

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

**CHEMISTRY**



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

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**JEE MAIN APRIL 2026 | 06 APRIL SHIFT-1**
**SECTION - A**

Question ID : 6952782186

51. An oxide of iron contains 69.9% iron, its empirical formula, is:

 (Given : Molar mass of Fe and O are 56 and 16 g mol<sup>-1</sup> respectively.)

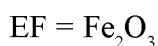
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- (1) FeO                      (2) Fe
- <sub>2</sub>
- O
- <sub>3</sub>
- (3) Fe
- <sub>3</sub>
- O
- <sub>4</sub>
- (4) FeO
- <sub>3</sub>

**Ans.** (2)

**Sol.**

Element	%	Atomic weight	No. of moles	Atomic Ratio	Simplest Ratio
Fe	69.9	56	$\frac{69.9}{56} = 1.25$	$\frac{1.25}{1.25} = 1$	2
O	30.1	16	$\frac{30.1}{16} = 1.88$	$\frac{1.88}{1.25} = 1.5$	3



Question ID : 6952782187

 52. If shortest wavelength of hydrogen atom in Lyman series is x, then longest wavelength in Balmer series of He<sup>+</sup> is:

प

- (1)
- $\frac{9x}{5}$
- (2)
- $\frac{36x}{5}$
- (3)
- $\frac{x}{4}$
- (4)
- $\frac{5x}{9}$

**Ans.** (1)

**Sol.** 
$$\frac{1}{\lambda} = R_H Z^2 \left( \frac{1}{n_1^2} - \frac{1}{n_2^2} \right)$$

$$\frac{1}{x} = R_H (1)^2 \left[ \frac{1}{12} - \frac{1}{\alpha^2} \right] \Rightarrow R_H = \frac{1}{x}$$

$$\frac{1}{\lambda} = \frac{1}{x} (2)^2 \left[ \frac{1}{2^2} - \frac{1}{3^2} \right]$$

$$\Rightarrow \lambda = \frac{9x}{5}$$

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Question ID : 6952782188

53. Match the LIST-I with LIST-II

List-I Orbital		List-II Radial nodes and nodal plane	
A.	2s	I.	1 Radial node + two nodal planes
B.	3s	II.	1 Radial node + one nodal plane
C.	3p	III.	2 Radial node + No nodal plane
D.	4p	IV.	1 Radial node + No nodal plane

Choose the correct answer from the options given below:

¶

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

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

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

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

**Ans.** (4)

<b>Sol.</b>	Orbital	R.N.	Nodal Plane
	2s	1	0
	3s	2	0
	3p	1	1
	4d	1	2

Question ID : 6952782189

54. The pairs among

$A = [\text{SO}_3^{2-}, \text{CO}_3^{2-}]$ ,  $B = [\text{O}_2^{2-}, \text{F}_2]$ ,  $C = [\text{CN}^-, \text{CO}]$ ,  $D = [\text{NH}_3, \text{H}_3\text{O}^+]$  and  $E = [\text{MnO}_4^{2-}, \text{CrO}_4^{2-}]$  that do not have similar Lewis dot structure are

¶

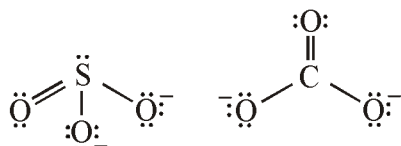
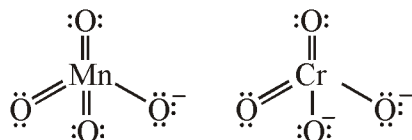
(1) A, B and E

(2) A and E

(3) B, C and D

(4) C and D

**Ans.** (2)

**Sol.** Pair "A"  $\Rightarrow$ Pair "E"  $\Rightarrow$ 

Question ID : 6952782190

55. Arrange the following isothermal processes in order of the magnitude of the work (p-V) involved between states 1 and 2 .

- A. Expansion in single stage  $w_A$   
 B. Expansion in multi stages  $w_B$   
 C. Compression in single stage  $w_C$   
 D. Compression in multi stages  $w_D$

Choose the correct option.

¶

(1)  $|w_B| > |w_A| > |w_C| > |w_D|$

(2)  $|w_C| > |w_D| > |w_A| > |w_B|$

(3)  $|w_C| > |w_D| > |w_B| > |w_A|$

(4)  $|w_B| > |w_A| > |w_D| > |w_C|$

**Ans.** (3)

**Sol.** During expansion maximum work is done by the system when process is reversible and minimum in irreversible single step

During compression work is done on the system is single step irreversible and minimum in reversible process.

$|w_C| > |w_D| > |w_B| > |w_A|$

Question ID : 6952782191

56. When 0.25 moles of a non-volatile, non-ionizable solute was dissolved in 1 mole of a solvent the vapor pressure of solution was x% of vapor pressure of pure solvent. What is x%?

¶

(1) 50%

(2) 60%

(3) 70%

(4) 80%

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**Ans.** (4)

$$\text{Sol. } \frac{P_A^0 - P_S}{P_A^0} = \frac{0.25}{1.25} = 0.2$$

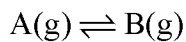
$$1 - \frac{P_S}{P_A^0} = 0.2$$

$$\Rightarrow \frac{P_S}{P_A^0} = 0.8$$

$$\Rightarrow \frac{P_S}{P_A^0} \times 100 = 0.8 \times 100 = 80\%$$

Question ID : 6952782192

57. One mole each of He and A(g) are taken in a 10 L closed flask and heated to 400 K to establish the following equilibrium.



$K_c$  for this reaction at 400 K is 4.0. The partial pressures (in atm) of He and B(g) are respectively (at equilibrium) (Assume He, A(g) and B(g) behave as ideal gases)

(Given :  $R=0.082 \text{ L atmK}^{-1}\text{mol}^{-1}$ )

¶

(1) 3.28, 2.624

(2) 2.624, 3.28

(3) 3.28, 0.656

(4) 0.656, 6.56

**Ans.** (1)

$$t = 0$$

1

$$t = t_{eq}$$

1-x

x

$$\sum n_{eq} = 1 + n_{He} = 2$$

= 0.2

= 0.8

$$K_c = \frac{x}{1 - \frac{x}{10}} = 4$$

$$\Rightarrow x = \frac{4}{5} = 0.8$$

$$P_{He} = \frac{nRT}{V} = \frac{1 \times 0.082 \times 400}{10} = 3.28 \text{ atm}$$

$$P_B = \frac{nRT}{V} = \frac{0.8 \times 0.082 \times 400}{10} = 2.624 \text{ atm}$$

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Question ID : 6952782193

58. Consider the following data

Electrolyte	$\Lambda_m^\circ$ ( $\text{Scm}^2 \text{mol}^{-1}$ )
$\text{BaCl}_2$	$x_1$
$\text{H}_2\text{SO}_4$	$x_2$
$\text{HCl}$	$x_3$

$\text{BaSO}_4$  is sparingly soluble in water. If the conductivity of the saturated  $\text{BaSO}_4$  solution is  $x \text{ Scm}^{-1}$  then the solubility product of  $\text{BaSO}_4$  can be given as

(Here  $\Lambda_m = \alpha \Lambda_m^\circ$ )

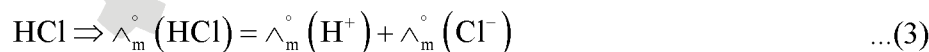
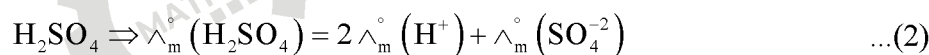
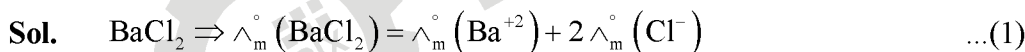
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(1)  $\frac{10^6 x^2}{\alpha^2 (x_1 + x_2 - 2x_3)^2}$

(2)  $\frac{x^2}{(x_1 + x_2 - 2x_3)^2}$

(3)  $\frac{\alpha^2 (x_1 + x_2 - 2x_3)^2}{10^6 x^2}$

(4)  $\frac{x^2}{(x_1 + x_2 + 2x_3)^2}$

**Ans.** (1)

[equation (1) + (2)] - 2[equation (3)]

$\Lambda_m^\circ (\text{BaSO}_4) = x_1 + x_2 - 2x_3$

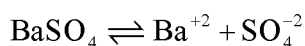
$\Lambda_m = \alpha \Lambda_m^\circ$

$\Lambda_m^\circ (\text{BaSO}_4) = \alpha (x_1 + x_2 - 2x_3)$

$\Lambda_m = K \times \frac{1000}{S}$

$\alpha (x_1 + x_2 - 2x_3) = x \times \frac{1000}{S}$

$$\Rightarrow S = \frac{1000x}{(x_1 + x_2 - 2x_3)\alpha}$$



$$K_{sp} = S^2 = \left( \frac{10^3 x}{(x_1 + x_2 - 2x_3)\alpha} \right)^2 = \frac{10^6 x^2}{\alpha^2 (x_1 + x_2 - 2x_3)^2}$$

Question ID : 6952782194

59. Given below are two statements:

**Statement I:** Aluminium is more electropositive than thallium as the standard electrode potential value of  $E^\circ \text{Al}^{3+} / \text{Al}$  is negative and  $E^\circ \text{Tl}^{3+} / \text{Tl}$  is positive.

**Statement II:** The sum of first three ionization enthalpies of boron is very high when compared to that of aluminium. Due to this reason boron forms covalent compounds only and aluminium forms  $\text{Al}^{3+}$  ion.

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.** S-I : -ve value of SRP in case of Al and +ve value of SRP in case of Ti indicates that Al is more electropositive than Ti.

S-II : Due to small size & high IE value Boron always form covalent compounds.

Question ID : 6952782195

60. The correct statements among the following are.

- A. Basic vanadium oxide is used in the manufacture of  $\text{H}_2\text{SO}_4$ .
- B. The spin-only magnetic moment value of the transition metal halide employed in Ziegler-Natta polymerization is 2.84 BM.
- C. The p-block metal compound employed in Ziegler-Natta polymerization has the metal in +3 oxidation state.
- D. The number of electrons present in the outer most 'd' orbital of metal halide employed in Wacker process is 8.

Choose the correct answer from the options given below

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¶

- (1) A and B Only  
 (2) A, C and D Only  
 (3) C and D Only  
 (4) B, C and D Only

**Ans.** (3)

- Sol.** (A) Amphoteric oxide,  $V_2O_5$  is used in manufacture of  $H_2SO_4$ .  
 (B)  $TiCl_4 \Rightarrow \mu = 0$   
 (C)  $AlCl_3 \Rightarrow Al^{+3}$   
 (D)  $PdCl_2 \Rightarrow Pd^{+2} \Rightarrow [Kr]4d^8$

Question ID : 6952782196

61. Match the List I and List II

List-I Electronic configuration of tetrahedral metal ion		List-II Crystal Field Stabilization Energy ( $\Delta_t$ )	
A.	$d^2$	I.	-0.6
B.	$d^4$	II.	-0.8
C.	$d^6$	III.	-1.2
D.	$d^8$	IV.	-0.4

Choose the correct answer from the options given below:

¶

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

**Ans.** (3)

**Sol.**  $C.F.S.E = -\frac{3}{5}\Delta_t \times n_e + \frac{2}{5}\Delta_t \times n_t$

EC (Tetrahedral)      CFSE

 $d^2$                        $-1.2 \Delta_t$ 
 $d^4$                        $-0.4 \Delta_t$ 
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$$d^6 \quad -0.6 \Delta_t$$

$$d^8 \quad -0.8 \Delta_t$$

Question ID : 6952782197

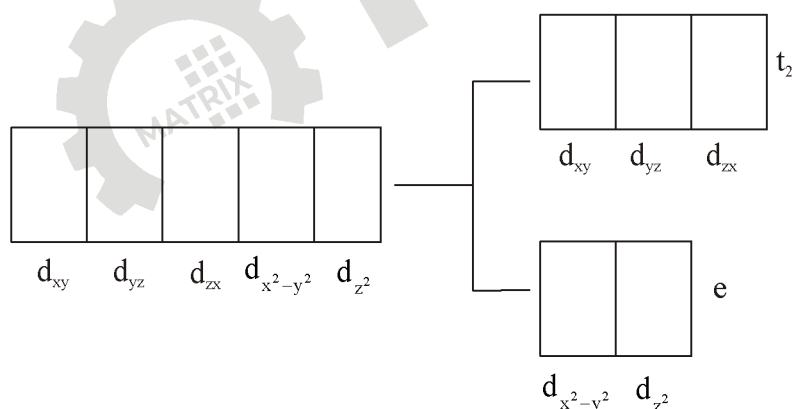
62. Which of the following are true about the energy of the given d-orbitals of a tetrahedral complex?

- A.  $d_{xy} = d_{xz} > d_{x^2-y^2}$
- B.  $d_{xy} = d_{yz} > d_z^2$
- C.  $d_x^2 - y^2 > d_z^2 > d_{xz}$
- D.  $d_{x^2-y^2} = d_z^2 < d_{xz}$

Choose the correct answer from the given below:

☞

- (1) A, B and D only
- (2) A and B only
- (3) B and D only
- (4) B, C and D only

**Ans.** (1)**Sol.** In tetrahedral complex, ligands approach metal ions in between the axis. i.e. orbitals faces more repulsion whose lobes are in between the axis.

Question ID : 6952782198

63.  $R_f$  value for 2-methylpropene in a solvent system (Ethyl acetate + ether) is 0.42 .  
 2-methylpropene is treated with dilute  $H_2SO_4$  to give major organic product (X).  
 $R_f$  value for (X) in the same solvent system under identical condition will be:

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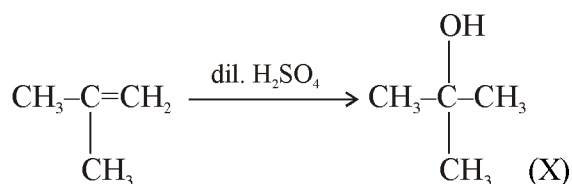


(1) 0.42

(2) 0.82

(3) 0.62

(4) 0.12

**Ans.** (4)**Sol.** Since  $R_f$  value = 0.42

Product X interact more strongly with stationary phase so travel less distance and hence have lower  $R_f$  than 0.42.

Question ID : 6952782199

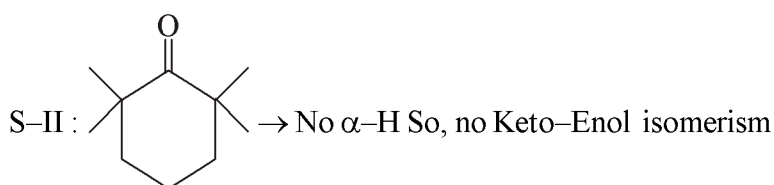
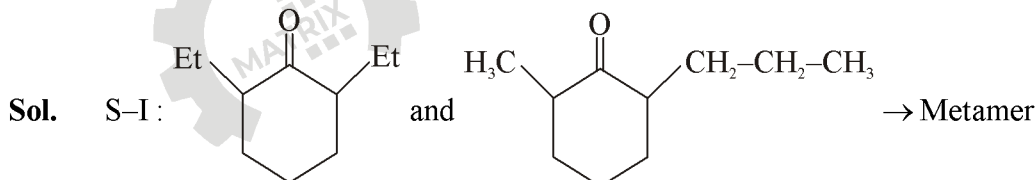
64. Given below are two statements:

**Statement I:** 2,6-diethylcyclohexanone and 6-methyl-2-n-propylcyclohexanone are metamers.**Statement II:** 2,2,6,6-tetramethylcyclohexanone exhibits keto-enol tautomerism.

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)

Question ID : 6952782200

65. Given below are two statements:

**Statement I:** Methane can be prepared by decarboxylation of sodium ethanoate, Kolbe's electrolysis of sodium acetate and reaction of  $\text{CH}_3\text{MgBr}$  with water.**Statement II:** Methane cannot be prepared from unsaturated hydrocarbons and by Wurtz reaction.**MATRIX JEE ACADEMY**

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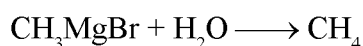
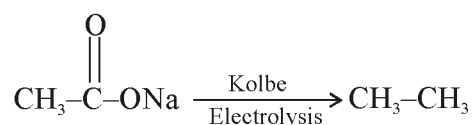
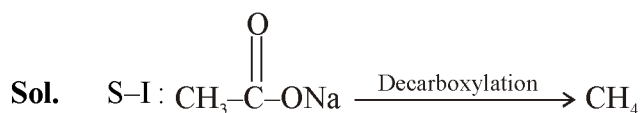
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In the light of the above statements, choose the correct answer from the options given below

¶

- (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.** (4)



S-II : Since Wurtz reaction is coupling reaction. So, methane can't be prepared by Wurtz reaction.

Question ID : 6952782201

66. Given below are two statements:

**Statement I:** 3-phenylpropene reacts with HBr and gives secondary alkyl bromide having a chiral carbon atom as the major product.

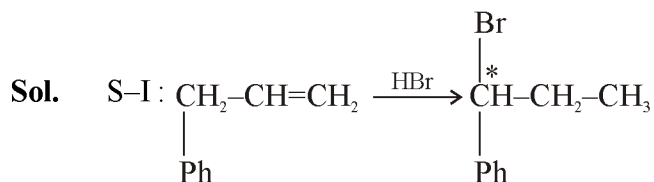
**Statement II:** Aryl chlorides and aryl cyanides can be prepared by Sandmeyer reaction as well as Gattermann reaction.

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.** (3)



(2°)

S-II : Aryl cyanides can't be prepared by Gattermann reaction.

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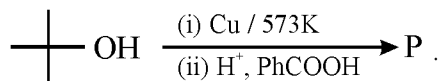
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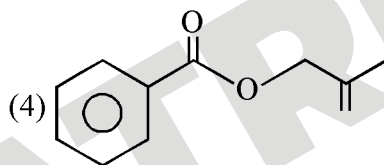
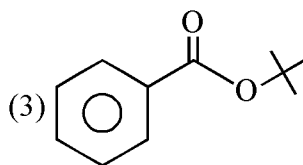
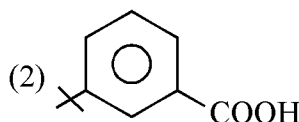
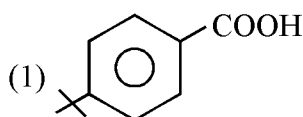
Question ID : 6952782202

67. Consider the following sequence of reactions

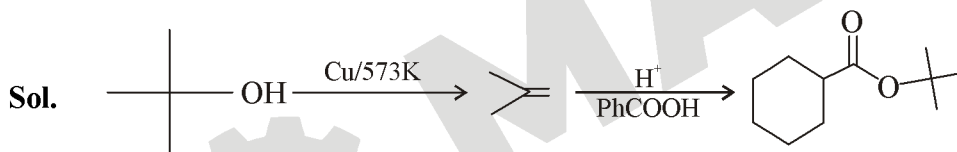


The major product P is:

¶



Ans. (3)



Question ID : 6952782203

68. Arrange the following compounds according to increasing order of boiling points.

n - C<sub>4</sub>H<sub>9</sub>OH(A), n - C<sub>4</sub>H<sub>9</sub>NH<sub>2</sub>(B), n - C<sub>4</sub>H<sub>10</sub>(C) and C<sub>2</sub>H<sub>5</sub>NHC<sub>2</sub>H<sub>5</sub>(D)

¶

(1) C &lt; B &lt; A &lt; D    (2) D &lt; C &lt; B &lt; A    (3) C &lt; D &lt; B &lt; A    (4) D &lt; B &lt; A &lt; C

Ans. (3)

Sol. BP ∝ Intermolecular force of attraction

BP ∝ No of H-Bonding

B.P. : n-C<sub>4</sub>H<sub>10</sub> < Et<sub>2</sub>NH < n-C<sub>4</sub>H<sub>9</sub>NH<sub>2</sub> < n-C<sub>4</sub>H<sub>9</sub>OH  
 (C)            (D)            (B)            (A)

Question ID : 6952782204

69. Match the List I with List II

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List-I Deficiency Disease		List-II Vitamin	
A.	Scurvy	I.	Pyridoxine
B.	Convulsions	II.	Vitamin A
C.	Cheilosis	III.	Ascorbic Acid
D.	Xerophthalmia	IV.	Riboflavin

Choose the correct answer from the options given below:

¶

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

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

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

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

**Ans.** (3)

**Sol.** Vitamin – A  $\Rightarrow$  Xerophthalmia

Vitamin – C (Ascorbic Acid)  $\Rightarrow$  Scurvy

Vitamin – B<sub>2</sub> (Riboflavin)  $\Rightarrow$  Cheilosis

Vitamin – B<sub>6</sub> (Pyridoxine)  $\Rightarrow$  Convulsions

Question ID : 6952782205

70. Match the List I with List II

List-I Amino acid		List-II Positive reaction/Test for functional group present in side chain of amino acid	
A.	Glutamine	I.	Hinsberg's test
B.	Lysine	II.	Neutral FeCl <sub>3</sub> test
C.	Tyrosine	III.	Ceric ammonium nitrate test
D.	Serine	IV.	Hoffman bromamide degradation

Choose the correct answer from the options given below:

¶

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

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

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

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

**Ans.** (2)

**Sol.** (A) Glutamine (1° amide)  $\rightarrow$  Hoffmann Bromamide Degradation

(B) Lysine (1° amine)  $\rightarrow$  Hinsberg's Test

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- (C) Tyrosine (Phenolic OH) → Neutral  $\text{FeCl}_3$  Test  
 (D) Serive (Alcoholic OH) → Ceric Ammonium nitrate Test

**SECTION - B**

Question ID : 6952782206

71. First and second ionization enthalpies of lithium are  $520 \text{ kJ mol}^{-1}$  and  $7297 \text{ kJ mol}^{-1}$  respectively. Energy required to convert  $3.5 \text{ mg}$  lithium (g) into  $\text{Li}^{2+}(\text{g})$  [ $\text{Li}(\text{g})\text{Li}^{2+}(\text{g})$ ] is \_\_\_\_\_  $\text{kJ mol}^{-1}$ . (nearest integer)

[Molar mass of  $\text{Li} = 7 \text{ g mol}^{-1}$ ]

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**Ans.** (4)

**Sol.**  $n_{\text{Li}} = \frac{3.5 \times 10^{-3}}{7} = 5 \times 10^{-4} \text{ mol}$

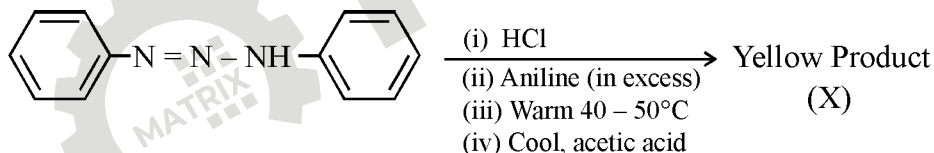


$\text{IE} = \text{IE}_1 + \text{IE}_2 = 7817 \text{ kJ mol}^{-1}$

So, energy =  $7817 \times 5 \times 10^{-4} = 3.908 \text{ kJ}$

Question ID : 6952782207

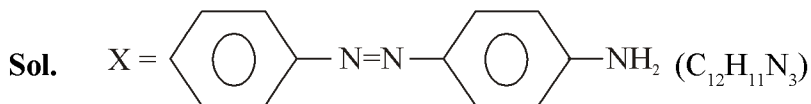
72. Consider the following sequence of reactions.



The percentage of nitrogen in the yellow product (X) formed is (Nearest Integer)

(Given Molar mass in  $\text{gmol}^{-1}$  H : 1, C : 12, N : 14)

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**Ans.** (21)

p-Aminoazobanzene

$$\%N = \frac{14 \times 3}{197} \times 100 = 21.3\%$$

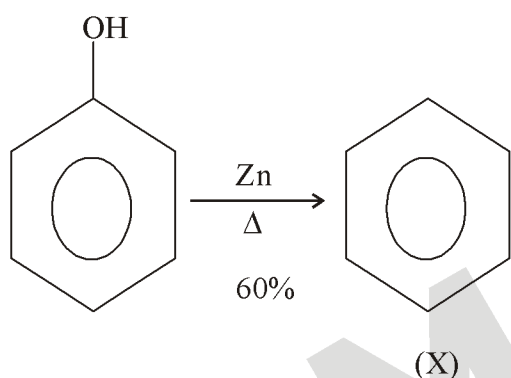
Question ID : 6952782208

73. 4.7 g of phenol is heated with Zn to give product X. If this reaction goes to 60% completion then the number of moles of compound X formed will be \_\_\_\_\_  $\times 10^{-2}$ . (Nearest Integer)

(Given molar mass in  $\text{g mol}^{-1}$ : H: 1, C: 12, O: 16)

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Ans. (3)



Sol.

$$\frac{4.7}{94} = 0.05$$

$$0.05 \times \frac{60}{100}$$

$$n_x = 0.05 \times \frac{60}{100} = 0.03 \text{ moles} = 3 \times 10^{-2} \text{ moles}$$

Question ID : 6952782209

74. Sucrose hydrolyses in acidic medium into glucose and fructose by first order rate law with  $t_{1/2} = 3$  hour. The percentage of sucrose remaining after 6 hours is \_\_\_\_\_. (Nearest integer)

(Given :  $\log 2 = 0.3010$  and  $\log 3 = 0.4771$ )

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Ans. (25)

Sol. No. of Half lives =  $\frac{6}{3} = 2$



$$\text{Amount of substance remain after 2 half lives} = \frac{[A]_0}{2^n} = \frac{[A]_0}{2^2} = \frac{[A]_0}{4}$$

$$\text{i.e. \% remaining} = \frac{[A]_0}{[A]_0} \times 100 = 25\%$$

Question ID : 6952782210

75. Consider the reaction  $X \rightleftharpoons Y$  at 300 K. If  $\Delta H^\ominus$  and  $K$  are  $28.40 \text{ kJ mol}^{-1}$  and  $1.8 \times 10^{-7}$  at the same temperature, then the magnitude of  $\Delta S^\ominus$  for the reaction in  $\text{JK}^{-1} \text{ mol}^{-1}$  is \_\_\_\_\_. (Nearest integer)

(Given :  $R = 8.3 \text{ JK}^{-1} \text{ mol}^{-1}$ ,  $\ln 10 = 2.3$ ,  $\log 3 = 0.48$ ,  $\log 2 = 0.30$ )

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**Ans.** (34)

**Sol.**  $X \rightleftharpoons Y$

$$\Delta G^\ominus = -RT \ln k$$

$$= -8.3 \times 300 \ln(1.8 \times 10^{-7})$$

$$= -8.3 \times 300 (-15.5)$$

$$= 38595 \text{ J}$$

$$\Delta G^\ominus = \Delta H^\ominus - T\Delta S^\ominus$$

$$\Delta S^\ominus = \frac{\Delta H^\ominus - \Delta G^\ominus}{T}$$

$$= \frac{28400 - 38595}{300}$$

$$= \frac{-10195}{300} = -34 \text{ J K}^{-1} \text{ mol}^{-1}$$