 95

Answer: (A) 55 · The council's preliminary key

Q64 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

The reaction $2A \rightarrow 2B + C$ has a rate constant of $1.2 \times 10^{-2} s^{-1}$. Which of the following is correct?

(A) Plot of [A] vs "$\frac{1}{t}$" will be straight line
(B) Plot of $\frac{1}{[A]}$ vs t^2 will be a straight line
(C) Plot of ln[A] vs t will be a straight line
(D) Plot of [A] vs t^2 will be a straight line

Answer: (C) Plot of ln[A] vs t will be a straight line · The council's preliminary key

Q65 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Which of the following is a zero order reaction?

(A) $2HI \rightarrow H_2 + I_2$

(B) $H_2 + Br_2 \xrightarrow{\Delta} 2HBr$

(C) $2N_2O_5 \rightarrow 4NO_2 + O_2$

(D) $H_2 + Cl_2 \xrightarrow{h\nu} 2HCl$

Answer: (D) $H_2 + Cl_2 \xrightarrow{h\nu} 2HCl$ · The council's preliminary key

Q66 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

If the definition of the temperature coefficient of the reaction holds good for a reaction between $27\,^{\circ}C$ and $37\,^{\circ}C$, the activation energy for the reaction in $kJ.mol^{-1}$ is

(A) 102

(B) 53.5

(C) ∞

(D) 141.5

Answer: (B) 53.5 · The council's preliminary key

Q67 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The rate constant of a reaction is increased 4 times after addition of catalyst to the reaction mixture at the same temperature of 27 °C. The change in the activation energy of this reaction is
(Take $\ln\left(\frac{1}{4}\right) = -1.386$, R = 8.314)

(A) -15 kJ/mol

(B) -1.5 kJ/mol

(C) -3.45 kJ/mol

(D) -34.5 kJ/mol

Answer: (C) -3.45 kJ/mol · The council's preliminary key

Q68 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Half life periods for a reaction at initial concentrations of 0.1 M and 0.01 M are 5 and 50 minutes, respectively. The order of reaction is

(A) 3

(B) 2

(C) 1

(D) 0

Answer: (B) 2 · The council's preliminary key

Q69 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

In the reaction, A$\rightarrow$ products, If the concentration of the reactant is doubled, rate of the reaction remains unchanged. The order of the reaction with respect to A is

(A) 1
(B) 2
(C) 0.5
(D) 0

Answer: (D) 0 · The council's preliminary key

Q70 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

$\mathrm{P} \rightarrow \mathrm{Q}$ is a zero order reaction. If the concentration of P decreases from 0.1 M to 0.05 M in 10 seconds, the concentration of P after 15 seconds time is

(A) $0.05\mathrm{M}$
(B) $0.025\mathrm{M}$
(C) $0.02\mathrm{M}$
(D) $0.01\mathrm{M}$

Answer: (B) $0.025\mathrm{M}$ · The council's preliminary key

Q71 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

If the rate of disappearance of $\mathrm{N_2O_5}$ in the following reaction is $1.2 \times 10^{-5}\ \mathrm{mol\,L^{-1}s^{-1}}$, the rate of production of $\mathrm{NO_2}$ (in $\mathrm{mol\,L^{-1}s^{-1}}$) is
$2\mathrm{N_2O_5\,(g)} \rightarrow 4\mathrm{NO_2\,(g)} + \mathrm{O_2\,(g)}$

(A) 1.2×10^{-5}
(B) 3.6×10^{-5}
(C) 2.4×10^{-5}
(D) 4.8×10^{-5}

Answer: (C) 2.4×10^{-5} · The council's preliminary key

Q72 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

What is the concentration (in $\mathrm{mol\,L^{-1}}$) of the product after 20 s in the following reaction.
Given that $\mathrm{A} \rightarrow 3\mathrm{B}$, rate = $k[\mathrm{A}]^0$
Time(s) Concentration of the reactant ($\mathrm{mol\,L^{-1}}$)
0 0.1
15 0.05
20 0.1-x

(A) 6.6×10^{-2}
(B) 1.32×10^{-1}
(C) 1.98×10^{-1}
(D) 2.2×10^{-2}

Answer: (C) 1.98×10^{-1} · The council's preliminary key

Q73 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A$\rightarrow$ products, is a first order reaction. The time required to decompose A to half its initial amount is 60 minutes. The rate constant of the reaction (in s^{-1}) is

(A) $1.05\ X\ 10^{-2}$
(B) $1.15\ X\ 10^{-2}$
(C) $1.25\ X\ 10^{-4}$
(D) $1.92\ X\ 10^{-4}$

Answer: (D) $1.92\ X\ 10^{-4}$ · The council's preliminary key

Q74 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

In a first order reaction, the concentration of the reactant is reduced from 0.6 $mol\,L^{-1}$ to 0.2 $mol\,L^{-1}$ in 5 min. What is the rate constant of the reaction? (log 3= 0.4771)

(A) $0.219\ min^{-1}$
(B) $0.325\ min^{-1}$
(C) $0.421\ min^{-1}$
(D) $0.522\ min^{-1}$

Answer: (A) $0.219\ min^{-1}$ · The council's preliminary key

Q75 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

The rate constant of a reaction at 500K and 700K are $0.02\ s^{-1}$ and $0.2\ s^{-1}$ respectively. The activation energy of the reaction (in $kJ\,mol^{-1}$) is (R=8.3 $JK^{-1}\,mol^{-1}$)

(A) 66.90
(B) 33.45
(C) 22.30
(D) 44.45

Answer: (B) 33.45 · The council's preliminary key

Q76 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

$CH_3CO_2C_2H_5 + H_2O \rightarrow CH_3CO_2H + C_2H_5OH$

Rate = $k[H_2O]\,[CH_3CO_2C_2H_5]$

The initial concentrations of ethyl acetate and water are 0.001M and 2M respectively. The value of rate constant, k of the reaction, if 99% of ethyl acetate is hydrolyzed in 10 seconds is

(A) $0.2303\ \mathrm{s}^{-1}$
(B) $2.303\ \mathrm{s}^{-1}$
(C) $4.606\ \mathrm{s}^{-1}$
(D) $3.303\ \mathrm{s}^{-1}$

Answer: (A) $0.2303\ \mathrm{s}^{-1}$ · The council's preliminary key

Q77 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The rate constant for a zero order reaction A$\rightarrow$ products is 0.0030 $\mathrm{mol\,L^{-1}\,s^{-1}}$. How long it will take for the initial concentration of A to fall from 0.10 M to 0.075M?

(A) 10 s
(B) 20 s
(C) 8.33 s
(D) 1.33 s

Answer: (C) 8.33 s · The council's preliminary key

Q78 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The time required for completion of 93.75% of a first order reaction is x minutes. The half life of it (in minutes) is

(A) $x/8$
(B) $x/2$
(C) $x/4$
(D) $x/3$

Answer: (C) $x/4$ · The council's preliminary key

Q79 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the decomposition reaction $\mathrm{A_{(g)} \longrightarrow B_{(g)}}$ follows first order kinetics, then the graph of rate of formation of B, denoted by R, against time 't' will be _____

Mandatory : No

If the decomposition reaction $A_{(g)} \longrightarrow B_{(g)}$ follows first order kinetics, then the graph of rate of formation of B, denoted by R, against time 't' will be _____

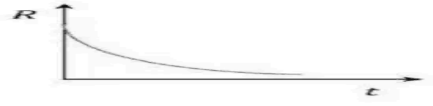
$A_{(g)} \longrightarrow B_{(g)}$ గా జరుగు వియోగచర్య ఒక ప్రథమ క్రమాంక చర్య అయిన, అప్పుడు B ఏర్పడే రేటు (R గా సూచించబడినది) మరియు t కాలముల మధ్య సంబంధము సూచించు రేఖా చిత్రము _____

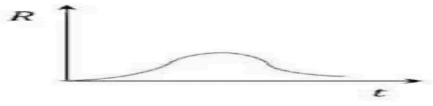
Options :

1. 

AP EAPCET 2021
AP EAPCET 2021

2. 

3. 

4. 

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (C) · The council's preliminary key

Q80 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If for a hypothetical reaction, $E_a = 0$ at $273\,\mathrm{K}$, then find the ratio of the rate constants at $383\,\mathrm{K}$.

(A) 10

(B) 1

(C) 0

(D) 100

Answer: (B) 1 · The council's preliminary key

Q81 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the rate constant of a first order reaction is $4.606 \times 10^{-3}\,\mathrm{s}^{-1}$, then find the time required for $400\,g$ of the reactant to reduce to $50\,g$.

(A) 7.52 minutes

(B) 0.45 minutes

(C) 46.06 minutes

(D) 15.05 minutes

Answer: (A) 7.52 minutes · The council's preliminary key

Q82 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

Compounds A and B react according to the equation $2A_{(g)} + B_{(g)} \rightarrow 2C_{(g)} + D_{(g)}$. The initial rate of formation was determined at different initial concentrations of A and B. The following results were obtained. The rate law for this reaction may be _____ [All concentrations are in mol/lit]

Exp No | Initial [A] | Initial [B] | Initial rate of formation of C

1 | 0.1 | 0.1 | 6×10^{-3}

2 | 0.3 | 0.2 | 7.2×10^{-2}

3 | 0.3 | 0.4 | 2.88×10^{-1}

4 | 0.4 | 0.1 | 2.4×10^{-2}

(A) Rate $= K[A]^2\,[B]$

(B) Rate $= K[A]\,[B]^2$

(C) Rate $= K[A]\,[B]$

(D) Rate $= K[A]^2\,[B]^0$

Answer: (B) Rate $= K[A]\,[B]^2$ · The council's preliminary key

Q83 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If the rate constant for a first order reaction is k, then find the time required for completion of $80\ \%$ of the reaction.

(A) $\frac{3.2}{k}$

(B) $\frac{1.6}{k}$

(C) $\frac{4.8}{k}$

(D) $\frac{0.8}{k}$

Answer: (B) $\frac{1.6}{k}$ · The council's preliminary key

Q84 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

A reaction has rate constant $k = 2.4 \times 10^{-4}\ \mathrm{s}^{-1}$. Then find the ratio of $t_{99.9}$ to t_{50}.

(A) 1

(B) 5

(C) 10

(D) 15

Answer: (C) 10 · The council's preliminary key

Q85 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

For a reaction $NO_2 + CO \rightarrow CO_2 + NO$ the possible elementary steps (below 500K) are

Step 1: $NO_2 + NO_2 \xrightarrow{slow} NO + NO_3$

Step 2: $NO_3 + CO \xrightarrow{Fast} CO_2 + NO_2$

its rate expression will be

(A) $rate = K[NO_2][CO]$
(B) $rate = K[CO_2][NO]$
(C) $rate = K[NO_2]^2$
(D) $rate = K[NO][NO_3]$

Answer: (C) $rate = K[NO_2]^2$ · The council's preliminary key

Q86 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Which among the following represents the expression for $(3/4)^{th}$ life of 1st order reaction?

(A) $\frac{k}{2.303}\log\left(\frac{4}{3}\right)$
(B) $\frac{2.303}{k}\log\left(\frac{3}{4}\right)$
(C) $\frac{2.303}{k}\log(4)$
(D) $\frac{2.303}{k}\log(3)$

Answer: (C) $\frac{2.303}{k}\log(4)$ · The council's preliminary key

Q87 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

Which statement among the following is incorrect?

(A) Unit of rate of disappearance is $M\ s^{-1}$
(B) Unit of rate of reaction is $M\ s^{-1}$
(C) Unit of rate constant k depends upon order of reaction
(D) Unit of rate constant k for a first order reaction is $M\ s^{-1}$

Answer: (D) Unit of rate constant k for a first order reaction is $M\ s^{-1}$ · The council's preliminary key

Q88 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

For zero order reaction, a plot of $t_{1/2}$ versus $[A]_0$ will be_____

(A) A straight line passing through the origin and slope = K
(B) A horizontal line (parallel to x - axis)
(C) A straight line with slope –K
(D) A straight line passing through origin and slope = $\frac{1}{2K}$

Answer: (D) A straight line passing through origin and slope = $\frac{1}{2K}$ · The council's preliminary key

Q89 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

For a $A + B \rightarrow$ products the rate of the reaction is given by $Rate = K[A][B]^2$. The units of rate constant (K) will be _____

(A) $mol\ L^{-1}\ S^{-1}$
(B) $L\ mol^{-1}\ S^{-1}$
(C) $mol^{2}\ L^{-2}\ S^{-1}$
(D) $mol^{-2}\ L^{2}\ S^{-1}$

Answer: (D) $mol^{-2}\ L^{2}\ S^{-1}$ · The council's preliminary key

Q90 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

For an elementary reaction, $X_{(g)} \longrightarrow Y_{(g)} + Z_{(g)}$, the $t_{1/2}$ is 10 minutes. In what period of time would the concentration of X be reduced to 10 % of its original concentration?

(A) 20 minutes
(B) 33.2 minutes
(C) 15 minutes
(D) 25.2 minutes

Answer: (B) 33.2 minutes · The council's preliminary key

Q91 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

If the rate constant for a first order reaction is $2.303 \times 10^{-3}\ s^{-1}$, find the time required to reduce $4\ g$ of the reactant to $0.2\ g$.

(A) 1.30 hours
(B) 21.60 hours
(C) 0.36 hours
(D) 2.60 hours

Answer: (C) 0.36 hours · The council's preliminary key

Q92 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

For a reaction A+B $\rightarrow$ P, the following data are provided
Entry | [A] in M | [B] in M | Initial rate (M/s)
1 | 0.02 | 0.02 | 2×10^{-2}
2 | 0.02 | 0.04 | 4×10^{-2}
3 | 0.04 | 0.04 | 8×10^{-2}
The rate constant for this reaction in standard unit is

(A) 5
(B) 1.2
(C) 2.4×10^{-4}
(D) 50

Answer: (D) 50 · The council's preliminary key

Q93 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

For a hypothetical reaction $\mathrm{A} \rightarrow \mathrm{C}$

$\mathrm{A} \underset{k_2}{\overset{k_1}{\rightleftharpoons}} \mathrm{B}$ [Fast]

$\mathrm{A} + \mathrm{B} \xrightarrow{k_3} \mathrm{C}$ (Slow)

Rate law for this reaction is

(A) $\propto [\mathrm{A}][\mathrm{B}]$

(B) $\propto [\mathrm{A}]^2$

(C) $\propto [\mathrm{A}]^2[\mathrm{B}]^2$

(D) $\propto [\mathrm{A}]^2[\mathrm{B}]$

Answer: (B) $\propto [\mathrm{A}]^2$ · Checked by our team

Q94 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Calculate the activation energy of a reaction, whose rate constant doubles on raising the temperature from 300 K to 600 K.

(A) 3.45 kJ/mol

(B) 6.90 kJ/mol

(C) 9.68 kJ/mol

(D) 19.6 kJ/mol

Answer: (A) 3.45 kJ/mol · The council's preliminary key

Q95 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

For a first order reaction $t_{1/2}$ is 1200 s. The specific rate constant in s^{-1} is

(A) 5.8×10^{-4}

(B) 5.8×10^{-5}

(C) 0.58×10^{-6}

(D) 0.58×10^{-5}

Answer: (A) 5.8×10^{-4} · The council's preliminary key

Q96 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

What will be the overall order of a reaction for which the rate expression is given as

$\text{Rate} = K[A]^{1/2}[B]^{3/2}$

(A) second order
(B) first order
(C) zero order
(D) third order

Answer: (A) second order · The council's preliminary key

Q97 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

In the sequence of reaction
$\mathrm{A} \xrightarrow{k_1} \mathrm{X} \xrightarrow{k_2} \mathrm{Y} \xrightarrow{k_3} \mathrm{Z}$
$k_3 > k_2 > k_1$, then the rate determining step is

(A) $\mathrm{A} \longrightarrow \mathrm{Z}$
(B) $\mathrm{A} \longrightarrow \mathrm{X}$
(C) $\mathrm{Y} \longrightarrow \mathrm{Z}$
(D) $\mathrm{X} \longrightarrow \mathrm{Y}$

Answer: (B) $\mathrm{A} \longrightarrow \mathrm{X}$ · The council's preliminary key

Q98 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

$2\mathrm{FeCl_3} + \mathrm{SnCl_2} \rightarrow 2\mathrm{FeCl_2} + \mathrm{SnCl_2}$. This reaction is an example for

(A) Third order reaction
(B) Zero order reaction
(C) First order reaction
(D) Second order reaction

Answer: (A) Third order reaction · The council's preliminary key

Q99 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

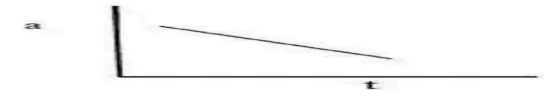
Which of the following plots is correct for a zero-order reaction?

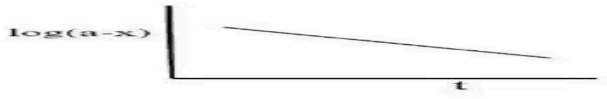
EdLoop EAPCET

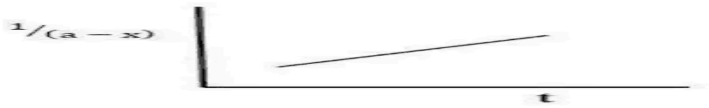
Which of the following plots is correct for a zero-order reaction?

ఈ క్రింది రేఖా చిత్రములలో శూన్య క్రమాంక చర్యకు సరియైనది ఏది?

Options :

1. 

2. 

3. 

4. 

AP EAMCET 2020

AP EAMCET 2020

(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (A) · The council's preliminary key

Q100 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The rate constant is same for 3 reactions of order I, II and III respectively, the unit of concentration being in $moles/litre$. If the concentration of reactant is unity, rates of reaction R_1, R_2, R_3 will be

_____

(A) $R_1 = R_2 = R_3$

(B) $R_1 < R_2 < R_3$

(C) $R_1 > R_2 > R_3$

(D) $R_1 = R_2 \neq R_3$

Answer: (A) $R_1 = R_2 = R_3$ · The council's preliminary key

Q101 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

For a first order reaction $A_5 \rightarrow 5B_2$, the concentrations vs time plot is as shown. The half-life of the reaction is

(see the figure above)

Orientation : Vertical

For a first order reaction $A_5 \rightarrow 5B_2$, the concentrations vs time plot is as shown. The half-life of the reaction is



మొదటి క్రమాంక చర్య $A_5 \rightarrow 5B_2$ కు గాఢత-కాలముల రేఖా చిత్రము పై విధముగా ఉంది. అయన, చర్య అర్ధాయువు కాలము ఎంత?

Options :

1. 120 minutes
   120 నిమిషాలు
2. 109.75 minutes
   109.75 నిమిషాలు
3. 112.5 minutes
   112.5 నిమిషాలు

AP EAMCET 2020
AP EAMCET 2020

4. 140 minutes
   140 నిమిషాలు

(A) 120 minutes
(B) 109.75 minutes
(C) 112.5 minutes
(D) 140 minutes

Answer: (C) 112.5 minutes · Checked by our team

Q102 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Decomposition of ethane $\frac{d[C_2H_6]}{dt} = k[C_2H_6]$ proceeds through a complex mechanism, which includes 5 steps. The overall rate constant(k) can be expressed as $k = \frac{k_1 k_2 k_3}{k_2 k_5}$ where k_1, k_2, k_3, k_4, k_5 are the rate constants of the 5 steps.
If the activation energies of each of the steps respectively are $E_1 = 1E,\ E_2 = 2E,\ E_3 = 3E,\ E_4 = 4E,\ E_5 = 5E$, where $E = 20\ \text{kJ/mol}$. Then find the overall activation energy of the decomposition.

(A) $6.67\ \text{kJ/mol}$
(B) $3.33\ \text{kJ/mol}$
(C) $20\ \text{kJ/mol}$
(D) $10\ \text{kJ/mol}$

Answer: (C) $20\ \text{kJ/mol}$ · Checked by our team

Q103 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

For the reaction $A \longrightarrow$ products, if the graph of $[A]$ v/s time gives a straight line, predict the order of the reaction.

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

Answer: (D) Zero order · The council's preliminary key

Q104 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

In the chemical reaction $A \rightarrow B$, what is the order of the reaction? Given that the rate of reaction doubles if the concentration of A is increased four times.

(A) 2
(B) 1.5
(C) 0.5
(D) 1

Answer: (C) 0.5 · The council's preliminary key

Q105 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The rate of a reaction doubles when the temperature is changed from 300 K to 310 K. Activation energy of the change is _____ ($R = 8.314\ J.K^{-1}.mol^{-1}$), $\log 2 = 0.301$]

(A) 53.6 $kJ.mol^{-1}$
(B) 48.6 $kJ.mol^{-1}$
(C) 58.5 $kJ.mol^{-1}$
(D) 60.5 $kJ.mol^{-1}$

Answer: (A) 53.6 $kJ.mol^{-1}$ · The council's preliminary key

---

Q106 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Rate of the reaction $xA + yB \rightarrow zC$ is given by $r = K[A]^x[B]^y$. If the concentration of A is tripled, rate of reaction increased by 27 times over the initial. Then choose the correct plot for variation of half-life ($t_{1/2}$ on y-axis) of the reaction w.r.t total initial concentration of reactants (on x-axis) is _____

EdLoop EAPCET

Orientation : Vertical

Rate of the reaction $xA + yB \rightarrow zC$ is given by $r = K[A]^x[B]^y$. If the concentration of A is tripled, rate of reaction increased by 27 times over the initial. Then choose the correct plot for variation of half-life ($t_{1/2}$ on y-axis) of the reaction w.r.t total initial concentration of reactants (on x-axis) is _____

$xA + yB \rightarrow zC$, ఈ చర్యకు $r = K[A]^x[B]^y$. A యొక్క గాఢతను మూడు రెట్లు పెంచితే, చర్య రేటు తొలి చర్య రేటుకు 27 రెట్లుకు పెరుగును. అయిన, అర్ధాయుకాలము($t_{1/2}$, y-విధాంకము) కి మరియు క్రియాజనకాల ఆరంభ గాఢతల మొత్తము(x-విధాంకము) కి గల సంబంధాన్ని తెలిపే సరి అయిన రేఖా చిత్రమును గుర్తించండి.

Options :

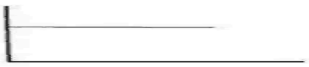
1.

AP EAMCET 2020

AP EAMCET 2020



2.



3.



4.



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (B) · The council's preliminary key

Q107 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Find the correct equation among the following

(A) $\ln K - \ln A = \frac{E_a}{RT}$

(B) $K = \frac{AE_a}{RT}$

(C) $\ln K + \ln A = \frac{E_a}{RT}$

(D) $\frac{E_a}{RT} = \ln A - \ln K$

Answer: (D) $\frac{E_a}{RT} = \ln A - \ln K$ · The council's preliminary key

Q108 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The half-life of a first order reaction varies with temperature according to

(A) $\ln(t_{1/2}) \propto \frac{1}{T}$

(B) $\ln(t_{1/2}) \propto T$

(C) $(t_{1/2}) \propto \frac{1}{T^2}$

(D) $(t_{1/2}) \propto T^2$

Answer: (A) $\ln(t_{1/2}) \propto \frac{1}{T}$ · Official TGCHE final key

Q109 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

For a reversible reaction $\mathrm{A} \rightleftharpoons \mathrm{B}$, pre-exponential factor is same for both the forward and backward reactions and has value of $20\ \mathrm{S}^{-1}$. If the enthalpy change along the forward reaction is $-41.5\ \mathrm{kJ/mol}$, the value of equilibrium constant at $500\ \mathrm{K}$ is

(A) e^{10}
(B) e^{9}
(C) e^{8}
(D) e^{7}

Answer: (A) e^{10} · Official TGCHE final key

Q110 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

For a first order reaction (A $\rightarrow$ B), the temperature (T) dependent rate constant (k) in sec^{-1} was found to follow the equation: $\log k = \left(-\frac{20}{T}\right) + 4$. The activation energy ($\mathrm{E_a}$) and pre-exponential factor (A) respectively, are

(A) 46.06 $\mathrm{cal\,mol^{-1}}$ and $10^{-4}\ \mathrm{s^{-1}}$
(B) 92.12 $\mathrm{cal\,mol^{-1}}$ and $10^{4}\ \mathrm{s^{-1}}$
(C) 46.06 $\mathrm{cal\,mol^{-1}}$ and $10^{4}\ \mathrm{s^{-1}}$
(D) 9.212 $\mathrm{cal\,mol^{-1}}$ and $10^{-4}\ \mathrm{s^{-1}}$

Answer: (B) 92.12 $\mathrm{cal\,mol^{-1}}$ and $10^{4}\ \mathrm{s^{-1}}$ · Official TGCHE final key

Q111 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

What is the unit for the zero order rate constant?

(A) $l^{-1}\ \mathrm{mol\ s^{-1}}$
(B) $l\ \mathrm{mol\ s^{-1}}$
(C) $l\ \mathrm{mol^{-1}\ s^{-1}}$
(D) $l^{2}\ \mathrm{mol^{-2}\ s^{-1}}$

Answer: (A) $l^{-1}\ \mathrm{mol\ s^{-1}}$ · Official TGCHE final key

Q112 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

For a zero order reaction, the plot of concentration of reactant vs time is (Hint: Consider the intercept on the concentration axis)

(A) linear with + ve slope and non zero +ve intercept
(B) linear with - ve slope and non zero +ve intercept
(C) linear with - ve slope and zero intercept
(D) linear with + ve slope and zero intercept

Answer: (B) linear with - ve slope and non zero +ve intercept · Official TGCHE final key

---

Q113 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The specific rate constant of decomposition of a compound is given by $\ln k = 5.0 - \frac{12000}{T}$. The activation energy of decomposition for this compound at 300 K is

(A) 24 kcal mol^{-1}
(B) 12 kcal mol^{-1}
(C) 24 cal mol^{-1}
(D) 12 cal mol^{-1}

Answer: (A) 24 kcal mol^{-1} · Official TGCHE final key

Q114 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The rate of chemical reaction doubles with every 10 °C rise in temperature. If the reaction is carried out in the vicinity of 22 °C, the activation energy of the reaction is
(Given $R = 8.3\ \mathrm{J\,K^{-1}\,mol^{-1}}$, $\ln 2 = 0.69$ and $\ln 3 = 1.1$)

(A) $1.69\ \mathrm{kJ\,mol^{-1}}$
(B) $0.169\ \mathrm{kJ\,mol^{-1}}$
(C) $49.8\ \mathrm{kJ\,mol^{-1}}$
(D) $498\ \mathrm{J\,mol^{-1}}$

Answer: (C) $49.8\ \mathrm{kJ\,mol^{-1}}$ · Official TGCHE final key

---

Q115 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

For a reaction A $\rightarrow$ B, the average energies of A and B are 30 and 60 kcal/mol respectively. Energy of the activation for the backward reaction is 93 kcal/mol. The energy of activation for the forward reaction is

(A) 30 kcal/mol
(B) 123 kcal/mol
(C) 153 kcal/mol
(D) 90 kcal/mol

Answer: (B) 123 kcal/mol · Official TGCHE final key

Q116 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The first order decomposition of H_2O_2 in an appropriate medium is characterized by a rate constant of 0.2303 min^{-1}. What is the time (in min) required to complete 9/10 fraction of the reaction?

(A) 0.1
(B) 10
(C) 100
(D) 0.01

Answer: (B) 10 · Official TGCHE final key

Q117 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The decomposition of O_3 (g) follows first order kinetics and is given by:
$O_3\,(g) \rightarrow O_2\,(g) + O\,(g)$
The rate constant for this reaction is $1.0 \times 10^{-3}\ s^{-1}$. The initial pressure of O_3 (g) is 100 atm. What will be the partial pressure (in atm) of O_3, O_2, O respectively after 38.38 minutes?

(A) 95, 5, 5
(B) 10, 90, 0
(C) 10, 90, 90
(D) 10, 0, 90

Answer: (C) 10, 90, 90 · Official TGCHE final key

Q118 TS EAMCET 2019 · 4 May · Shift 2 MCQ

When the temperature of a reaction is raised by 10 °C, how many times the rate will be enhanced?

(A) 1.5
(B) 3
(C) 2
(D) 4

Answer: (C) 2 · Official TGCHE final key

Q119 TS EAMCET 2019 · 3 May · Shift 1 MCQ

For a zero-order reaction, the correct expression for rate constant (k) at half-life time ($t_{1/2}$) is (R_0 = initial concentration of reactant)

EdLoop EAPCET

(A) $k = \frac{2.303}{t_{1/2}} \log \frac{[R_0]}{[R_0]/2}$

(B) $k = \frac{2.303}{t} \log \frac{[R_0]}{[R_0]}$

(C) $k = \frac{[R_0] - \frac{1}{2}[R_0]}{t_{1/2}}$

(D) $k = \frac{2.303}{(t_2 - t_1)} \log [R_0]$

Answer: (C) $k = \frac{[R_0] - \frac{1}{2}[R_0]}{t_{1/2}}$ · Official TGCHE final key

Q120 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The following results have been obtained during the kinetic studies of reaction:

$2NO + 2H_2 \longrightarrow N_2 + 2H_2O$

Table (Expt; $-\frac{d[NO]}{dt}$ in $\text{mol L}^{-1}\text{s}^{-1}$; [NO] in mol L^{-1}; $[H_2]$ in mol L^{-1}):

1. 4.8×10^{-5}; 1×10^{-2}; 1×10^{-3}
2. 43.2×10^{-5}; 3×10^{-2}; 1×10^{-3}
3. 86.4×10^{-5}; 3×10^{-2}; 2×10^{-3}

The rate Law is:

(A) $-\frac{d[NO]}{dt} = k[NO]^2[H_2]$

(B) $-\frac{d[NO]}{dt} = k[NO]^2[H_2]^{1/2}$

(C) $-\frac{d[NO]}{dt} = k[NO][H_2]^2$

(D) $-\frac{d[NO]}{dt} = k[NO][H_2]$

Answer: (A) $-\frac{d[NO]}{dt} = k[NO]^2[H_2]$ · Official TGCHE final key

Q121 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The rate equation for the reaction

$2A + B \rightarrow$ products is

rate $= k[A][B]^2$.

If k at T(K) is $5.0 \times 10^{-6}\ \text{mol}^{-2}\text{L}^2\text{s}^{-1}$, the initial rate of the reaction, when $[A] = 0.05\ \text{mol L}^{-1}$ and $[B] = 0.1\ \text{mol L}^{-1}$ is

(A) $1.25 \times 10^{-9}\ \text{L mol L}^{-1}\ \text{s}^{-1}$

(B) $1.25 \times 10^{-9}\ \text{mol L}^{-1}\ \text{s}^{-1}$

(C) $2.50 \times 10^{-9}\ \text{mol L}^{-1}\ \text{s}^{-1}$

(D) $2.50 \times 10^{-9}\ \text{L mol L}^{-1}\ \text{s}^{-1}$

Answer: (C) $2.50 \times 10^{-9}\ \text{mol L}^{-1}\ \text{s}^{-1}$ · Official APSCHE final key

EdLoop EAPCET

Q122 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Which one of the following statements is correct?

(A) In collision theory $e^{-E_a/RT}$ corresponds to the fraction of molecules that have energy equal or greater than E_a

(B) The number of collisions of reacting molecules per second per unit volume of the reaction mixture is activated complex

(C) Molecularity is the number of molecules involved in a complex reaction

(D) A catalyst catalyses the non-spontaneous reaction

Answer: (A) In collision theory $e^{-E_a/RT}$ corresponds to the fraction of molecules that have energy equal or greater than E_a · Official APSCHE final key

Q123 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

Which one of the following is **not** the correct statement with respect to order of a reaction?

(A) order can be determined experimentally.

(B) order of reaction is equal to sum of the powers of concentration terms in differential form of rate law.

(C) order does not change with change of pressure or temperature.

(D) order cannot be fractional.

Answer: (D) order cannot be fractional. · Official APSCHE final key

Q124 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The half life periods of a first order reaction at 300 K and 400 K are 50 s and 10 s respectively. The activation energy of the reaction in $kJ\,mol^{-1}$ is $(\log 5 = 0.70)$

(A) 4.0

(B) 8.0

(C) 16.10

(D) 20.10

Answer: (C) 16.10 · Official APSCHE final key

Q125 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

The rate constants for a reaction at 400 K and 500 K are $2.60 \times 10^{-5}\ s^{-1}$ and $2.60 \times 10^{-3}\ s^{-1}$ respectively. The activation energy of the reaction in $kJ\ mol^{-1}$ is

(A) 38.3
(B) 57.4
(C) 114.9
(D) 76.6

Answer: (D) 76.6 · Official APSCHE final key

Q126 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

In the first order thermal decomposition of $C_2H_5I_{(g)} \longrightarrow C_2H_{4(g)} + HI_{(g)}$ the reactant in the beginning exerts a pressure of 2 bar in a closed vessel at 600 K. If the partial pressure of the reactant is 0.1 bar after 1000 minutes at the same temperature the rate constant in min^{-1} is
(log 2 = 0.30)

(A) 6.0×10^{-4}
(B) 6.0×10^{-3}
(C) 3.0×10^{-3}
(D) 3.0×10^{-4}

Answer: (C) 3.0×10^{-3} · Official APSCHE final key

Q127 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The reaction $X \rightarrow$ products is a first order reaction. In 40 minutes, the concentration of X changes from 1.0M to 0.25M. What is the initial rate of reaction when [X] = 0.1M? ($\log 4 = 0.60$)

(A) $1.73 \times 10^{-3}\ mol\,L^{-1}\,min^{-1}$
(B) $3.47 \times 10^{-4}\ mol\,L^{-1}\,min^{-1}$
(C) $1.73 \times 10^{-4}\ mol\,L^{-1}\,min^{-1}$
(D) $3.45 \times 10^{-3}\ mol\,L^{-1}\,min^{-1}$

Answer: (D) $3.45 \times 10^{-3}\ mol\,L^{-1}\,min^{-1}$ · Official APSCHE final key

Q128 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Which of the following graphs represent a first order reaction (a = initial concentration of reactant, x = concentration of reactant consumed, t = time) *(see the figure above)*

EdLoop EAPCET

Question Number : 146 Question Id : 4928632706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Which of the following graphs represent a first order reaction
(a = initial concentration of reactant, x = concentration of reactant consumed, t = tim

క్రింది గ్రాఫ్‌లలో ఏవి మొదటి క్రమాంక చర్యను సూచిస్తాయి?
(a = ప్రారంభక్రియాజనకం గాఢత, x = వినియోగం చెందించేక్రియా జనకం గాఢత, t = కాలం)

a) b) c) d)



Options :
1. a, b, d
2. c, d
3. b, c
4. a, b

A a, b, d
B c, d
C b, c
D a, b

Answer: (D) a, b · The council's preliminary key

Q129 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A particular reaction has a rate constant 1.15×10^{-3} s^{-1}. How long does it take for 6 g of the reactant to reduce to 3 g? ($\log 2 = 0.301$)

A 301 s
B 603 s
C 840 s
D 15 s

Answer: (B) 603 s · The council's preliminary key

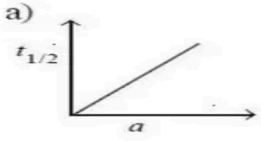
Q130 TS EAMCET 2018 · 5 May · Shift 2 MCQ

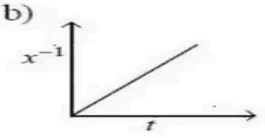
Which of the following graphs represent a zero order reaction?
(a = initial concentration of reactant, x = concentration of reactant consumed, t = time)
(see the figure above)

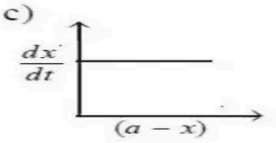
Question Number : 146 Question Id : 4928632386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

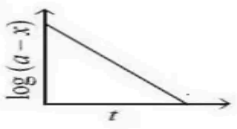
Which of the following graphs represent a zero order reaction?
(a = initial concentration of reactant, x = concentration of reactant consumed, t = time)

క్రింది గ్రాఫ్‌లలో ఏవి సున్న క్రమాంక చర్యను సూచిస్తాయి?
(a = క్రియాజనకం ప్రారంభగాఢత, x = వినియోగమైన క్రియాజనకం గాఢత, t = కాలం)

a) 

b) 

c) 

d) 

Options :
1. a, c, d
2. a, c
3. b, c, d
4. a, d

(A) a, c, d
(B) a, c
(C) b, c, d
(D) a, d

Answer: (B) a, c · The council's preliminary key

Q131 TS EAMCET 2018 · 4 May · Shift 1 MCQ

If the rate constants of a reaction at 500 K and 700 K are $0.002\ \mathrm{s}^{-1}$ and $0.06\ \mathrm{s}^{-1}$ respectively, the value of K^{-1} (sic) activation energy is ($R = 8.314\ \mathrm{J\,mol^{-1}K^{-1}}$, $\log 3 = 0.477$)

(A) $49.49\ \mathrm{kJ\,mol^{-1}}$
(B) $98.98\ \mathrm{kJ\,mol^{-1}}$
(C) $24.75\ \mathrm{kJ\,mol^{-1}}$
(D) $12.37\ \mathrm{kJ\,mol^{-1}}$

Answer: (A) $49.49\ \mathrm{kJ\,mol^{-1}}$ · The council's preliminary key

Q132 TS EAMCET 2018 · 4 May · Shift 2 MCQ

For a particular reaction, the rate constant becomes double on increasing temperature from 27 °C to 37 °C. Calculate the approximate activation energy (in kcal $\mathrm{mol^{-1}}$)
(R = 2 cal $\mathrm{mol^{-1}\ K^{-1}}$)

(A) 1289
(B) 12.89
(C) 1.28
(D) 53.41

Answer: (B) 12.89 · The council's preliminary key

Q133 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the half lives of the first order reaction at 350 K and 300 K are 2 and 20 seconds respectively, the activation energy of the reaction in $\mathrm{kJmol^{-1}}$ is

(A) 40.2
(B) 20.1
(C) 60.3
(D) 30.2

Answer: (A) 40.2 · The council's preliminary key

Q134 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

At T(K), if the rate constant of a first order reaction is $4.606 \times 10^{-3}\ \mathrm{s^{-1}}$, the time to reduce the initial concentration of the reactant to 1/10 in seconds is :

(A) 500
(B) 1000
(C) 100
(D) 50

Answer: (A) 500 · The council's preliminary key

Q135 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The rate equation for a first order reaction is given by $[\mathrm{R}] = [\mathrm{R}]_0\, e^{-kt}$. A straight line with positive slope is obtained by plotting
($[\mathrm{R}]_0$ = Initial concentration of reactant, $[\mathrm{R}]$ = concentration of reactant at time, t)

(A) $\log \frac{[\mathrm{R}]_0}{[\mathrm{R}]}$ Vs time
(B) $[\mathrm{R}]$ Vs time
(C) $\log[\mathrm{R}]$ Vs time
(D) $\log \frac{[\mathrm{R}]}{[\mathrm{R}]_0}$ Vs time

Answer: (A) $\log \frac{[\mathrm{R}]_0}{[\mathrm{R}]}$ **Vs time** · The council's preliminary key

Q136 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

At T(K), the following data were obtained for a general reaction $\mathrm{A} + \mathrm{B} + \mathrm{C} \longrightarrow \text{products}$

Expt. | Initial [A] | Initial [B] | Initial [C] | Initial rate

1 | 0.02 M | 0.1 M | 0.03 M | $2.4 \times 10^{-6}\ \mathrm{Ms}^{-1}$

2 | 0.02 M | 0.2 M | 0.03 M | $4.8 \times 10^{-6}\ \mathrm{Ms}^{-1}$

3 | 0.02 M | 0.2 M | 0.06 M | $9.6 \times 10^{-6}\ \mathrm{Ms}^{-1}$

4 | 0.04 M | 0.2 M | 0.06 M | $9.6 \times 10^{-6}\ \mathrm{Ms}^{-1}$

The rate constant for the above reaction is

(A) $8.0 \times 10^{-4}\ \mathrm{s}^{-1}$

(B) $8.0 \times 10^{-4}\ \mathrm{L\ mol}^{-1}\ \mathrm{s}^{-1}$

(C) $8.0 \times 10^{4}\ \mathrm{L\ mol}^{-1}\ \mathrm{s}^{-1}$

(D) $8.0 \times 10^{-4}\ \mathrm{L}^{2}\ \mathrm{mol}^{-2}\ \mathrm{s}^{-1}$

Answer: (B) $8.0 \times 10^{-4}\ \mathrm{L\ mol}^{-1}\ \mathrm{s}^{-1}$ · The council's preliminary key

Q137 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Thermal decomposition of HCOOH is a first order reaction and the rate constant at T(K) is $4.606 \times 10^{-3}\ \mathrm{s}^{-1}$. The time required to decompose 90% of initial quantity of HCOOH at T(K) in seconds is

(A) 100

(B) 500

(C) 1000

(D) 50

Answer: (B) 500 · The council's preliminary key

Q138 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

At T(K) if the rate constant for a zero order reaction is $2.5 \times 10^{-3}\ \mathrm{Ms}^{-1}$, the time required for the initial concentration of reactant, R to fall from 0.10 M to 0.075 M at the same temperature in seconds is

(A) 25

(B) 5

(C) 10

(D) 20

Answer: (C) 10 · The council's preliminary key

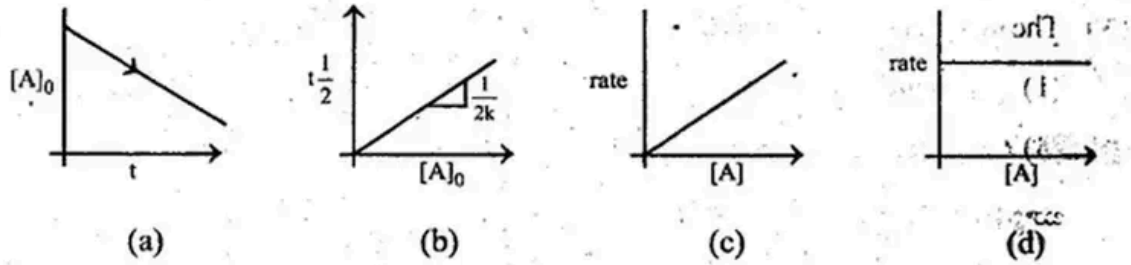
Q139 TS EAMCET 2017 · 12 May · Offline MCQ

Which of the following are the correct representations of a zero order reaction, where A represents the reactant?

(see the figure above)

142. Which of the following are the correct representations of a zero order reaction, where A represents the reactant?

ఈక్రింద ఇవ్వబడిన గ్రాఫ్‌లలో A క్రియాజనకము అయితే ఏది శూన్యక్రమాంక చర్యను సరిగ్గా సూచిస్తుంది?



(a) (b) (c) (d)

(1) a, b, c (2) a, b, d (3) b, c, d (4) a, c, d

A a, b, c
B a, b, d
C b, c, d
D a, c, d

Answer: (B) a, b, d · The council's preliminary key

Q140 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

20% of a first order reaction was found to be completed at 10 A.M. At 11.30 A.M. on the same day, 20% of the reaction was found to be remaining. The half life period in minutes of the reaction is

A 90
B 60
C 45
D 30

Answer: (C) 45 · The council's preliminary key

Q141 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The rate equation for the decomposition of a compound 'A' in terms of partial pressure is given as, rate $= k(P_A)^{3/2}$. If the pressure is measured in bar and time in minutes, then the units of rate constant is :

(A) min^{-1}

(B) $\mathrm{bar}^{3/2}\,\mathrm{min}^{-1}$

(C) $\mathrm{bar}^{-1/2}\,\mathrm{min}^{-1}$

(D) $\mathrm{bar}^{1/2}\,\mathrm{min}$

Answer: (C) $\mathrm{bar}^{-1/2}\,\mathrm{min}^{-1}$ · The council's preliminary key

Q142 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The time taken for 10% completion of a first order reaction is 20 minutes. The time required for the completion of 19% of the same reaction in minutes is

(A) 40

(B) 60

(C) 30

(D) 50

Answer: (A) 40 · The council's preliminary key

Q143 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The time taken for half of the initial amount of $\mathrm{N_2O_5}$ to decompose is 12 min at 310 K and 2 hrs at 300 K. The activation energy of reaction in kJ is ($R = 8.3\ \mathrm{J\ K^{-1}\ mol^{-1}}$)

(A) 177.76

(B) 17.776

(C) 355.52

(D) 35.552

Answer: (A) 177.76 · The council's preliminary key

Q144 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The rate constant of a first order reaction is $6.909\ \mathrm{min}^{-1}$. So the time required for the completion of 75% of the same reaction in minutes is

(A) $\frac{2}{3}\log 2$

(B) $\frac{2}{3}\log 4$

(C) $\frac{3}{2}\log 2$

(D) $\frac{3}{2}\log 4$

Answer: (A) $\frac{2}{3}\log 2$ · The council's preliminary key

Q145 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The initial rates of decrease of $\mathrm{I_2}$ in acetone - iodine reaction catalysed by $\mathrm{H^+}$ are given in the table.

Experiment	Initial $[I_2]$ (mol L^{-1})	Initial $[H^+]$ (mol L^{-1})	Initial $[CH_3COCH_3]$ (mol L^{-1})	Initial rate of decrease of I_2 (mol L^{-1} s^{-1})
1	0.01	0.1	0.1	0.096
2	0.01	0.2	0.1	0.192
3	0.02	0.2	0.1	0.192
4	0.01	0.2	0.2	0.384

The order with respect to I_2, H^+, acetone and total order of the reaction respectively are:

(A) 0, 2, 1, 3
(B) 1, 0, 1, 2
(C) 0, 1, 1, 2
(D) 1, 1, 0, 2

Answer: (C) 0, 1, 1, 2 · The council's preliminary key

Q146 TS EAMCET 2016 · 15 May · Offline MCQ

For the reaction
$5Br^-(aq) + 6H^+(aq) + BrO_3^-(aq) \rightarrow 3Br_2(aq) + 3H_2O(\ell)$
if, $-\frac{\Delta[BrO_3^-]}{\Delta t} = 0.01 \text{ mol } L^{-1} \text{ min}^{-1}$,
$\frac{\Delta[Br_2]}{\Delta t}$ in $\text{mol } L^{-1} \text{ min}^{-1}$ is

(A) 0.01
(B) 0.3
(C) 0.03
(D) 0.005

Answer: (C) 0.03 · Official TGCHE final key

Q147 AP EAMCET 2016 · 29 Apr · Offline MCQ

The slope of the graph drawn between $\ln k$ and $1/T$ as per Arrhenius equation gives the value (R = gas constant, E_a = Activation energy)

(A) $\frac{R}{E_a}$
(B) $\frac{E_a}{R}$
(C) $\frac{-E_a}{R}$
(D) $\frac{-R}{E_a}$

Answer: (C) $\frac{-E_a}{R}$ · The council's preliminary key

Q148 AP EAMCET 2014 · 22 May · Offline MCQ

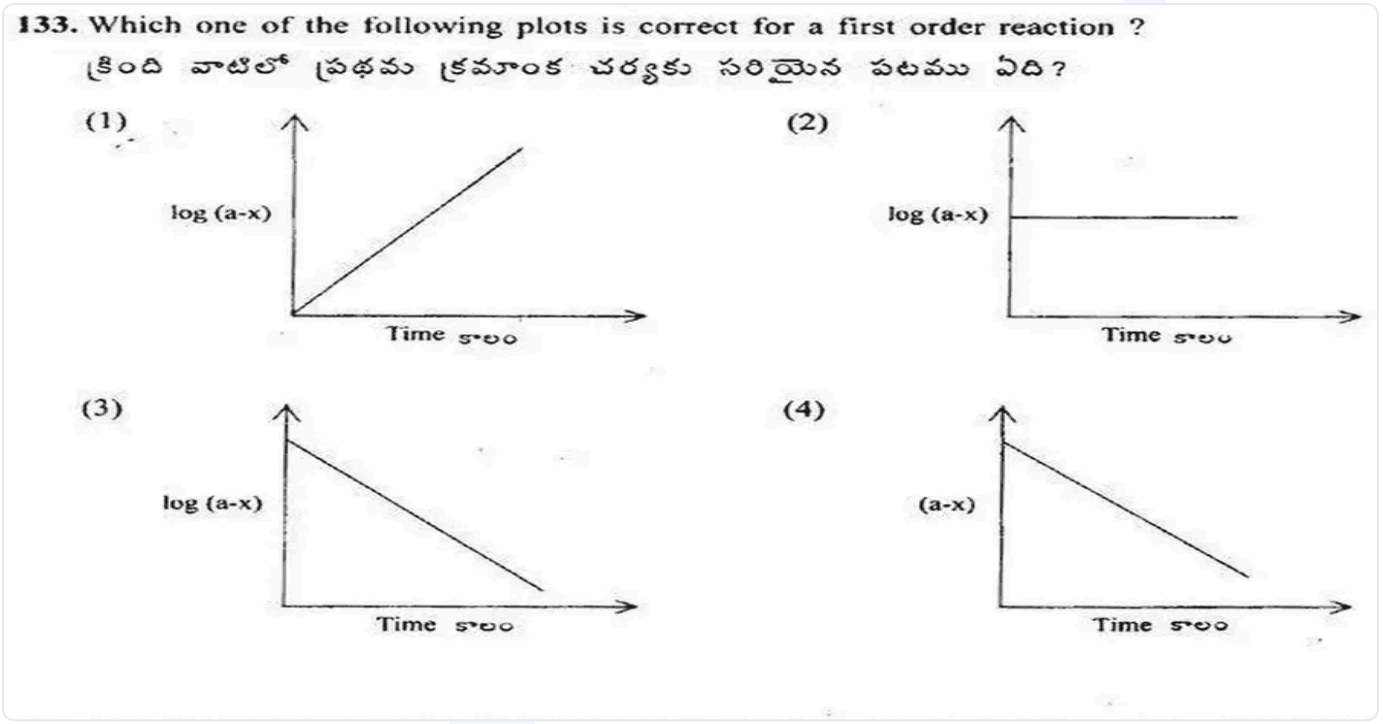
In a first order reaction the concentration of the reactant decreases from 0.6 M to 0.3 M in 15 minutes. The time taken for the concentration to change from 0.1 M to 0.025 M in minutes is

(A) 1.2
(B) 12
(C) 30
(D) 3

Answer: (C) 30 · The council's preliminary key

Q149 AP EAMCET 2013 · 10 May · Offline MCQ

Which one of the following plots is correct for a first order reaction ?
(see the figure above)



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · The council's preliminary key

Q150 AP EAMCET 2012 · 12 May · Offline MCQ

Which one of the following statements is correct for the reaction
$CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$ (all aq)

(A) Order is two but molecularity is one
(B) Order is one but molecularity is two
(C) Order is one and molecularity is one
(D) Order is two and molecularity is two

Answer: (D) Order is two and molecularity is two · Official APSCHE final key

Q151 AP EAMCET 2011 · 8 May · Offline MCQ

Match the following :
List I
A) Arrhenius equation
B) Slowest step in a reaction mechanism
C) Rate constant of a II order reaction
D) The possibility of a reaction depends on
List II
i) Free energy change
ii) $\mathrm{conc}^{-1}.\mathrm{time}^{-1}$
iii) $\mathrm{conc}^{1-\mathrm{n}}.\mathrm{time}^{-1}$
iv) Rate determining step
v) $k = \mathrm{A}\,.\,e^{-E_a/RT}$
The correct answer is :

(A) A-v, B-i, C-iii, D-iv
(B) A-v, B-iv, C-iii, D-ii
(C) A-v, B-iv, C-ii, D-i
(D) A-iii, B-iv, C-ii, D-i

Answer: (C) A-v, B-iv, C-ii, D-i · The council's preliminary key

Q152 AP EAMCET 2010 · 30 May · Offline MCQ

What is the slope of the straight line for the graph drawn between $\ln k$ and $\frac{1}{\mathrm{T}}$, where k is the rate constant of a reaction at temperature T ?

(A) $\frac{-\mathrm{E}_a}{2.303\mathrm{R}}$
(B) $\frac{-\mathrm{E}_a}{\mathrm{R}}$
(C) $\frac{\mathrm{E}_a}{\mathrm{R}}$
(D) $\frac{\mathrm{R}}{\mathrm{E}_a}$

Answer: (B) $\frac{-\mathrm{E}_a}{\mathrm{R}}$ · Official APSCHE final key

EdLoop EAPCET