

JEE Main April 2026
Question Paper With Text Solution
02 April | Shift -1

CHEMISTRY



JEE Main & Advanced | XI-XII Foundation | VI-X Pre-Foundation

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911
Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in

JEE MAIN APRIL 2026 | 02 APRIL SHIFT-1**SECTION – A**

Question ID : 69112151

51. The mass of iron converted into Fe_3O_4 by the action of 18 g of steam is :(Given : Molar mass of H, O and Fe are 1, 16 and 56 g mol⁻¹ respectively)

Assume iron is present in excess :

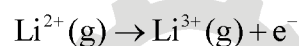
¶

- (1) 2.1 g (2) 4.2 g (3) 21 g (4) 42 g

Ans. (4)**Sol.** $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$ $\therefore$ 4 mole H_2O react with 3 mole Fe $\therefore$ for 1 mole H_2O we need $\frac{3}{4}$ mole Fe

$$\text{mass of Fe} = \frac{3}{4} \times 56 = 42\text{g}$$

Question Id : 69112152

52. What is the energy (in J atom⁻¹) required for the following process?(Take the ionization energy for the H atom in the ground state as 2.18×10^{-18} J atom⁻¹)

¶

- (1)
- 8.72×10^{-18}
- (2)
- 1.962×10^{-18}
- (3)
- 1.962×10^{-17}
- (4)
- 6.54×10^{-17}

Ans. (3)**Sol.** $\text{IE} = \text{IE}_\text{H} \times Z^2$

$$= 2.18 \times 10^{-18} \times Z^2 \text{ J/atom}$$

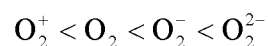
$$= 2.18 \times 10^{-18} \times (3)^2$$

$$= 1.96 \times 10^{-17} \text{ J/atom}$$

Question Id : 69112153

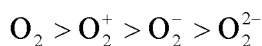
53. Given below are two statements :

Statement (I) : The correct sequence of bond lengths in the following species is :



Statement (II) : The correct sequence of number of unpaired electrons in the following species is :

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In the light of the above statements, choose the correct answer from the options given below :

¶

- (1) Both Statement I and Statement II are true
- (2) Both Statement I and Statement II are false
- (3) Statement I is true but Statement II is false
- (4) Statement I is false but Statement II is true

Ans. (3)

Sol.	Species	B.O.	Unpaired e^-
	O_2^+	2.5	1
	O_2	2.0	2
	O_2^-	1.5	1
	O_2^{2-}	1.0	0

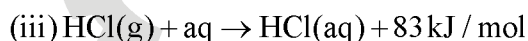
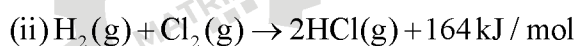
true (I) $B.O. \propto \frac{1}{B.L.}$

B.L. : $O_2^+ < O_2 < O_2^- < O_2^{2-}$

false (II) Unpaired e^- : $O_2 > O_2^+ = O_2^- > O_2^{2-}$

Question Id : 69112154

54. Consider the following data.

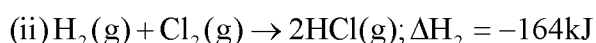
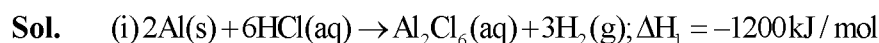


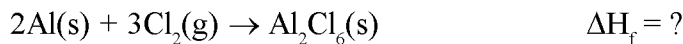
The enthalpy of formation of anhydrous solid Al_2Cl_6 is :

¶

- (1) -648 kJ mol^{-1} (2) $-1350 \text{ kJ mol}^{-1}$ (3) $-2002 \text{ kJ mol}^{-1}$ (4) $-1527 \text{ kJ mol}^{-1}$

Ans. (4)





$$\Delta H_f = (1) + 3 \times (2) + 6 \times (3) - (4)$$

$$= \Delta H_1 + 3(\Delta H_2) + 6(\Delta H_3) - \Delta H_4$$

$$= -1527 \text{ kJ/mol}$$

Question Id : 69112155

55. 19.5 g of fluoro acetic acid (molar mass 78 g mol^{-1}) is dissolved in 500 g of water at 298 K. The depression in the freezing point of water was 1°C . What is K_a of fluoro acetic acid? (For water, $K_f = 1.86 \text{ K kg mol}^{-1}$). Assume molarity and molality to have same values.

¶

(1) 10^{-6}

(2) 4×10^{-4}

(3) 3×10^{-5}

(4) 3×10^{-3}

Ans. (4)

Sol. $m = \frac{19.5}{\frac{78}{0.5}} = 0.5 \text{ mol/kg}$

$$\Delta T_f = iK_f m$$

$$1 = i \times 1.86 \times 0.5$$

$$i = 1.0753 = 1 + (2 - 1)\alpha$$

$$\alpha = 0.0753$$

$$K_a = \frac{c\alpha^2}{1 - \alpha} \approx c\alpha^2$$

$$K_a = 0.5 \times (0.0753)^2 = 3 \times 10^{-3}$$

Question Id : 69112156

56. The solubility product constants of Ag_2CrO_4 and AgBr are $32x$ and $4y$ respectively at 298 K.

The value of $\left(\frac{\text{molarity of } \text{Ag}_2\text{CrO}_4}{\text{molarity of } \text{AgBr}} \right)$ can be expressed as :

¶

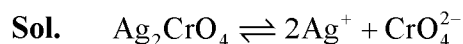
(1) $\frac{2\sqrt[3]{x}}{y}$

(2) $2\sqrt{\frac{x}{y}}$

(3) $\sqrt{\frac{x}{y}}$

(4) $\frac{\sqrt[3]{x}}{\sqrt{y}}$

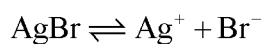
Ans. (4)



$$2s_1 \quad s_1$$

$$K_{sp} = 4s_1^3 = 32x$$

$$s_1 = \sqrt[3]{8x}$$



$$s_2 \quad s_2$$

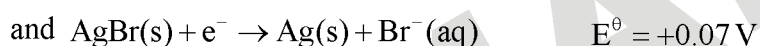
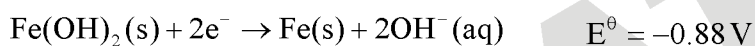
$$K_{sp} = s_2^2 = 4y$$

$$s_2 = 2\sqrt{y}$$

$$\frac{s_1}{s_2} = \frac{\sqrt[3]{8x}}{2\sqrt{y}}$$

Question Id : 69112157

57. An electrochemical cell is constructed using half cells in the direction of spontaneous change



Which of the following option is correct ?

Ⓐ



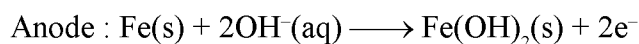
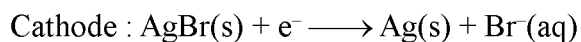
(2) $E^\theta_{\text{cell}} = -0.95 \text{ V}$

(3) Fe is reduced in the electrochemical cell

(4) E^θ_{cell} is an extensive property

Ans. (1)

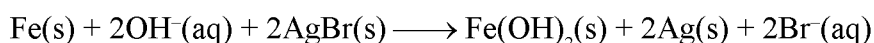
Sol. For spontaneous cell



$$E^\circ_{\text{cell}} = E^\circ_{\text{C}} - E^\circ_{\text{A}}$$

$$= 0.07 - (-0.88) = +0.95 \text{ V}$$

Cell Rxn :



E°_{cell} is intensive property

MATRIX JEE ACADEMY

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in

Question Id : 69112158

58. $t_{100\%}$ is the time required for the 100% completion of the reaction while $t_{1/2}$ is the time required for 50 % of the reaction to be completed. Which of the following option correctly represents the relation between $t_{100\%}$ and $t_{1/2}$ for zero and first order reactions respectively ?

☐

(1) $t_{100\%} = (t_{1/2})^2$ and $t_{100\%} = (t_{1/2})^{-\infty}$

(2) $t_{100\%} = 2t_{1/2}$ and $t_{100\%} = (t_{1/2})^{\infty}$

(3) $t_{100\%} = 2t_{1/2}$ and $t_{100\%} = (2t_{1/2})^2$

(4) $t_{100\%} = (t_{1/2})^{\infty}$ and $t_{100\%} = 2t_{1/2}$

Ans. (2)

Sol. Zero order : $[A]_0 - [A]_t = kt$

$$t_{100\%} = \frac{[A]_0}{k}, t_{50\%} = \frac{[A]_0}{2k}$$

$$\Rightarrow t_{100\%} = 2t_{1/2}$$

1st order : $[A]_t = [A]_0 e^{-kt}$ (1st order never completes)

$$t_{100\%} = \infty \text{ or } \left(\frac{t_{1/2}}{2} \right)^{\infty}$$

Question Id : 69112159

59. Given below are two statements:

Statement (I): The first ionisation enthalpy of the elements Na, Mg, Cl and Ar follows the order $\text{Na} > \text{Mg} > \text{Cl} > \text{Ar}$.

Statement (II) : Among Ca, Al, Fe and B, the third ionisation enthalpy is very high for Ca. In the light of the above statements, choose the correct answer from the options given below :

☐

- (1) Both Statement I and Statement II are true
 (2) Both Statement I and Statement II are false
 (3) Statement I is true but Statement II is false
 (4) Statement I is false but Statement II is true

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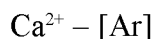
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Ans. (4)

Sol. Statement I : Incorrect



Statement II : Correct



IE₃ very high due to stable configuration

Question Id : 69112160

60. Given below are two statements:

Statement (I): Oxidising power of halogens decreases in the order $F_2 > Cl_2 > Br_2 > I_2$, which is the basis of "Layer test".

Statement (II): "Layer test" to identify Br_2 and I_2 in aqueous solution involves the oxidation of bromide or iodide into Br_2 or I_2 respectively with Cl_2 , which is a type of displacement redox reaction.

In the light of the above statements, choose the correct answer from the options given below :

☐

(1) Both Statement I and Statement II are true

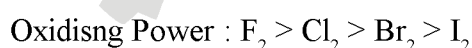
(2) Both Statement I and Statement II are false

(3) Statement I is true but Statement II is false

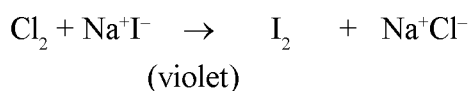
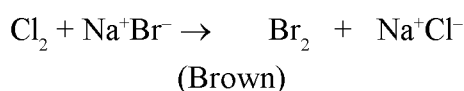
(4) Statement I is false but Statement II is true

Ans. (1)

Sol. Statement I : True



Statement II : True

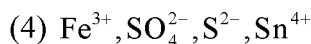
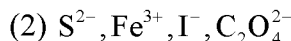
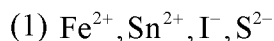


Displacement Redox reaction

Question Id : 69112161

61. Which of the following sets includes all the species that will change the orange colour of $K_2Cr_2O_7$ in acidic medium?

¶



Ans. (1)

Sol. $\text{Fe}^{3+}, \text{Sn}^{4+}, \text{SO}_4^{2-}$ these are already in their maximum oxidation state and will not react with $\text{K}_2\text{Cr}_2\text{O}_7$.

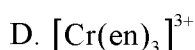
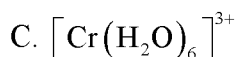
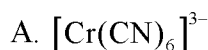
Question Id : 69112162

62. Match List - I with List - II.

List - I

Chromium (III) Complexes

(en = ethylene diamine)



List - II

$\Delta_o (\text{cm}^{-1})$

I. 15,060

II. 17,400

III. 22,300

IV. 26,600

Choose the correct answer from the options given below :

¶

(1) A-I, B-II, C-III, D-IV

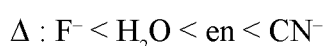
(2) A-II, B-III, C-IV, D-I

(3) A-III, B-IV, C-I, D-II

(4) A-IV, B-I, C-II, D-III

Ans. (4)

Sol. $\Delta_o \propto$ Ligand strength



Question Id : 69112163

63. Given below are two statements:

Statement (I) : 1,2,3-Trihydroxypropane can be separated from water by simple distillation.

Statement (II) : An azeotropic mixture cannot be separated by fractional distillation.

In the light of the above statements, choose the correct answer from the options given below :

¶

MATRIX JEE ACADEMY

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in

- (1) Both Statement I and Statement II are true
 (2) Both Statement I and Statement II are false
 (3) Statement I is true but Statement II is false
 (4) Statement I is false but Statement II is true

Ans. (4)

Sol. 1,2,3 trihydroxy propane (Glycerol) has very high BP (290°C) and decomposes at or below its BP.
 $\therefore$ cannot be separated by simple distillation. It is separated by distillation under reduced pressure.

69112164 Question

64. Given below are two statements:

Statement (I) : Benzyl chloride reacts faster in S_N1 mechanism than ethyl chloride.

Statement (II) : Ethyl carbocation intermediate is less stabilized by hyperconjugation than benzyl carbocation by resonance.

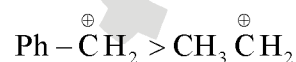
In the light of the above statements, choose the correct answer from the options given below :

☞

- (1) Both Statement I and Statement II are true
 (2) Both Statement I and Statement II are false
 (3) Statement I is true but Statement II is false
 (4) Statement I is false but Statement II is true

Ans. (1)

Sol. In S_N1 we look for stability of carbocation, rate of $S_N1 \propto$ stability of carbocation



(Resonance stabilised)

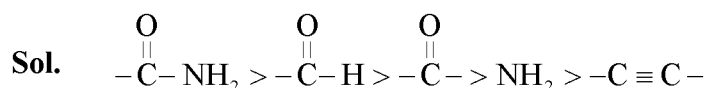
Question Id : 69112165

65. In IUPAC nomenclature, the correct order of decreasing priority of functional group is :

☞

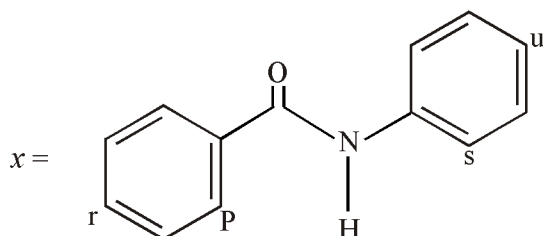
- (1) $-\text{CONH}_2$, $>\text{C}=\text{O}$, $-\text{CHO}$, $-\text{NH}_2$, $-\text{C}\equiv\text{C}-$
 (2) $-\text{CONH}_2$, $-\text{COOCH}_3$, $-\text{CHO}$, $-\text{NH}_2$, $-\text{OH}$
 (3) $-\text{CONH}_2$, $-\text{CHO}$, $>\text{C}=\text{O}$, $-\text{NH}_2$, $-\text{C}\equiv\text{C}-$
 (4) $-\text{CONH}_2$, $-\text{CHO}$, $-\text{CN}$, $-\text{NH}_2$, $-\text{C}\equiv\text{C}-$

Ans. (3)



Question Id : 69112166

66. For the given molecule, "x", the preferred site for the attack of the electrophile is :



¶

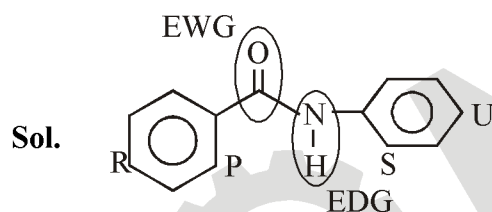
(1) Predominantly at "r"

(2) "r" and "u"

(3) "p" and "s"

(4) Predominantly at "u"

Ans. (4)



EDG increases rate of electrophilic addition

→ EDG are generally ortho-para directing & major product is predominantly formed at position (U)

Question Id : 69112167

67. Match List - I with List - II.

List - I

List - II

Mixture of Compounds

Reagent used to distinguish

A. Diethyl amine + Ethyl amine

I. Bromine water

B. Acetaldehyde + Acetone

II. $\text{CHCl}_3 + \text{KOH}, \Delta$

C. Ethanol + Phenol

III. Neutral FeCl_3

D. Benzoic acid + Cinnamic acid

IV. Ammonical silver nitrate

Choose the correct answer from the options given below :

¶

MATRIX JEE ACADEMY

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

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(1) A-IV, B-II, C-I, D-III

(2) A-IV, B-II, C-III, D-I

(3) A-II, B-IV, C-I, D-III

(4) A-II, B-IV, C-III, D-I

Ans. (D)

Sol. (A) $\text{CH}_3 - \text{CH}_2 - \text{NH} - \text{CH}_2 - \text{CH}_3$
 2° Amine

 $\text{CH}_3 - \text{CH}_2 - \text{NH}_2 \rightarrow +\text{ve } \text{CHCl}_3 + \text{KOH}, \Delta$
 1° Amine

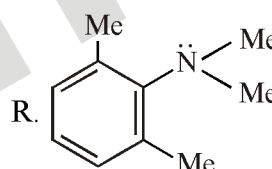
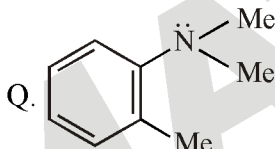
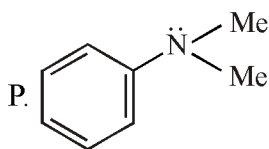
 (B) $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \text{H} \rightarrow +\text{ve}$ Tollen's test

 (C) Phenol $\rightarrow +\text{ve}$ neutral FeCl_3 test

 (D) $\text{Ph} - \text{CH} = \text{CH} - \text{COOH} \rightarrow +\text{ve}$ Bromine water test.

Question Id : 69112168

68. Consider the three aromatic molecules (P, Q and R) whose structures have been given below :


 The correct order regarding the reactivity of these compounds with $\text{Ph} - \text{N} \equiv \text{NCl}^{(-)}_{(+)}$ optimum but slightly acidic medium is :

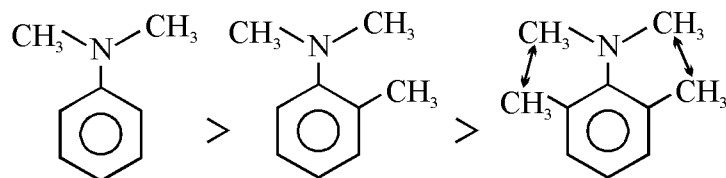
¶

 (1) $\text{P} > \text{Q} > \text{R}$

 (2) $\text{R} > \text{P} > \text{Q}$

 (3) $\text{R} > \text{Q} > \text{P}$

 (4) $\text{P} > \text{R} > \text{Q}$
Ans. (A)

Sol. Rate of electrophilic aromatic substitution $\propto \frac{\text{EDG}}{\text{EWG}}$

 Steric inhibition
of resonance

Question Id : 69112169

69. Match List - I with List - II.

List - I

Vitamin

A. Vitamin B₁

B. Vitamin B₂

C. Vitamin B₆

D. Vitamin C

List - II

Name

I. Pyridoxine

II. Ascorbic acid

III. Thiamine

IV. Riboflavin

Choose the correct answer from the options given below :

☞

(1) A-II, B-I, C-III, D-IV

(2) A-IV, B-III, C-II, D-I

(3) A-III, B-IV, C-I, D-II

(4) A-I, B-III, C-II, D-IV

Ans. (C)

Sol. B₁ → Thiamine

B₂ → Riboflavin

B₆ → Pyridoxine

C → Ascorbic acid

Question Id : 69112170

70. A salt with few drops of conc. HCl gives apple green colour in flame test. The group precipitate of the salt is dissolved in acetic acid and treated with K₂CrO₄ to give yellow precipitate. When the sodium carbonate extract of the salt solution is heated with conc. HNO₃ and ammonium molybdate, it resulted a canary yellow precipitate. The cation and anion present in the salt are respectively,

☞

(1) Ca²⁺ and SO₄²⁻ (2) Ba²⁺ and PO₄³⁻ (3) Mn²⁺ and PO₄³⁻ (4) Ba²⁺ and SO₄²⁻

Ans. (2)

Sol. Apple green = Ba²⁺

Ba²⁺ + CrO₄²⁻ → BaCrO₄ ↓

(Yellow)

PO₄³⁻ + (NH₄)₂MoO₄ + HNO₃ → (NH₄)₃PO₄ · 12MoO₃ ↓

(Canary yellow)

SECTION – B

Question Id : 69112171

71. 5.33 g of $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$, which is a 1 : 3 electrolyte, is dissolved in water and is passed through a cation exchanger. The chloride ions in the eluted solution, on treatment with AgNO_3 results in 8.61 g of AgCl . The ratio of moles of complex reacted and moles of AgCl formed is _____ $\times 10^{-2}$. (Nearest integer)

[Molar mass in g mol^{-1} Cr : 52, Ag : 108, Cl : 35.5, H : 1, O : 16]

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Ans. (33)

Sol. $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3 + \text{AgNO}_3 \rightarrow 3\text{AgCl} \downarrow$
excess

$$\text{moles of } \text{CrCl}_3 \cdot 6\text{H}_2\text{O} = \frac{5.33}{266.5} = 0.02$$

$$\text{moles of } \text{AgCl} = \frac{8.61}{143.5} = 0.06$$

$$\text{Ratio} = \frac{0.02}{0.06} = \frac{1}{3} \approx 0.3333$$

$$= 33.33 \times 10^{-2} \approx 33 \times 10^{-2}$$

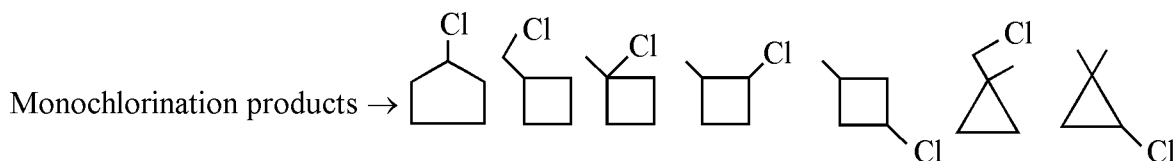
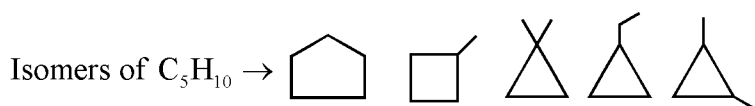
Question Id : 69112172

72. Consider the isomers of hydrocarbon with molecular formula C_5H_{10} . These isomers do not decolourise KMnO_4 solution. These isomers are subjected to chlorination with chlorine in presence of light to give monochloro compounds. The total number of monochloro compounds (structural isomers only) formed is _____.

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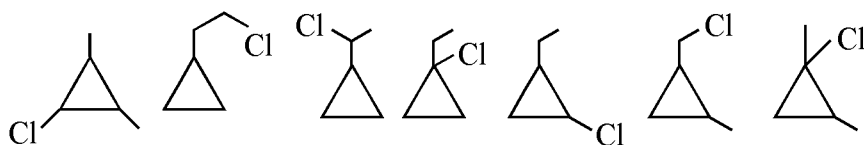
Ans. (14)

Sol. $\text{C}_5\text{H}_{10} \rightarrow$ do not decolorise KMnO_4 which means they are cyclic compound.

 $\text{DU} = 1$

MATRIX JEE ACADEMY

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in

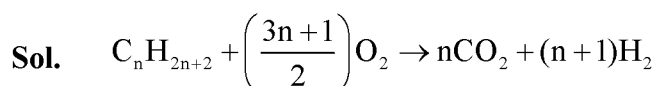


Question Id : 69112173

73. One mole of an alkane (x) requires 8 mole oxygen for complete combustion. Sum of number of carbon and hydrogen atoms in the alkane (x) _____.

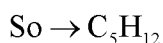
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Ans. (17)



$$\frac{3n+1}{2} = 8$$

$$n = 5$$



$$\text{Total} = 5 + 12 = 17$$

Question Id : 69112174

74. For reaction $A \rightarrow P$, rate constant $k = 1.5 \times 10^3 s^{-1}$ at $27^\circ C$

If activation energy for the above reaction is $60 kJ mol^{-1}$, then the temperature (in $^\circ C$) at which rate constant, $k = 4.5 \times 10^3 s^{-1}$ is _____. (Nearest integer)

Given : $\log 2 = 0.30, \log 3 = 0.48, R = 8.3 J K^{-1} mol^{-1}, \ln 10 = 2.3$

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Ans. (41)

Sol. $E_a = 60000 J mol^{-1}$

$$K_1 = 1.5 \times 10^3 s^{-1}$$

$$T_1 = 300 K$$

$$K_2 = 4.5 \times 10^3 s^{-1}$$

$$T_2 = ?$$

$$\log\left(\frac{K_2}{K_1}\right) = \frac{E_a}{2.303R} \left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$T_2 = 314.43 - 273.15$$

$$= 41.28^\circ C \approx 41$$

MATRIX JEE ACADEMY

Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in



Question Id : 69112175

75. At the transition temperature T , $A \rightleftharpoons B$ and $\Delta G^\circ = 105 - 35 \log T$ where A and B are two states of substance X. The transition temperature in $^\circ\text{C}$ when pressure is 1 atm is _____.

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Ans. (727)**Sol.** At the transition Temp (T)

$$\Delta G^\circ = 0$$

$$105 - 35 \log T = 0$$

$$T = 1000 \text{ K} = 727^\circ\text{C}$$

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