

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

**CHEMISTRY**



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

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**JEE MAIN APRIL 2026 | 02 APRIL SHIFT-2**
**SECTION – A**

Question ID : 691121201

51. The ratio of mass percentage (w/w) of C : H in a hydrocarbon is 12 : 1. It has two carbon atoms. The weight (in g) of CO<sub>2</sub> (g) formed when 3.38 g of this hydrocarbon is completely burnt in oxygen is :

 (Given : Molar mass in g mol<sup>-1</sup> C: 12, H: 1, O: 16)

¶

- (1) 5.68                      (2) 11.44                      (3) 22.74                      (4) 17.05

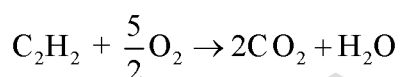
Question ID : 691121202

**Ans.** (2)

**Sol.** mass ratio = 12 : 1

$$\text{mole ratio} = \frac{12}{12} : \frac{1}{1} = 1 : 1$$

EF = CH

 MF = C<sub>2</sub>H<sub>2</sub>


$$\text{mole of C}_2\text{H}_2 = \frac{3.38}{26} = 0.13 \text{ mol}$$

$$\text{moles of CO}_2 = 0.13 \times 2 = 0.26 \text{ mol}$$

$$\text{mass of CO}_2 = 0.26 \times 44 = 11.44 \text{ mol}$$

52. The first and second ionization constants of a weak dibasic acid H<sub>2</sub>A are 8.1 × 10<sup>-8</sup> and 1.0 × 10<sup>-13</sup> respectively. 0.1 mol of H<sub>2</sub>A was dissolved in 1L of 0.1 M HCl solution. The concentration of HA<sup>-</sup> in the resultant solution is :

¶

- (1) 0.1 M                      (2) 9.53 × 10<sup>-6</sup> M                      (3) 8.1 × 10<sup>-8</sup> M                      (4) 1.0 × 10<sup>-13</sup> M

**Ans.** (3)

**Sol.** H<sub>2</sub>A ⇌ H<sup>+</sup> + HA<sup>-</sup>                      HCl → H<sup>+</sup> + A<sup>-</sup>

$$K_{a1} = \frac{[\text{H}^+][\text{HA}^-]}{[\text{H}_2\text{A}]}$$

$$8.1 \times 10^{-8} = \frac{(0.1) \times [\text{HA}^-]}{0.1}$$

$$[\text{HA}^-] = 8.1 \times 10^{-8} \text{ M}$$

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Question ID : 691121203

53.  $\text{SF}_4$  is isostructural with :

☐

- (A)
- $\text{BrF}_4^-$
- (B)
- $\text{CH}_4$
- (C)
- $\text{IF}_4^+$
- (D)
- $\text{XeF}_4$
- (E)
- $\text{XeO}_2\text{F}_2$

Choose the correct answer from the options given below :

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

**Ans.** (2)**Sol.**  $\text{SF}_4 \rightarrow \frac{\text{shope}}{\text{see - saw}}$ 

- (A)
- $\text{BrF}_4^- \rightarrow$
- Square planar
- 
- (B)
- $\text{CH}_4 \rightarrow$
- Tetrahedral
- 
- (C)
- $\text{IF}_4^+ \rightarrow$
- See-Saw
- 
- (D)
- $\text{XeF}_4 \rightarrow$
- Square planar
- 
- (E)
- $\text{XeO}_2\text{F}_2 \rightarrow$
- See-Saw

Question ID : 691121204

54. Gas 'A' undergoes change from state 'X' to state 'Y'. In this process, the heat absorbed and work done by the gas is 10 J and 18 J respectively. Now gas is brought back to state 'X' by another process during which 6 J of heat is evolved. In the reverse process of 'Y' to 'X',

☐

- (1) 18 J of the work is done by the gas 'A'
- 
- (2) 2 J of the work is done by the gas 'A'.
- 
- (3) 12 J of the work is done on the gas 'A' by the surrounding.
- 
- (4) 14 J of the work is done on the gas 'A' by the surrounding.

**Ans.** (4)**Sol.**  $\Delta U = Q + W$ 1. Forward Process ( $X \rightarrow Y$ )

$$Q_1 = +10\text{J}$$

$$W_1 = -18\text{J}$$

$$\Delta U_{xy} = -8\text{J}$$

(2) Reverse Process ( $Y \rightarrow X$ )

$$\Delta U_{yx} = +8\text{J}$$

$$Q_2 = -6\text{J}$$

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$$\Delta U_{yx} = Q_2 + W_2$$

$$W_2 = +14\text{J}$$

Question ID : 691121205

55. Solution A is prepared by dissolving 1 g of a protein (molar mass = 50000 gmol<sup>-1</sup>) in 0.5 L of water at 300 K . Its osmotic pressure is x bar. Solution B is made by dissolving 2 g of same protein in 1 L of water at 300 K . Osmotic pressure of solution B is y bar. Entire solution of A is mixed with entire solution of B at same temperature. The osmotic pressure of resultant solution is z bar, x, y and z respectively are :  
(R = 0.083 L bar mol<sup>-1</sup> K<sup>-1</sup>)

¶

- (1)  $9.96 \times 10^{-4}$ ;  $9.96 \times 10^{-4}$ ;  $9.96 \times 10^{-4}$   
 (2)  $9.96 \times 10^{-4}$ ;  $9.96 \times 10^{-4}$ ;  $19.92 \times 10^{-4}$   
 (3)  $4.98 \times 10^{-4}$ ;  $4.98 \times 10^{-4}$ ;  $4.96 \times 10^{-4}$   
 (4)  $4.98 \times 10^{-4}$ ;  $4.98 \times 10^{-4}$ ;  $4.98 \times 10^{-4}$

**Ans.** (1)

**Sol.** Solution -A

$$\pi = \frac{n}{v} RT = \frac{1}{50000} \times \frac{1}{0.5} \times 0.083 \times 300$$

$$x = 9.96 \times 10^{-4} \text{ bar}$$

Solution- B

$$\pi = \frac{n}{v} RT = \frac{2}{50000} \times \frac{1}{1} \times 0.083 \times 300$$

$$y = 9.96 \times 10^{-4} \text{ bar}$$

Resultant Solution

Total mass = 3g

Total Volume = 0.5 + 1 = 1.5 L

$$\text{New Conc}^n = \frac{3}{1.5} = 2$$

$$\pi = CRT = 2 \times 0.083 \times 300$$

$$Z = 9.96 \times 10^{-4} \text{ bar}$$

Question ID : 691121206

56. At 25°C, 20.0 mL of 0.2 M weak monoprotic acid HX is titrated against 0.2 M NaOH . The pH of the solution (a) at the start of the titration (when NaOH has not been added) and (b) when 10 mL of NaOH is added respectively, are :

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Given :  $K_a = 5 \times 10^{-4}$

$pK_a = 3.3$

$\alpha \ll 1$

¶

**(a) (b)**

(1) 0.7      2.0

(2) 2.0      3.3

(3) 1.1      2.2

(4) 3.0      2.2

**Ans.** (2)

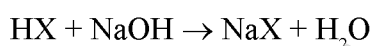
**Sol.** (a)  $\alpha \ll 1$ 

$[H^+] = \sqrt{K_a \cdot C} = 10^{-2}$

$pH = 2.0$

(b) m mol of HX = 4

m mol of NaOH = 2



4	2	0
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2	0	2
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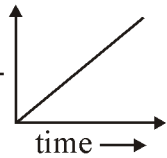
$$pH = p^{K_a} + \log_{10} \frac{[Salt]}{[Acid]}$$

$pH = 3.3$

Question ID : 691121207

 57. Consider the reaction  $aX \rightarrow bY$ , for which the rate constant at  $30^\circ\text{C}$  is  $1 \times 10^{-3} \text{ mol}^{-1} \text{ L s}^{-1}$ . Which of the following statements are true ?

- A. When concentration of 'X' is increased to four times, the rate of reaction becomes 16 times.
- B. The reaction is a second order reaction.
- C. The half-life period is independent of the concentration of X.
- D. Decomposition of  $\text{N}_2\text{O}_5$  is an example of the above reaction.

E.  $\ln \frac{[R_0]}{[R]}$   is valid for the above reaction.

Choose the correct answer from the options given below :

¶

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

**Ans.** (1)

**Sol.**  $K = 10^{-3} \text{ L mol}^{-1} \text{ S}^{-1}$

From unit it is second order ( $n = 2$ )

$$\text{Rate} = k[x]^2$$

if  $[x]$  is made 4 times

then rate becomes 16 times

$$\rightarrow (t_{1/2})_{n=2} = \frac{1}{K[A]_0}$$

$\rightarrow$  Decomposition of  $\text{N}_2\text{O}_5$  is 1<sup>st</sup> order

$$\rightarrow \ln \left( \frac{[R_0]}{[R]} \right) = kt \text{ is for 1st order.}$$

Question ID : 691121208

58. The correct set that contains all kinds (basic, acidic, amphoteric and neutral) of oxides is :

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- (1)  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{Al}_2\text{O}_3$  and  $\text{As}_2\text{O}_3$       (2)  $\text{Al}_2\text{O}_3$ ,  $\text{As}_2\text{O}_3$ , CO and NO  
 (3)  $\text{K}_2\text{O}$ ,  $\text{Cl}_2\text{O}_7$ ,  $\text{As}_2\text{O}_3$  and NO      (4)  $\text{Na}_2\text{O}$ ,  $\text{N}_2\text{O}$ ,  $\text{Al}_2\text{O}_3$  and CO

**Ans.** (3)

**Sol.** Basic oxide -  $\text{K}_2\text{O}$ ,  $\text{Na}_2\text{O}$

Acidic oxide -  $\text{Cl}_2\text{O}_7$

Amphoteric oxide -  $\text{As}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$

Neutral oxide - NO, CO,  $\text{N}_2\text{O}$

Question ID : 691121209

59. Given below are two statements:

**Statement I :** The second ionization enthalpy of B, Al and Ga is in the order of  $B > Al > Ga$ .

**Statement II :** The correct order in terms of first ionization enthalpy is  $Si < Ge < Pb < Sn$ .

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

☐

- (1)                                      (2)                                      (3)                                      (4)

**Ans.** (2)**Sol.**  $IE_2 : B > Ga > Al$  $IE_1 : Si > Ge > Pb > Sn$ 

Question ID : 691121210

60. Given below are two statements:

**Statement I:** Among Zn, Mn, Sc and Cu, the energy required to remove the third valence electron is highest for Zn and lowest for Sc .**Statement II:** The correct order of the following complexes in terms of CFSE is  $[Co(H_2O)_6]^{2+} < [Co(H_2O)_6]^{3+} < [Co(en)_3]^{3+}$ .

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

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- (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.**  $IE_3$  (KJ/mol)

Sc 2393

Mn 3260

Cu 3556

Zn 3837

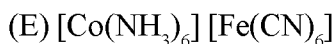
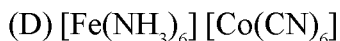
 $IE_3 : Sc < Mn < Cu < Zn$ → on moving from left to right  $Z_{eff}$  increases  $\Rightarrow$  IE increases→ CFSE  $\propto$  oxidation state of metalCFSE  $\propto$  strength of ligand $[Co(H_2O)_6]^{2+} < [Co(H_2O)_6]^{3+} < [Co(en)_3]^{3+}$ 

Question ID : 691121211

61. Which of the following complexes will show coordination isomerism ?

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(A)  $[Ag(NH_3)_2][Ag(CN)_2]$ (B)  $[Co(NH_3)_6][Cr(CN)_6]$ (C)  $[Co(NH_3)_6][Co(CN)_6]$



Choose the correct answer from the options given below :

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

**Ans.** NTA(2)

Answer by Matrix (1,2,4)

**Sol.** Only  $[\text{Ag}(\text{NH}_3)_2][\text{Ag}(\text{CN})_2]$  cannot show coordination isomerism.

Question ID : 691121212

62. Complete combustion of Xg of an organic compound gave 0.25 g of  $\text{CO}_2$  and 0.12 g of  $\text{H}_2\text{O}$ . If the % of carbon is 25% and of hydrogen is 4.89%, then  $X = \_\_\_\_ \times 10^{-3}$  g. (Nearest integer) (Molar mass of C, H and O are 12,1 and 16 g  $\text{mol}^{-1}$  respectively.)

¶

- (1) 273                                      (2) 27                                      (3) 2730                                      (4) 227

**Ans.** (1)

**Sol.** % of C =  $\frac{12}{44} \times \frac{0.25}{\text{wt. of OC}} \times 100$

$$25 = \frac{12}{44} \times \frac{25}{\text{wt. of OC}}$$

$$\begin{aligned} \text{wt. of OC} &= 0.02726 \\ &= 273 \times 10^{-3} \text{ gm} \end{aligned}$$

Question ID : 691121213

63. Given below are two statements :

Statement I : In  $\text{O}_2\text{N}-\text{C}_6\text{H}_4-\overset{\oplus}{\text{C}}\text{H}-\text{C}_6\text{H}_4-\text{OCH}_3$ , the carbocation is stabilised by +R effect of  $-\text{OCH}_3$  group

Statement II : In  $\text{O}_2\text{N}-\text{C}_6\text{H}_4-\overset{\ominus}{\text{C}}\text{H}-\text{C}_6\text{H}_4-\text{OCH}_3$ , the carbanion is stabilised by -R effect of  $-\text{NO}_2$  group.

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

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- (1) Both Statement I and Statement II are true

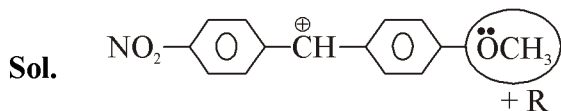


(2) Both Statement I and Statement II are false

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

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

**Ans.** (1)



Question ID : 691121214

64. The compound (X) on

(i) on heating in the presence of anhydrous  $\text{AlCl}_3$  and HCl gas gives 2,4-dimethyl pentane

(ii) aromatization gives toluene and

(iii) cyclisation gives methyl cyclohexane

The correct name of compound (X) is

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(1) Hept - 2 - ene

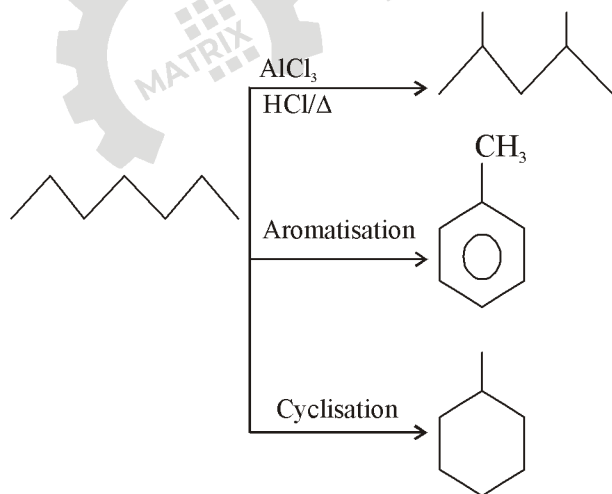
(2) Hept 1, 3, 5-triene

(3) Heptane

(4) Hept - 2, 4, 6-triene

**Ans.** (3)

**Sol.**



Question ID : 691121215

65. Correct statements regarding alkyl halides (R - X) among the following are :

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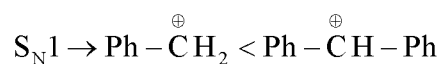
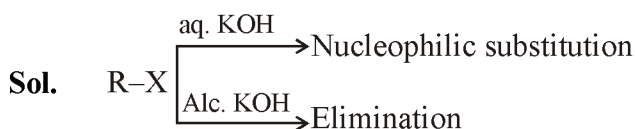
- A. Alcohol being less polar solvent as compared to water, alcoholic KOH favours elimination reaction with  $Rv - X$ .
- B. Order of reactivity towards  $S_N1$  mechanism is  $C_6H_5-CH_2-Cl > C_6H_5-CHCl-C_6H_5$ .
- C. Non substituted aryl halides exhibit properties similar to alkyl halides.
- D. Vinyl chloride is an example of haloalkene and allyl chloride is an example of haloalkyne.
- E.  $R - Cl$  can be prepared by reacting  $R - OH$  with  $SOCl_2$  but  $Ar-Cl$  cannot be prepared by reacting  $Ar-OH$  with  $SOCl_2$ .

Choose the correct answer from the options given below :

¶

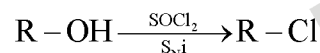
- (1) A, B and C only    (2) B and D only    (3) A and E only    (4) D and E only

**Ans.** (3)



Vinyl Chloride  $CH_2=CH-Cl$  (Haloalkene)

Allyl Chloride  $CH_2=CH-CH_2-Cl$  (not haloalkyne)



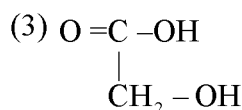
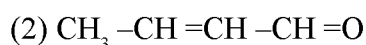
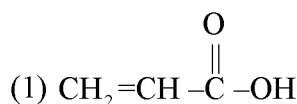
Phenol do not give  $S_Ni$  reaction with  $SOCl_2$  due to partial double bond character in  $C-O$  bond.

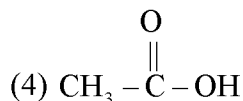
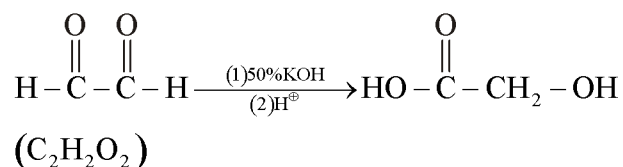
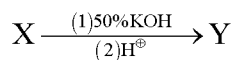
Question ID : 691121216

66. An organic compound "x" where molar ratio of C, O and H are equal, on treatment with 50% KOH under reflux followed by acidification produced "y". The most likely structure of "y" is :

Molar mass of "x" is  $58 \text{ g mol}^{-1}$

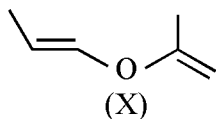
¶



**Ans.** (3)**Sol.** Given organic compound have same molar ratio  $\rightarrow (\text{CHO})_n$ 

Question ID : 691121217

67. A molecule (X) with following structure under mild acidic condition is hydrolysed to produce (Y) and (Z). Identify the correct statements about (Y) and (Z).

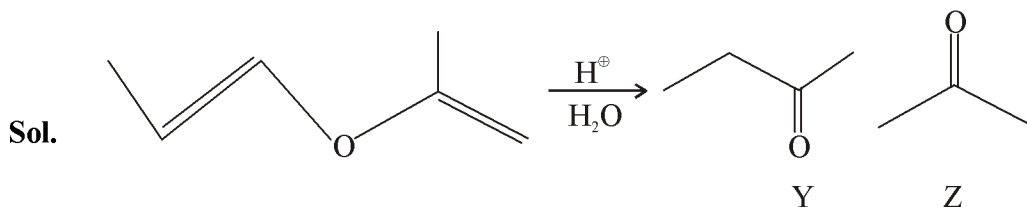


- A. Both (Y) and (Z) have same molar mass.  
 B. (Y) and (Z) can be distinguished from each other by  $\text{NaHCO}_3$ .  
 C. (Y) and (Z) react with HCN with same rates.  
 D. (Y) and (Z) undergo addition reaction with 2,4-DNP.

Choose the correct answer from the options given below :

¶

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

**Ans.** (4)

Y &amp; Z have same molar mass

Both do not react with  $\text{NaHCO}_3$ **MATRIX JEE ACADEMY**

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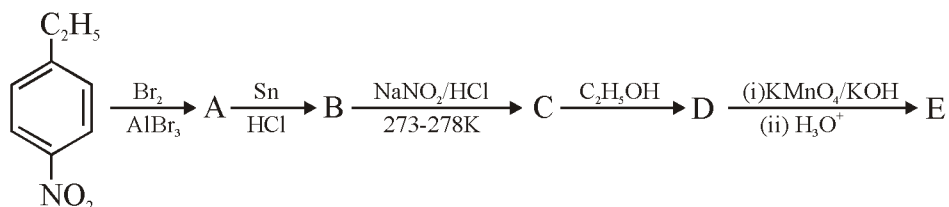
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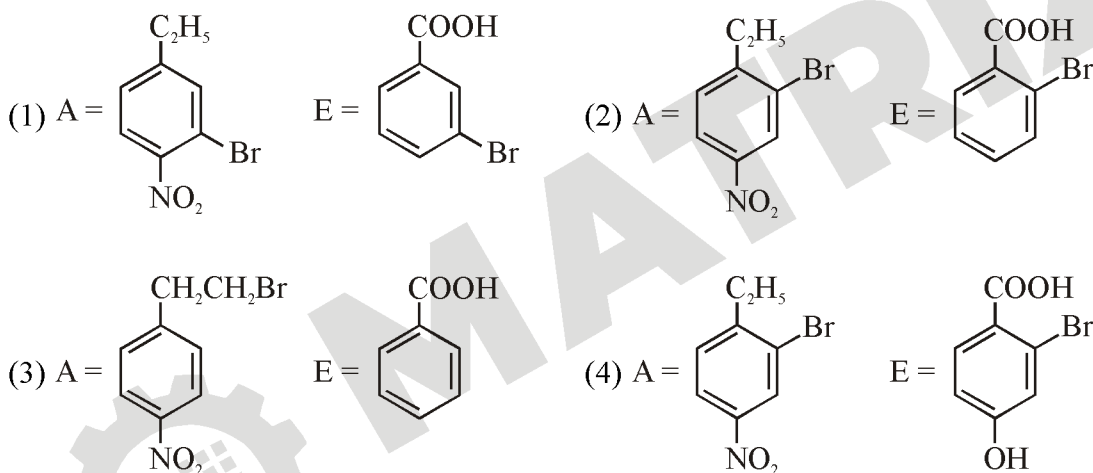
Aldehydes are more reactive towards HCN  
Both are carbonyl so gives +ve 2,4 DNP test

Question ID : 691121218

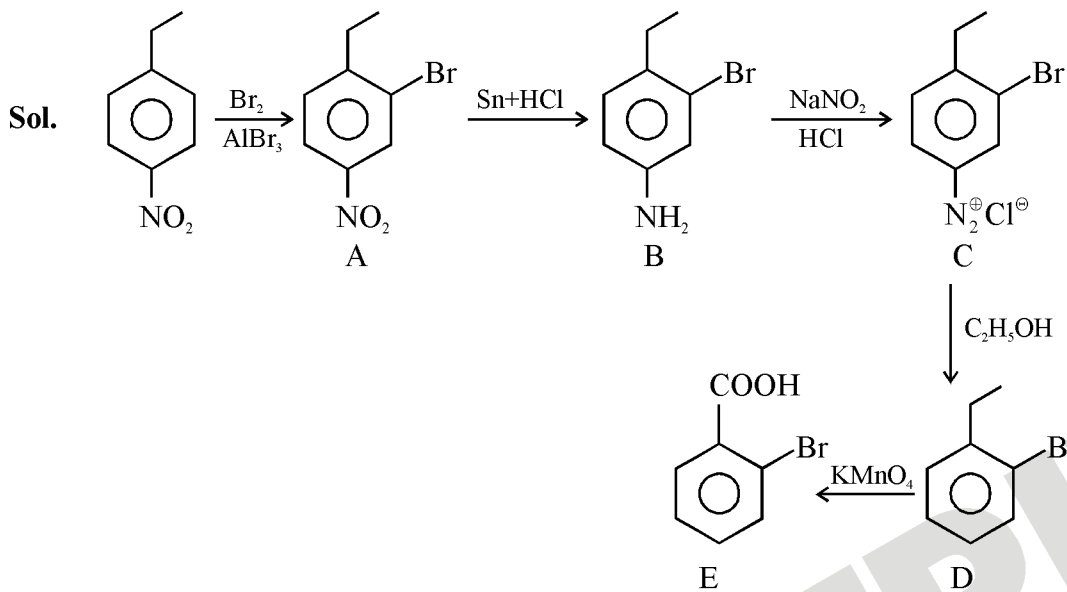
68. Identify compounds A and E in the following reaction sequence.



¶



Ans. (2)



Question ID : 691121219

69. Identify the correct pair having amino acid (A) and the hormone (B) that is iodinated derivative of the amino acid (A).

(T and Y represent one letter code for amino acids)

Amino acid (A)                  Hormone (B)

- (1) T                                  Insulin  
 (2) T                                  Thyroxine  
 (3) Y                                  Thyroxine  
 (4) Y                                  Insulin

☒

Ans. (3)

Sol. T → Threonine

Y → Tyrosine

Thyroxine is an iodinated derivative of the Tyrosine amino acid.

Question ID : 691121220

70. Among  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cr}^{2+}$  and  $\text{Zn}^{2+}$ , the ion that shows positive borax bead test and with highest ionisation enthalpy is :

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(1)  $\text{Fe}^{2+}$ (2)  $\text{Zn}^{2+}$ (3)  $\text{Cr}^{2+}$ (4)  $\text{Fe}^{3+}$ **Ans.** (4)**Sol.**  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cr}^{2+}$  gives positive borax bead test. Among these  $\text{Fe}^{3+}$  has maximum IE.**SECTION - B**

Question ID : 691121221

71. The surface of sodium metal is irradiated with radiation of wavelength  $x$  nm. The kinetic energy of ejected electrons is  $2.8 \times 10^{-20}$  J. The work function of sodium is 2.3 eV. The value of  $x$  is\_\_\_\_\_  $\times 10^2$  nm. (Nearest integer)(Given :  $h = 6.6 \times 10^{-34}$  J s;  $1\text{eV} = 1.6 \times 10^{-19}$  J;  $c = 3.0 \times 10^8$  m  $\text{s}^{-1}$ )

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**Ans.** (5)**Sol.**  $E - E^\circ = \text{KE}$  — (1)

$$E^\circ = 2.3 \times 1.6 \times 10^{-19} \text{ J} = 3.68 \times 10^{-19} \text{ J}$$

$$\text{KE} = 0.28 \times 10^{-19} \text{ J}$$

$$\text{using (1), } E = 3.96 \times 10^{-19} \text{ J}$$

$$\lambda = \frac{hc}{E} = 500 \text{ nm}$$

$$= 5 \times 10^2 \text{ nm}$$

Question ID : 691121222

72. Consider the following gas phase reaction being carried out in a closed vessel at  $25^\circ\text{C}$ .

time (min)	total pressure of the system (mm Hg)
30	300
$\infty$	600

The pressure of  $\text{C}(\text{g})$  at 30 minutes time interval would be \_\_\_\_\_ mm Hg. (nearest integer)

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**Ans.** (20)**Sol.**  $2\text{A} \rightarrow 4\text{B} + \text{C}$  Total pressure**MATRIX JEE ACADEMY**

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$$\begin{array}{l}
 t = 0 \quad P^0 \quad 0 \quad 0 \quad P_0 \\
 t = 30 \quad P^0 - 2x \quad 4x \quad x \quad P_0 \\
 t = \infty \quad 0 \quad 2P_0 \quad 0.5P_0 \quad 2.5P_0
 \end{array}$$

$$2.5P_0 = 600 \Rightarrow P_0 = 240 \text{ mm Hg}$$

$$P^0 + 3x = 200$$

$$x = 20 \text{ mm}$$

Question ID : 691121223

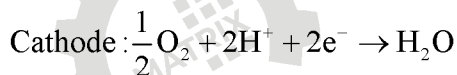
73. Consider the following two half-cell reactions along with the standard reduction potential given :



A fuel cell was set up using the above two reactions such that the cell operates under the standard condition of 1 bar pressure and 298 K temperature. The fuel cell works with 80 % efficiency. If the work derived from the cell using 1 mol of  $\text{CH}_3\text{OH}$  is used to compress an ideal gas isothermally against a constant pressure of 1 kPa, then the change in the volume of the gas,  $\Delta V =$  \_\_\_\_\_  $\text{m}^3$ . (nearest integer)

Given:  $F = 96500 \text{ C mol}^{-1}$ 

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**Ans.** (560)

$$E_{\text{cell}}^{\circ} = E_{\text{C}}^{\circ} - E_{\text{A}}^{\circ} = 1.23 - 0.02 = 1.21 \text{ V}$$

$$|W_{\text{max}}| = |\Delta G| = nFE_{\text{cell}}^{\circ}$$

$$= 6 \times 96500 \times 1.21 = 700590 \text{ J}$$

$$W_{\text{act}} = 0.8 \times 700590 = 560472 \text{ J}$$

$$W_{\text{act}} = |P_{\text{ext}} \Delta V|$$

$$P_{\text{ext}} = 1000 \text{ Pascal}$$

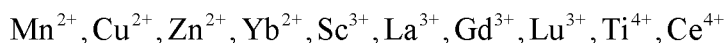
$$560472 = 1000 \times |\Delta V|$$

$$\Delta V = 560.472 \text{ m}^3 \approx 560$$

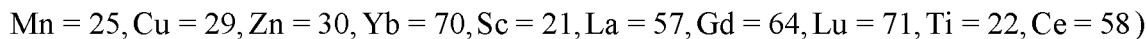
Question ID : 691121224



74. Number of paramagnetic ions among the following d - and f-block metal ions \_\_\_\_\_.



(Atomic number of



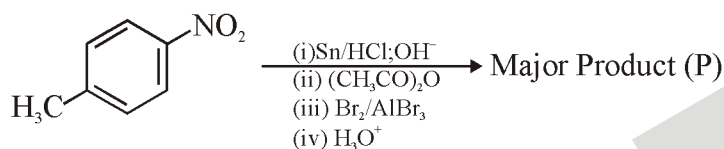
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**Ans.** (3)

**Sol.** Paramagnetic ions are 3 ( $\text{Mn}^{2+}, \text{Cu}^{2+}, \text{Gd}^{3+}$ )

Question ID : 691121225

75. Consider the following reactions sequence

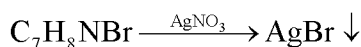
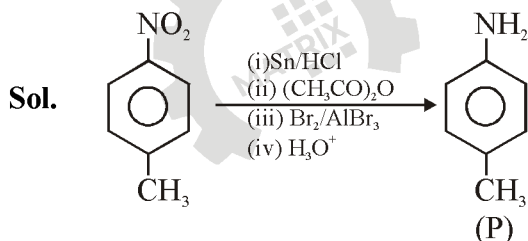


When the product (P) is subjected to Carius analysis using  $\text{AgNO}_3$ , 1.0 g of the product (P) will produce \_\_\_\_\_ g of the precipitate of  $\text{AgBr}$ . (Nearest Integer)

(Given : molar mass in  $\text{g mol}^{-1}$  C : 12, H : 1, O : 16, N : 14, Br : 80, Ag : 108)

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**Ans.** (1)



1 gm

$$\text{moles} = \frac{1}{186} \qquad \text{moles} = \frac{1}{186}$$

$$\text{gm ppt of AgBr} = \frac{1}{186} \times 188 \approx 1$$