

JEE Main April 2026
Question Paper With Text Solution
08 April | Shift -2

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 | 8 APRIL SHIFT-2****SECTION – A**

Question Id : 691121576

51. Match List - I with List - II.

List - I

Mass of substance

A. 1.8 mg water

B. 9.8 mg sulphuric acid

C. 1.8 mg carbon

D. 5.85 mg salt NaCl

List - II

Number of atoms

I. $2 \times 10^{-4} \times N_A$ II. $1.5 \times 10^{-4} \times N_A$ III. $3 \times 10^{-4} \times N_A$ IV. $7 \times 10^{-4} \times N_A$

Choose the correct answer from the options given below :

¶

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

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

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

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

Ans. (3)**Sol.** A. 1.8 mg water $= \frac{1.8 \times 10^{-3}}{18}$ moles of water

$$= 10^{-4} \text{ moles of water}$$

$$= 10^{-4} \times N_A \times 3 \text{ atoms}$$

B. 9.8 mg sulphuric acid $= \frac{9.8 \times 10^{-3}}{98}$ moles of H_2SO_4

$$= 10^{-4} \text{ moles of } \text{H}_2\text{SO}_4$$

$$= 7 \times 10^{-4} N_A \text{ atoms}$$

C. 1.8 mg of carbon $= \frac{1.8 \times 10^{-3}}{12}$ moles $\frac{3 \times 10^{-4}}{2}$ moles

$$= 1.5 \times 10^{-4} N_A \text{ atoms}$$

D. 5.85 mg of NaCl $= \frac{5.85 \times 10^{-3}}{58.5} = 10^{-4}$ moles of NaCl

$$= 2 \times 10^{-4} N_A \text{ atoms.}$$

Question Id : 691121577



52. Given below are two statements :

Given : Molar mass of C, H, O, Cl are 12, 1, 16 and 35.5 g mol⁻¹, respectively

Statement I: In 30 % (w/w) solution of methanol in CCl₄ (at T K), the mole fraction of CCl₄ is equal to 0.33 .

Statement II: Mixture of methanol and CCl₄ shows positive deviation from Raoult's law.

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 30% w/w CH₃OH in CCl₄
30 g CH₃OH in 70 g of CCl₄

$$\text{moles of CH}_3\text{OH} = \frac{30}{32} \text{ \& moles of CCl}_4 = \frac{70}{154}$$

$$\text{moles fraction of CCl}_4 = \frac{\frac{70}{154}}{\frac{30}{32} + \frac{70}{154}} \approx 0.33$$

Statement -II CH₃OH (polar) and CCl₄ (non polar) is mixture of positive deviation

Question Id : 691121578

53. Bromine trifluoride autoionizes to form BrF₂[⊕] and BrF₄[⊖]. The shapes of the cation and anion are respectively _____, and _____.

¶

- (1) bent, square planar
- (2) linear, square planar
- (3) bent, see-saw
- (4) linear, tetrahedral

Ans. (1)

Sol. 2BrF₃ → BrF₂⁺ + BrF₄⁻

$$\text{steric number of Br in cation} = \frac{7 + 2 - 1}{2} = 4$$



(2 BP & 2 lp so bent shape)

$$\text{steric number of Br in anion} = \frac{7+4+1}{2} = 6$$

(4 BP + 2 lp) so square planar

Question Id : 691121579

54. Which of the following statements are not correct?

A. For water, magnitude of K_b is more than the magnitude of K_f .

B. The elevation in boiling point of water when a non-volatile solute is added to it is larger in magnitude than its depression in freezing point.

C. Osmotic pressure measurement is preferred over any other colligative property to determine molar mass of proteins and polymers.

D. The dimerised form of benzoic acid in benzene is $\text{C}_6\text{H}_5-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \cdots \cdots \text{O}=\overset{\text{O}}{\parallel}{\text{C}}-\text{C}_6\text{H}_5$

Choose the correct answer from the options given below :

¶

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

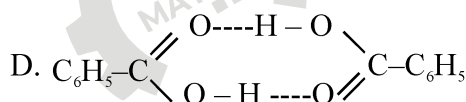
Ans. (3)

Sol. A. $(K_b)_{\text{H}_2\text{O}} = 0.52$ $(K_f)_{\text{H}_2\text{O}} = 1.86$

B. $\Delta T_b = i K_b m$ $\Delta T_f = i K_f m$

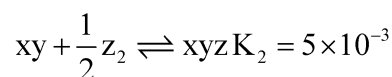
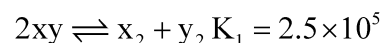
if we keep same solute & same molality then $(\Delta T_f > \Delta T_b)$

C. Fact



Question Id : 691121580

55. Consider the following reactions in which all the reactants and products are present in gaseous state



The value of K_3 for the equilibrium $\frac{1}{2} x_2 + \frac{1}{2} y_2 + \frac{1}{2} z_2 \rightleftharpoons xyz$ is :

¶



(1) 2.5×10^{-3}

(2) 2.5×10^3

(3) 1.0×10^{-5}

(4) 5×10^{-3}

Ans. (3)

Sol. $2xy \rightleftharpoons x_2 + y_2 \quad K_1 = 2.5 \times 10^5$

$$xy + \frac{1}{2}z_2 \rightleftharpoons xyz \quad K_2 = 5 \times 10^{-3}$$

$$\frac{1}{2}x_2 + \frac{1}{2}y_2 + \frac{1}{2}z_2 \rightleftharpoons xyz$$

$$K_{eq} = \frac{1}{(K_1)^2} \times K_2$$

$$= \frac{1}{5 \times 10^2} \times 5 \times 10^{-3} = 10^{-5}$$

Question Id : 691121581

56. Given at 298 K : $E_{Fe^{2+}/Fe}^\ominus = X$ Volt

$E_{Fe^{3+}/Fe}^\ominus = Y$ Volt

The $E_{Fe^{3+}/Fe^{2+}}^\ominus$ in Volt at 298 K is given by :

¶

(1) $2X - 3Y$

(2) $3Y - 2X$

(3) $3Y + 2X$

(4) $Y + X$

Ans. (2)

Sol. $E_{Fe^{2+}/Fe}^\ominus = X$ $E_{Fe^{3+}/Fe}^\ominus = Y$

$\Delta G_1^\ominus = -2Fx$

$\Delta G_2^\ominus = -3Fy$

$E_{Fe^{3+}/Fe^{2+}}^\ominus = ?$

$\Delta G_3^\ominus = \Delta G_2^\ominus - \Delta G_1^\ominus$

$-FE^\ominus = -3Fy + 2Fx$

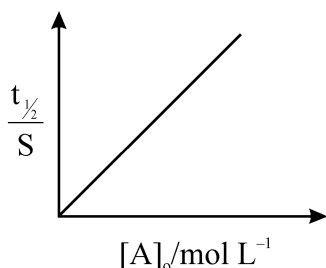
$E^\ominus = 3y - 2x$

Question Id : 691121582

57. Given below are two statements :

$R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$ and $1 \text{ cal} = 4.2 \text{ J}$

Statement I: When $E_a = 12.6 \text{ kcal/mol}$ the room temperature rate constant is doubled by a 10°C increase in temperature (298 K to 308 K)Statement II : For a first order reactions $A \rightarrow B$,



Here $[A]_0$ is the initial concentration of A and $t_{1/2}$ is half life of 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

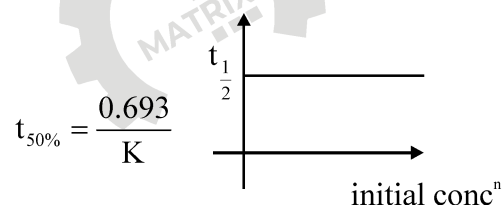
Ans. (2)

Sol. Statement -I $K = Ae^{-E_a/RT}$

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

so if we increase temperature from 293 to 307 K then $K_2 \neq 2K_1$

Statement -II for first order reaction



Question Id : 691121583

58. List - I

Electronic configuration
of neutral atom (where $n = 2$)

- A. ns^2
- B. ns^2np^1
- C. ns^2np^3
- D. ns^2np^6

List - II

1st Ionization Energy (kJ mol^{-1})

- I. 2080
- II. 899
- III. 800
- IV. 1402

Choose the correct answer from the options given below :

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

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



¶

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

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

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

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

Ans. (1)**Sol.** A. ns^2 (alkaline earthmetal)B. ns^2np^1 (13th group)C. ns^2np^3 (15th group, half filled)D. ns^2np^6 (18th group, noble gases)

Question Id : 691121584

59. Find the correct statements related to group 15 hydrides.

A. Reducing nature increases from NH_3 to BiH_3 .B. Tendency to donate lone pair of electrons decreases from NH_3 to BiH_3 .C. The stability of hydrides decreases from NH_3 to BiH_3 .D. HEH bond angle decreases from NH_3 to SbH_3 Elements of group 15)

Choose the correct answer from the options given below :

¶

(1) A and B only

(2) B and C only

(3) A, B, C and D

(4) A, C and D only

Ans. (3)**Sol.** A. Reducing nature $BiH_3 > SbH_3 > AsH_3 > PH_3 > NH_3$.B. Tendency to donate lone pair $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$

C. Stability decrease down the group of hydrides

D. Bond angle decreases down the group

Question Id : 691121585

60. Given below are two statements :

Statement I : The number of pairs among $[Ti^{4+}, V^{2+}]$, $[V^{2+}, Mn^{2+}]$, $[Mn^{2+}, Fe^{3+}]$ and $[V^{2+}, Cr^{2+}]$ in which both ions are coloured is 3.Statement II : The number of pairs among $[La^{3+}, Yb^{2+}]$, $[Lu^{3+}, Ce^{4+}]$ and $[Ac^{3+}, Lr^{3+}]$ ions in which both are diamagnetic is 3 .

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

¶

(1) Both Statement I and Statement II are correct

(2) Both Statement I and Statement II are incorrect

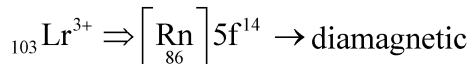
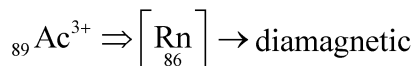
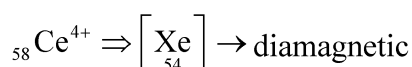
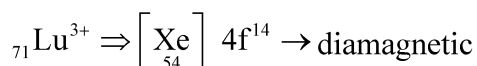
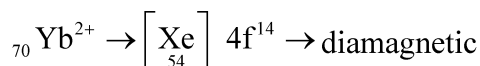
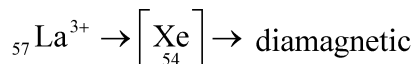


(3) Statement I is correct but Statement II is incorrect

(4) Statement I is incorrect but Statement II is correct

Ans. (4)

Sol. $\text{Ti}^{4+} \rightarrow$ colourless $\text{Mn}^{2+} \rightarrow$ pale pink (almost colourless)



Question Id : 691121586

61. Given below are two statements for catalytic properties of transition metals.

Statement I: First row transition metals which act as catalyst utilise their 3d electrons only for formation of bonds between reactant molecules and atoms on the surface of catalyst.

Statement II: There is increase in the concentration of reactants on the surface of catalyst which strengthens the bonds in reacting molecules.

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

¶

(1) Both Statement I and Statement II are correct

(2) Both Statement I and Statement II are incorrect

(3) Statement I is correct but Statement II is incorrect

(4) Statement I is incorrect but Statement II is correct

Ans. (4)

Sol. Ni as catalyst provides surface for reactants & use 3d & 4s orbitals for formation of bonds between reactant molecules and allow reactants to make bonds.

Question Id : 691121587

62. Given below are two statements :

Statement I: Vapours of the liquid with higher boiling point condense before vapours of the liquid with lower boiling points in fractional distillation.

Statement II: The vapours rising up in the fractionating column become richer in high boiling component of the mixture.

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 true but Statement II is true

Ans. (3)

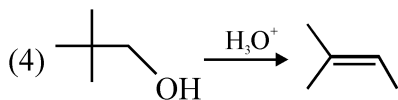
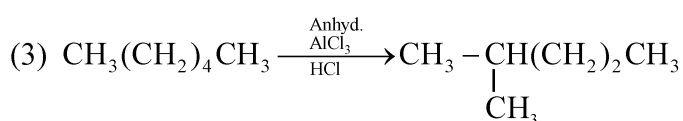
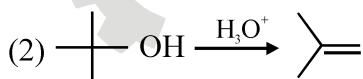
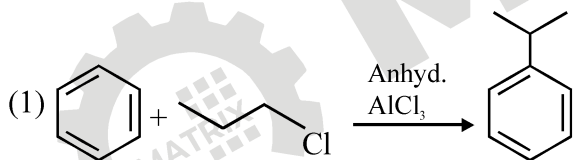
Sol. Statement - I - Higher attraction leads to faster condensation.

Statement - II - Higher attraction leads to slower evaporation.

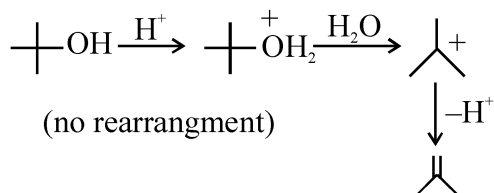
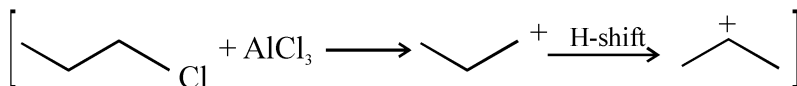
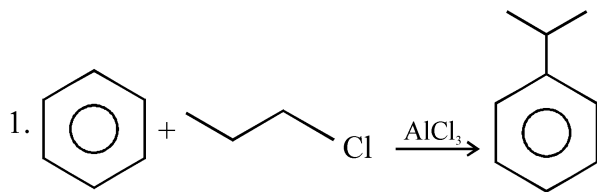
Question Id : 691121588

63. The major product of which of the following reaction is not obtained by rearrangement reaction?

¶

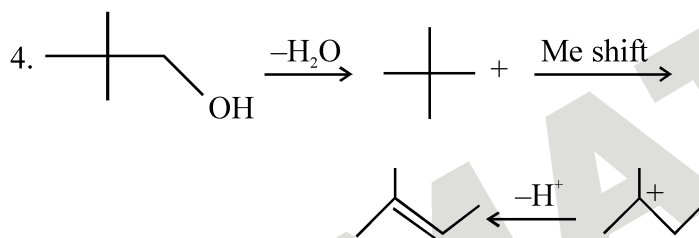


Ans. (2)

**Sol.**

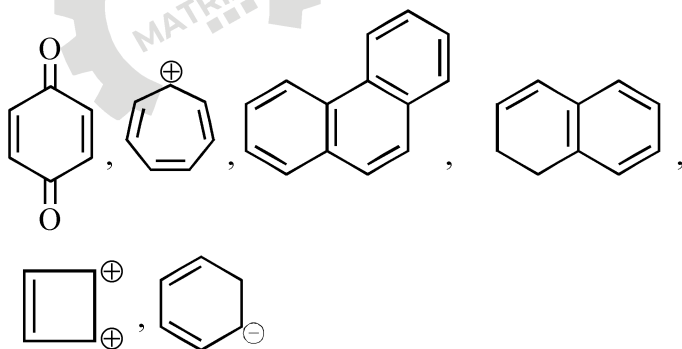
2. (no rearrangement)

3. Isomerisation of alkane occurs through rearrangement.



Question Id : 691121589

64. The total number of aromatic compounds/species from the following is



¶

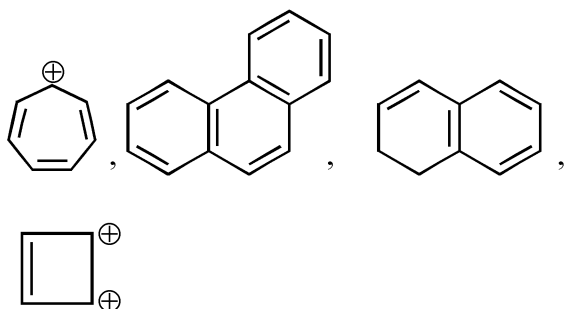
(1) 6

(2) 4

(3) 3

(4) 5

Ans. (2)

**Sol.**

Question Id : 691121590

65. n-Butane on monochlorination under photochemical condition gives an optically active compound "P". "P" on further chlorination gives dichloro compounds. The number of dichloro compounds obtained (ignore stereoisomers) is :

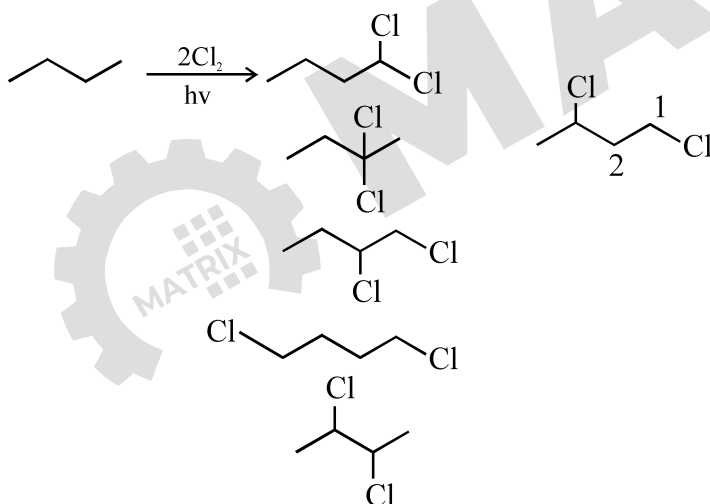
P

(1) 3

(2) 4

(3) 5

(4) 6

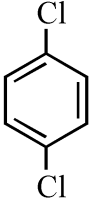
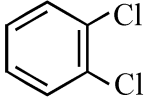
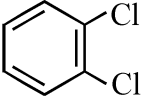
Ans. (4)**Sol.**

Question Id : 691121591

66. Given below are two statements :

Statement I: Due to increase in van der Waals forces, the order of boiling points is $\text{CH}_3\text{CH}_2\text{CH}_2\text{I} > \text{CH}_3\text{CH}_2\text{I} > \text{CH}_3\text{I}$.



As  is more symmetric, its melting point is higher than , however its boiling point is lower than .

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

¶

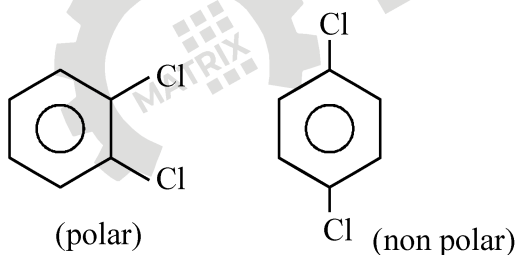
- (1) Both Statement I and Statement II are true
- (2) Both Statement I and Statement II are false
- (3) Statement I is true but Statement II is false
- (4) Statement I is true but Statement II is true

Ans. (1)

Sol. Statement- I correct

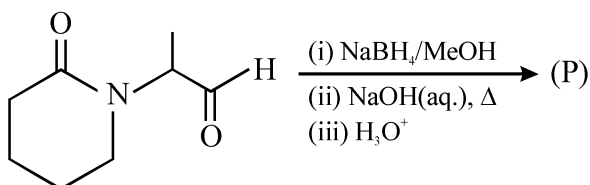
incorrect in molecular mass will increase the van der Waals attraction forces

Statement -II more symmetrical molecules have higher melting point but more polar ones have higher boiling point.



Question Id : 691121592

67. Consider the following reaction.



The major product (P) formed is :

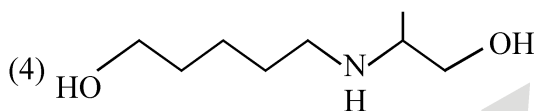
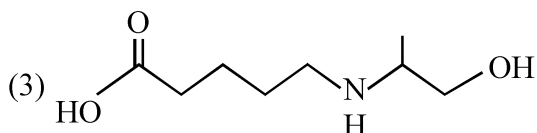
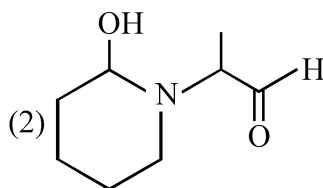
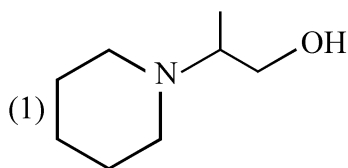
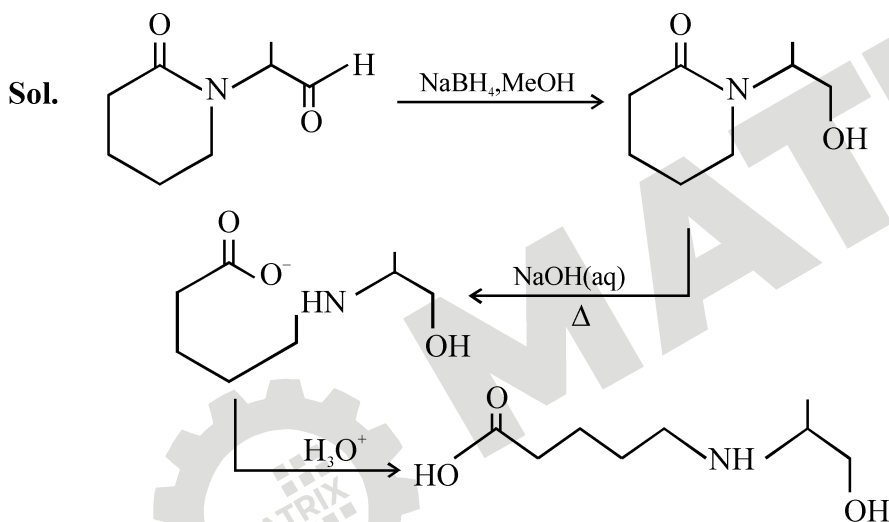
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Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911

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



¶

**Ans.** (3)

Question Id : 691121593

68. Which statements are True?

- A. In Hoffmann bromamide degradation, 4 moles of NaOH and 2 moles of Br₂ are consumed per mole of an amide
- B. Hoffmann bromamide reaction is not given by alkyl amides.
- C. Primary amines can be synthesized by Hoffmann bromamide degradation.
- D. Secondary amide on reaction with Br₂ and NaOH will give secondary amine.
- E. The by-products of Hoffmann degradation are NaCO₃, and NaBr and H₂O.

Choose the correct answer from the options given below :

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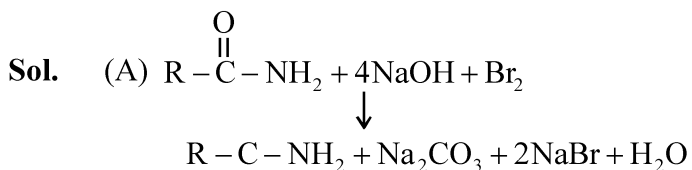
(1) A, C and E only

(2) B, C and D only

(3) C and E only

(4) C, D and E only

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**Ans.** (3)

A is wrong

(B) It is given by 1° amide it is correct

(C) True

(D) Incorrect

(E) True

Question Id : 691121594

69. The incorrect statement from the following with respect to carbohydrates is :

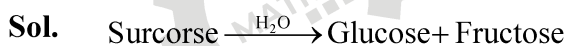
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(1) All monosaccharides are reducing sugars.

(2) The monosaccharide units obtained from hydrolysis of oligosaccharides are always the same.

(3) Starch and cellulose are typical examples of polysaccharides, which are very high molecular weight compounds of more than ten monosaccharide units.

(4) Open chain and cyclic structures co-exist at equilibrium that are responsible for certain properties as in the case of D – (+) – glucose.

Ans. (2)

Question Id : 691121595

70. Which of the following amino acid will give violet coloured complex with neutral ferric chloride solution?

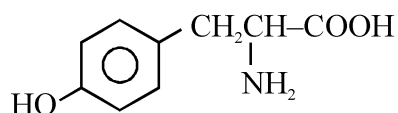
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(1) Threonine

(2) Serine

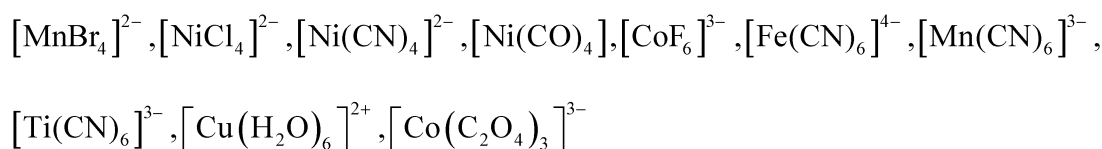
(3) Tyrosine

(4) Cysteine

Ans. (3)**Sol.** Phenolic group must be there**SECTION – B****MATRIX JEE ACADEMY****Office : Piprali Road, Sikar (Raj.) | Ph. 01572-241911****Website : www.matrixedu.in ; Email : smd@matrixacademy.co.in**

Question Id : 691121596

71. Inscript Number of paramagnetic complexes among the following is



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Ans. (6)

Sol. $[\text{MnBr}_4]^{2-} \text{ Mn}^{2+} \Rightarrow 3d^5$ with tetrahedral geometry $\rightarrow$ paramagnetic

 $[\text{NiCl}_4]^{2-} \rightarrow 3d^8 \text{ Ni}^{2+} \Rightarrow$ with tetrahedral geomety $\rightarrow$ paramagnetic

 $[\text{Ni}(\text{CN})_4]^{2-} \rightarrow \text{Ni}^{2+} \Rightarrow 3d^8$ with strong field ligand sq planar $\rightarrow$ diamagnetic

 $[\text{Ni}(\text{CO})_4] \rightarrow \text{Ni} \rightarrow 3d^{10}$ with tetrahedral geometry $\rightarrow$ diamagnetic

 $[\text{CoF}_6]^{3-} \Rightarrow \text{Co}^{3+} \Rightarrow 3d^6 \rightarrow \text{WFL} \rightarrow (t_{2g}^4 e_g^2) \rightarrow$ paramagnetic

 $[\text{Fe}(\text{CN})_6]^{4-} \Rightarrow \text{Fe}^{2+} \Rightarrow 3d^6 \rightarrow$ with SFL $\rightarrow t_{2g}^6 \rightarrow$ diamagnetic

 $[\text{Mn}(\text{CN})_6]^{3-} \Rightarrow 3d^4$ with SFL $\rightarrow t_{2g}^4 \rightarrow$ paramagnetic

 $[\text{Ti}(\text{CN})_6]^{3-} \Rightarrow \text{Ti}^{3+} \Rightarrow 3d^1 \Rightarrow$ paramagnetic

 $[\text{Cu}(\text{H}_2\text{O})_6]^{2+} \Rightarrow \text{Cu}^{2+} \Rightarrow 3d^9 \rightarrow$ paramagnetic

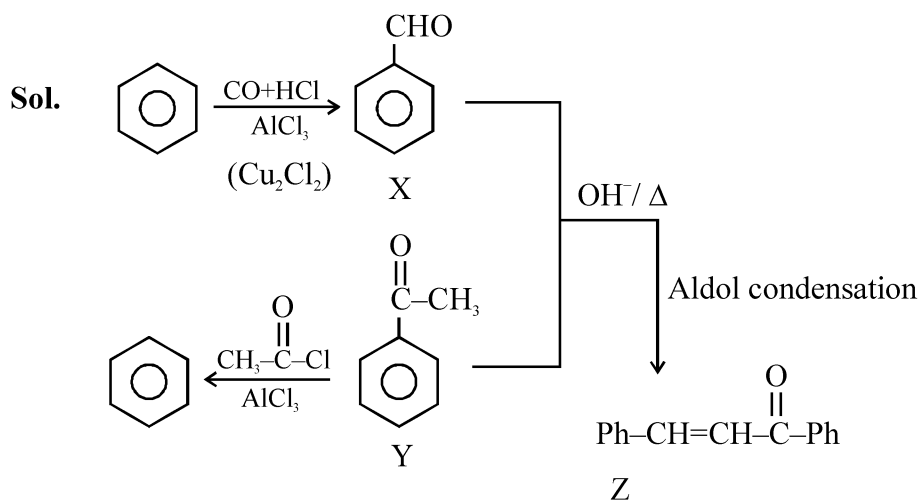
 $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-} \Rightarrow \text{Co}^{3+} \rightarrow 3d^6$ with oxalate as SLF diamagnetic

Question Id : 691121597

 72. 'x' is the product which is obtained from benzene by reacting it with carbon monoxide and hydrogen chloride in the presence of cuprous chloride. 'y' is the major product obtained from the benzene by reacting it with ethanoyl chloride in the presence of anhydrous AlCl_3 . Product (major) obtained by heating x and y in the presence of alkali is z. Total number of π (pi) electrons in z is _____.

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Ans. (16)



Total pi electrons = $6 + 2 + 2 + 6 = 16$

Question Id : 691121598

73. Consider two radiations of wavelengths

1. $\lambda_1 = 2000 \text{ \AA}$

2. $\lambda_2 = 6000 \text{ \AA}$

The ratio of the energies of these two radiations $\left(\frac{E_1}{E_2}\right)$ is _____ (Nearest integer).

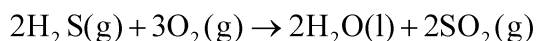
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Ans. (3)

Sol. $\frac{E_1}{E_2} = \frac{\lambda_2}{\lambda_1} = \frac{6000}{2000} = 3$

Question Id : 691121599

74. Consider the reaction



The magnitude of enthalpy change for the reaction in kJ mol^{-1} is _____. (Nearest integer)

Given : $\Delta_f H^\ominus (\text{H}_2\text{S}) = -20.1 \text{ kJ mol}^{-1}$

$$\Delta_f H^\ominus (\text{H}_2\text{O}) = -286.0 \text{ kJ mol}^{-1}$$

MATRIX JEE ACADEMY

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

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



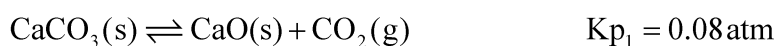
$$\Delta_f H^\ominus (\text{SO}_2) = -297.0 \text{ kJ mol}^{-1}$$

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Ans. (1126)

Sol. $\Delta H_{\text{rxn}}^\ominus = 2\Delta H_f(\text{H}_2\text{O}) + 2\Delta H_f(\text{SO}_2) - 2\Delta H_f(\text{H}_2\text{S})$
 $= -286 \times 2 - 297 \times 2 + 40.2$
 $= -1125.8$
nearest integer = 1126

Question Id : 691121600

75. Solid carbon, CaO and CaCO₃ are mixed and allowed to attain equilibrium at T K.The partial pressure of CO is _____ $\times 10^{-1}$ atm

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Ans. (4)

Sol. $\text{CaCO}_3(\text{s}) \rightleftharpoons \text{CaO}(\text{s}) + \text{CO}_2(\text{g}) \quad K_{p_1} = 0.08 \text{ atm}$
 $\text{C}(\text{s}) + \text{CO}_2(\text{g}) \rightleftharpoons 2\text{CO}(\text{g}) \quad K_{p_2} = 2 \text{ atm}$
 $K_{p_1} \times K_{p_2} = P_{\text{CO}}^2$
 $2 \times 0.08 = P_{\text{CO}}^2$
 $P_{\text{CO}} = 0.4 = 4 \times 10^{-1}$