

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

CHEMISTRY



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

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JEE MAIN APRIL 2026 | 06 APRIL SHIFT-2**SECTION – A**

Question ID : 6911211251

51. Which of the following contain the same number of atoms ?

(Given : Molar mass in g mol^{-1} of H, He, O and S are 1, 4, 16 and 32 respectively).A. 2g of O_2 gasB. 4g of SO_2 gasC. 1400 mL of O_2 at STP

D. 0.05 L of He at STP

E. 0.0625 mol of H_2 gas

Choose the correct answer from the options given below :

¶

(1) A and B only

(2) B and C only

(3) C and D only

(4) A, C and E only

Ans. (4)**Sol.**

$$n_{\text{O}_2} = \frac{2}{32}$$

$$\text{No. of atom (O)} = 2 \times \frac{2}{32} \times N_A = 0.125N_A$$

$$n_{\text{SO}_2} = \frac{4}{64}$$

$$\text{No. of atom} = 3 \times \frac{4}{64} \times N_A = 0.1875N_A$$

$$n_{\text{O}_2} = \frac{1400}{22400}$$

$$\text{No. of atom} = \frac{1400}{22400} \times 2 \times N_A = 0.125N_A$$

$$n_{\text{He}} = \frac{0.05}{22.4}$$

$$\text{No. of atom} = \frac{0.05}{22.4} \times N_A = 0.0022N_A$$

$$n_{\text{H}_2} = 0.0625$$

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$$\text{No. of atom} = 0.0625 \times 2 \times N_A = 0.125 N_A$$

Question Id : 6911211252

52. The Bohr radius of a hydrogen like species is 70.53 pm. The species and the stationary state (n) are respectively.

(Given : Hydrogen atom Bohr radius is 52.9 pm)

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- (1) Li^{2+} , 3 (2) He^+ , 3 (3) He^+ , 2 (4) Li^{2+} , 2

Ans. (4)

Sol. $r_n = 52.9 \frac{n^2}{Z} \text{ pm}$

$$70.53 = 52.9 \frac{n^2}{Z}$$

$$1.33 = \frac{n^2}{Z}$$

 Li^{2+}

$$Z = 3$$

$$n = 2$$

Question Id : 6911211253

53. Given below are two statements :

Statement I : The number of compounds among SO_2 , SO_3 , SF_4 , SF_6 and H_2S in which sulphur does not obey the Octet Rule is 3.

Statement II : Among $[\text{H}_2\text{O}, \text{ClF}_3, \text{SF}_4]$, $[\text{NH}_3, \text{BrF}_5, \text{SF}_4]$, $[\text{BrF}_5, \text{ClF}_3, \text{XeF}_4]$ and $[\text{XeF}_4, \text{ClF}_3, \text{H}_2\text{O}]$, the number of sets in which all the molecules have one lone pair of electrons on the central atom is 1.

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

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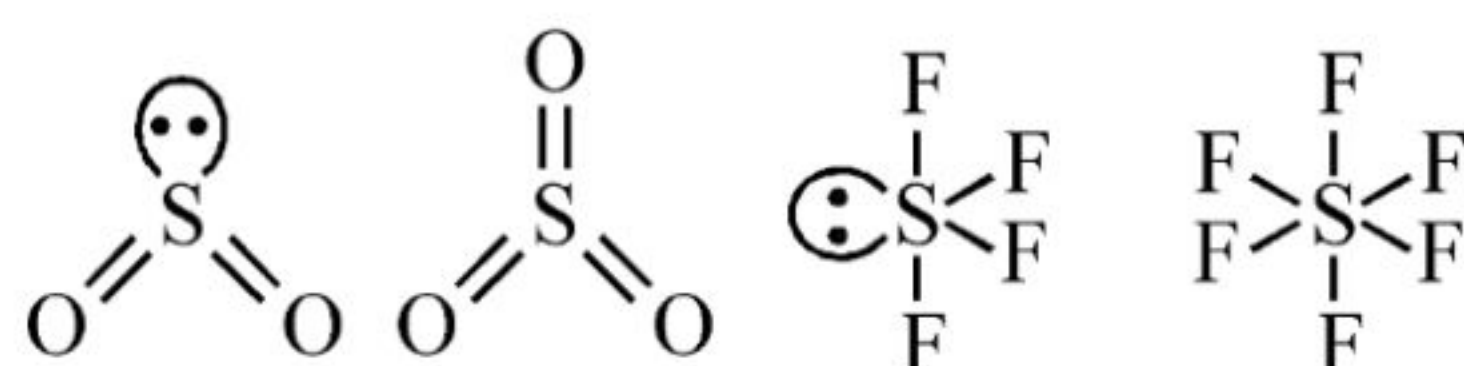
- (1) Both Statement I and Statement II are true.
(2) Both Statement I and Statement II are false.
(3) Statement I is true but Statement II is false.
(4) Statement I is false but Statement II is true.

Ans. (4)

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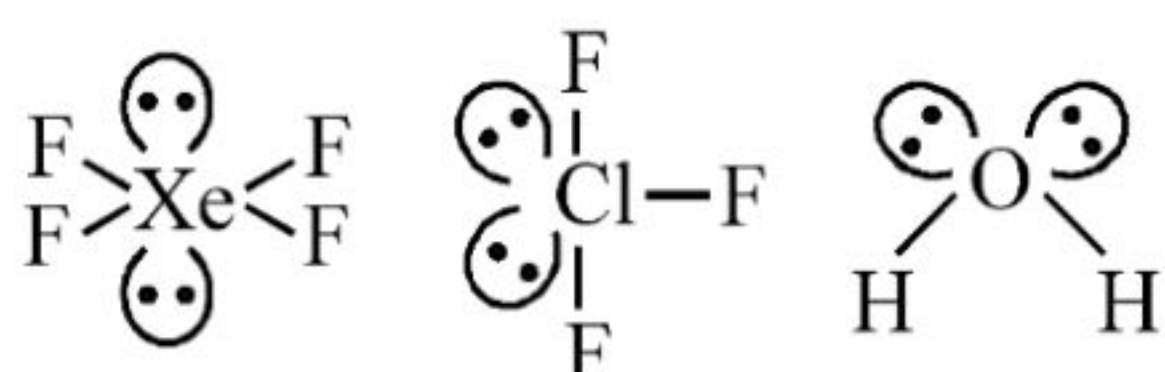
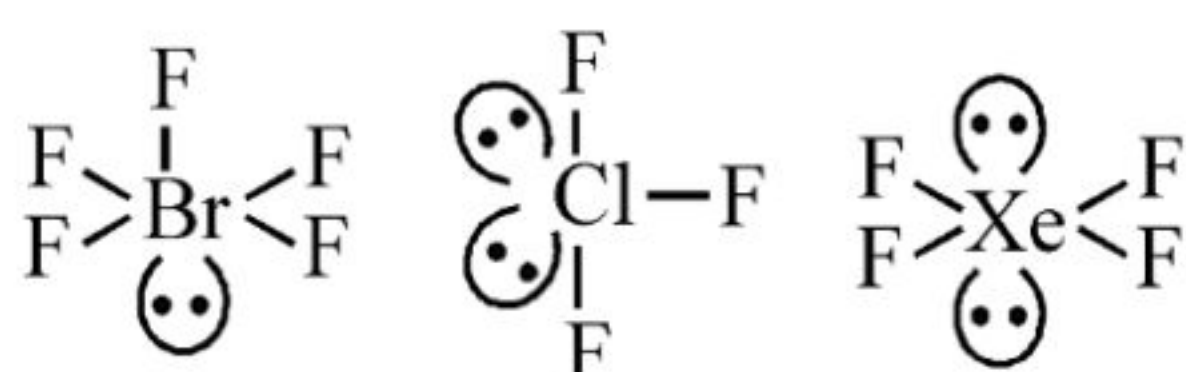
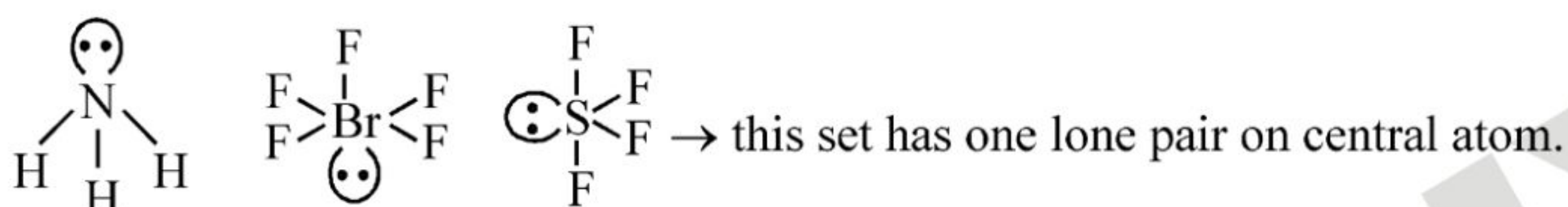
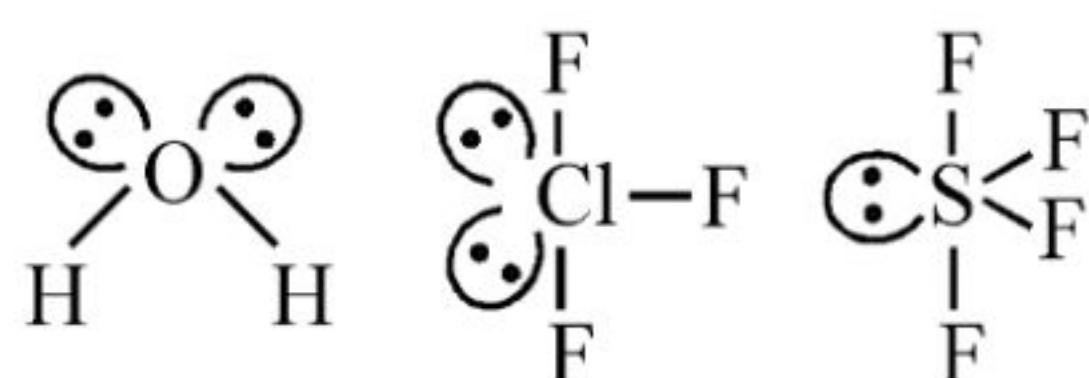
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Sol.


do not follow octet rule.

Statement I is false.



Statement II is true.

Question Id : 6911211254

54. Match List-I with List-II.

 Given V_1 and V_2 are initial and final volumes respectively.

List-I
(Isothermal process)

A. Reversible expansion

B. Free expansion

C. Irreversible Compression

D. Cyclic reversible

List-II
(Expression)

 I. $q = 0$

 II. $q = nRT \ln \frac{V_2}{V_1}$

 III. $w = -p_{\text{ext}} (V_1 - V_2)$

 IV. $\frac{q_{\text{rev}}}{T} = 0$

Choose the correct answer from the options given below :

¶

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

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

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

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

Ans. (3)

Sol. Isothermal process

 Reversible expansion $\Delta U = 0$

$$w = -q$$

$$\text{So, } q = -w = -\left(-nRT \ln \frac{V_2}{V_1}\right)$$

$$= nRT \ln \frac{V_2}{V_1}$$

 A $\rightarrow$ II

Free expansion

$$q = 0$$

 B $\rightarrow$ I

Irreversible compression

$$W = -p_{\text{ext}}(V_2 - V_1)$$

Cyclic reversible

$$\frac{q_{\text{rev}}}{T} = 0$$

 D $\rightarrow$ 4

Question Id : 6911211255

55. Given below are two statements :

Chamber I		Chamber 2
18 g glucose in 100 mL aqueous solution	Semi-permeable membrane	30 g glucose in 250 mL aqueous solution

Statement I : H_2O molecules move from the chamber 1 to chamber 2.

Statement II : The osmotic pressure of a solution prepared by dissolving 50 mg of potassium sulphate (molar mass = 174 g/mol) in 2 L of water (at 27°C) is 0.0107 bar. (Given $R = 0.083 \text{ dm}^3 \text{ bar K}^{-1} \text{ mol}^{-1}$ and assume complete dissociation of electrolyte)

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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. (4)

Sol.

Chamber I		Chamber 2
18 g glucose 100 mL		30 g glucose 250 mL

→ SPM

$$\text{Molarity chamber 1} = \frac{18}{\frac{180}{1000}} = 1$$

$$\text{Molarity chamber 2} = \frac{30}{\frac{180}{1000}} = 0.67$$

H₂O molecules will move from chamber 2 to chamber 1.

So, statement 1 is false.

$$\pi = iCRT$$

$$= 3 \times \frac{50 \times 10^{-3}}{2} \times 0.083 \times 300$$

$$= 0.0107 \text{ bar}$$

So, statement II is true.



$$i = 3$$

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56. Given is a concentrated solution of a weak electrolyte A_xB_y of concentration 'c' and dissociation constant 'K'. The degree of dissociation is given by :

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- (1) $[K \times c^{x+y-1} x^x y^y]^{x+y}$ (2) $\left(\frac{K}{c^{x+y-1} x^x y^y} \right)^{\frac{1}{x+y}}$
- (3) $\left(\frac{c^{x+y-1} x^x y^y}{K} \right)^{x+y}$ (4) $\left(\frac{c^{x+y-1} x^x y^y}{K} \right)^{\frac{1}{x+y}}$

Ans. (2)

Sol. $A_xB_y \rightleftharpoons xA^{y+} + yB^{x-}$

c

$c - \alpha \quad x\alpha \quad y\alpha$

$$K = \frac{(x\alpha)^x (y\alpha)^y}{c - \alpha}$$

$$K = \frac{x^x y^y c^{x+y-1} \alpha^{x+y}}{1 - \alpha}$$

$$1 - \alpha \approx 1$$

$$\alpha = \left(\frac{K}{x^x y^y c^{x+y-1}} \right)^{\frac{1}{x+y}}$$

Question Id : 6911211257

57. For a general redox reaction

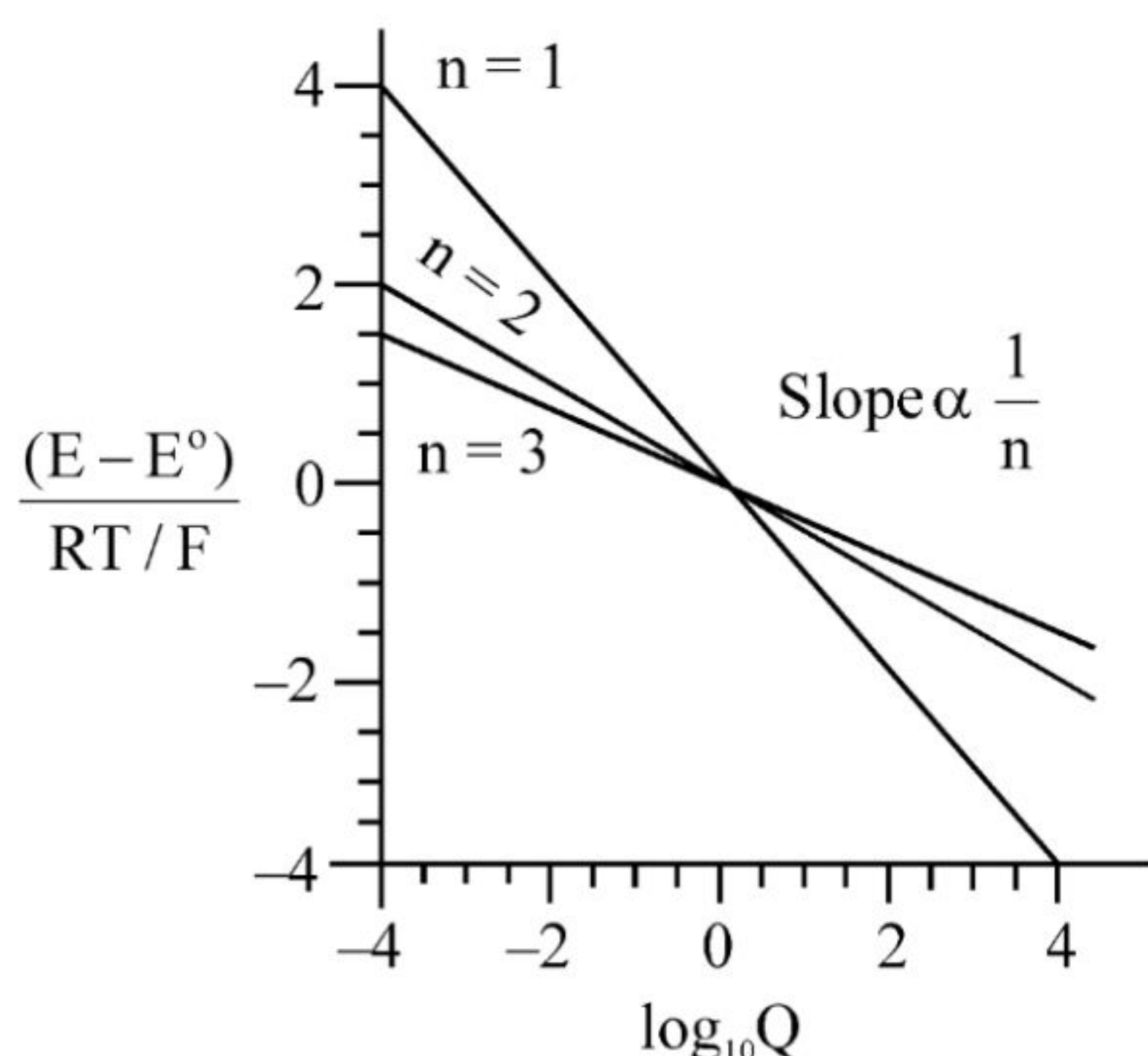


Which of the following statement is incorrect ?

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(1) The overall reaction can be written as $n_2 \text{Red}_1 + n_1 \text{Ox}_2 \rightleftharpoons n_2 \text{Ox}_1^{n_1+} + n_1 \text{Red}_2^{n_2-}$

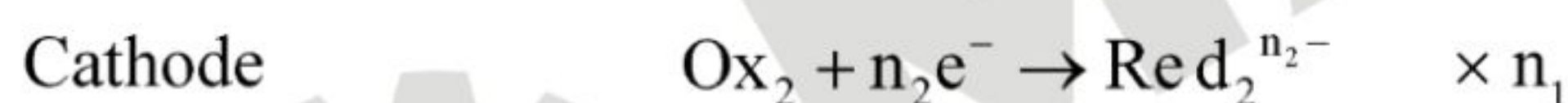
(2) The electrons do not appear in the overall reaction because electrons produced at the anode are consumed at the cathode.



(3) Here n is the number of electrons transferred in redox reaction.

(4) If the reaction is carried out reversibly, the electrical work done is equal to the ratio of charge and potential difference through which charge is moved.

Ans. (4)



Statement I is correct.

The e^- s do not appear in the overall reaction.

Statement II is correct.

$$\Delta G = \Delta G^\circ + RT \ln Q$$

$$-nFE = -nFE^\circ + RT 2.303 \log Q$$

$$E = E^\circ - \frac{RT 2.303}{nF} \log Q$$

$$E - E^\circ = -\frac{RT 2.303}{nF} \log Q$$

$$\frac{E - E^\circ}{\frac{RT}{F}} = -\frac{2.303}{n} \log Q$$

$$\text{slope} = -\frac{2.303}{n}$$

Statement III is correct.

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$\Delta G^\circ = -nFE^\circ = \text{electrical w done}$
 $nF = \text{charge}$
 $E^\circ = \text{potential difference}$

Statement IV is incorrect.

Question Id : 6911211258

58. In a period, the first ionisation enthalpy of the element at extreme left and the negative electron gain enthalpy of the extreme right element, except noble gases, are respectively

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(1) lowest and lowest

(2) highest and lowest

(3) lowest and highest

(4) highest and highest

Ans. (3)

Sol. In a period

first ionisation enthalpy at extreme left is lowest.

negative electron gain enthalpy at extreme right is highest.

Question Id : 6911211259

59. Given below are two statements :

Statement I : $F_2O < H_2O < Cl_2O$ is the correct trend in terms of bond angle.

Statement II : SiF_4 , SnF_4 and PbF_4 are ionic in nature.

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

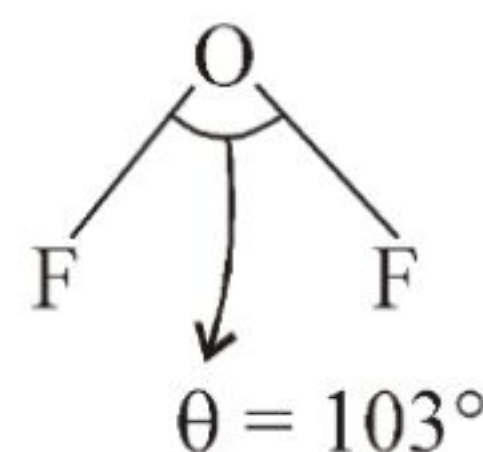
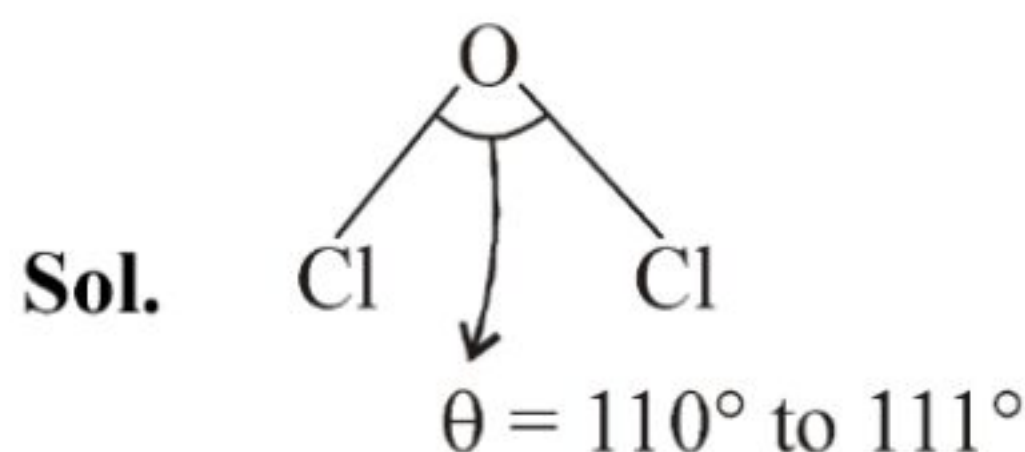
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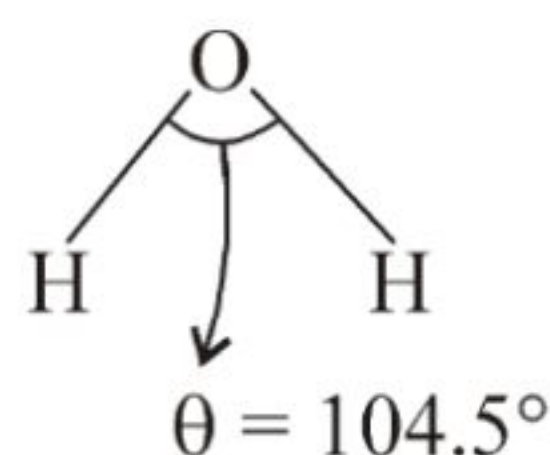
(1) Both Statement I and Statement II are true.

(2) Both Statement I and Statement II are false.

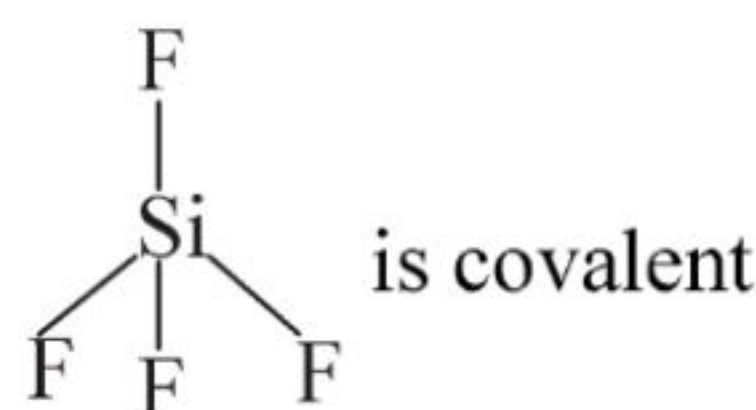
(3) Statement I is true but Statement II is false.

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

Ans. (3)




Statement I is correct.



SnF_4 and PbF_4 are ionic in nature.

Statement II is false.

Question Id : 6911211260

60. The correct order of first ($\Delta_i H_1$) and second ($\Delta_i H_2$) ionisation enthalpy values of Cr and Mn are :

A. $\Delta_i H_1$: Cr > Mn

B. $\Delta_i H_2$: Cr > Mn

C. $\Delta_i H_1$: Mn > Cr

D. $\Delta_i H_2$: Mn > Cr

Choose the correct answer from the options given below :

☞

(1) A and B only

(2) B and C only

(3) A and D only

(4) C and D only

Ans. (2)

Sol.	$\Delta_i H_1$ (kJ/mol)	$\Delta_i H_2$ (kJ/mol)
Cr	653	1592
Mn	717	1509

Question Id : 6911211261

61. Which of the following sequences of hybridisation, geometry and magnetic nature are correct for the given coordination compounds ?

A. $[\text{NiCl}_4]^{2-}$ – sp^3 , tetrahedral, paramagnetic

B. $[\text{Ni}(\text{NH}_3)_6]^{2+}$ – sp^3d^2 , octahedral, paramagnetic

C. $[\text{Ni}(\text{CO})_4]$ – sp^3 , tetrahedral, paramagnetic

D. $[\text{Ni}(\text{CN})_4]^{2-}$ – dsp^2 , square planar, diamagnetic

Choose the correct answer from the options given below :

☞

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(1) A, B, C and D

(2) B, C and D only

(3) A, C and D only

(4) A, B and D only

Ans. (4)

Sol. $[\text{NiCl}_4]^{2-}$
 $\text{Ni}^{2+} 3d^8 4s^0 sp^3$ tetrahedral paramagnetic

 $[\text{Ni}(\text{NH}_3)_6]^{2+}$
 $\text{Ni}^{2+} 3d^8 4s^0 sp^3 d^2$ octahedral paramagnetic

 $[\text{Ni}(\text{CO})_4]$
 $\text{Ni}^0 3d^8 4s^2 \rightarrow 3d^{10} 4s^0$
 sp^3 tetrahedral diamagnetic

 $[\text{Ni}(\text{CN})_4]^{2-}$
 $\text{Ni}^{2+} 3d^8 4s^0$ pairing will happen

 dsp^2 square planar diamagnetic

Question Id : 6911211262

62. Given below are two statements :

Statement I : A mixture of $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (sugar) and NaCl can be separated by dissolving sugar in alcohol, due to differential solubility.

Statement II : Rose essence from rose petals is separated by steam distillation due to its high volatility and insolubility in H_2O .

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. Sugar dissolves in alcohol but NaCl does not.

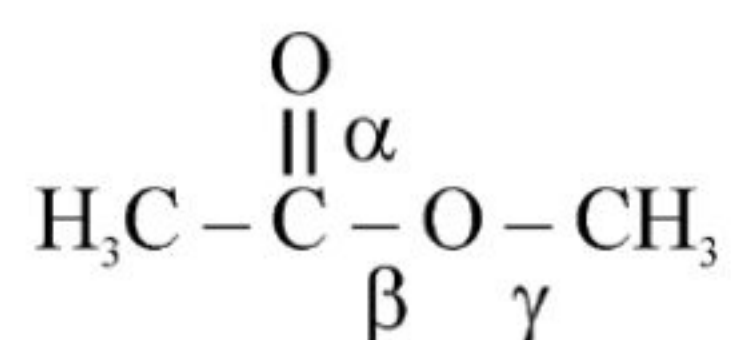
Statement I is correct.

Rose essence can be separated by steam distillation.

Statement II is correct.

Question Id : 6911211263

63. Shown below is the structure of methyl acetate with three different α , β and γ carbon-oxygen bonds.



The correct order of bond lengths of these bonds is :

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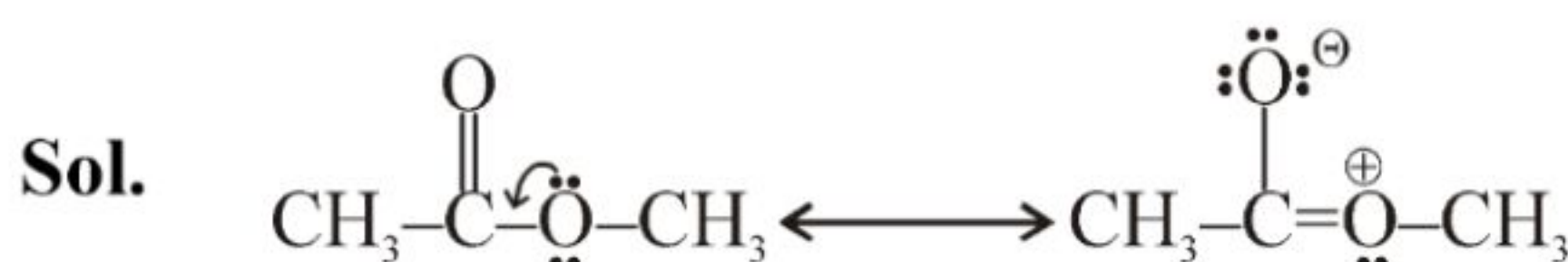
(1) $\alpha > \beta > \gamma$

(2) $\alpha < \beta < \gamma$

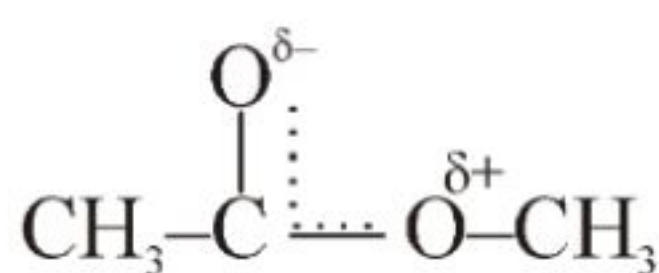
(3) $\alpha = \beta = \gamma$

(4) $\alpha < \beta = \gamma$

Ans. (2)



Hybrid



$\gamma \rightarrow$ always single bond

α and β are partial double bond

$\alpha < \beta$ because structure I is more stable and more contribution in hybrid.

Question Id : 6911211264

64. 'x' is the product which is obtained by the hydrolysis of prop-1-yne in the presence of mercuric sulphate under dilute acidic medium at 333 K. 'y' is the product which is obtained by the reaction of ethane nitrile with methyl magnesium bromide in dry ether followed by hydrolysis. IUPAC name of product obtained from 'x' and 'y' in the presence of barium hydroxide followed by heating is :

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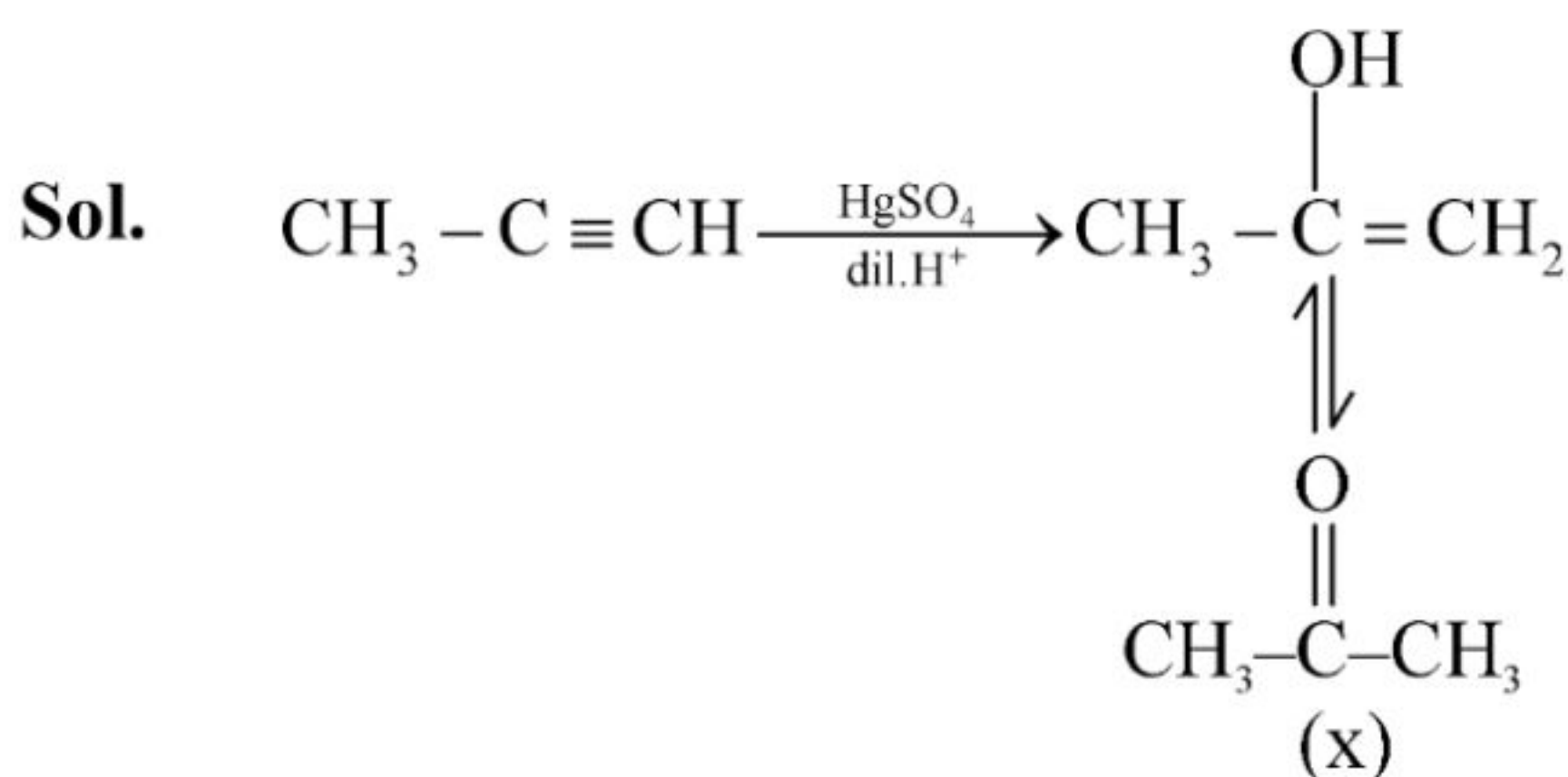
(1) 2-Methylpent-4-en-3-one

(2) 4-Methylpent-3-en-2-one

(3) 4-Methylpent-1-ene

(4) 2-Methylpent-3-one

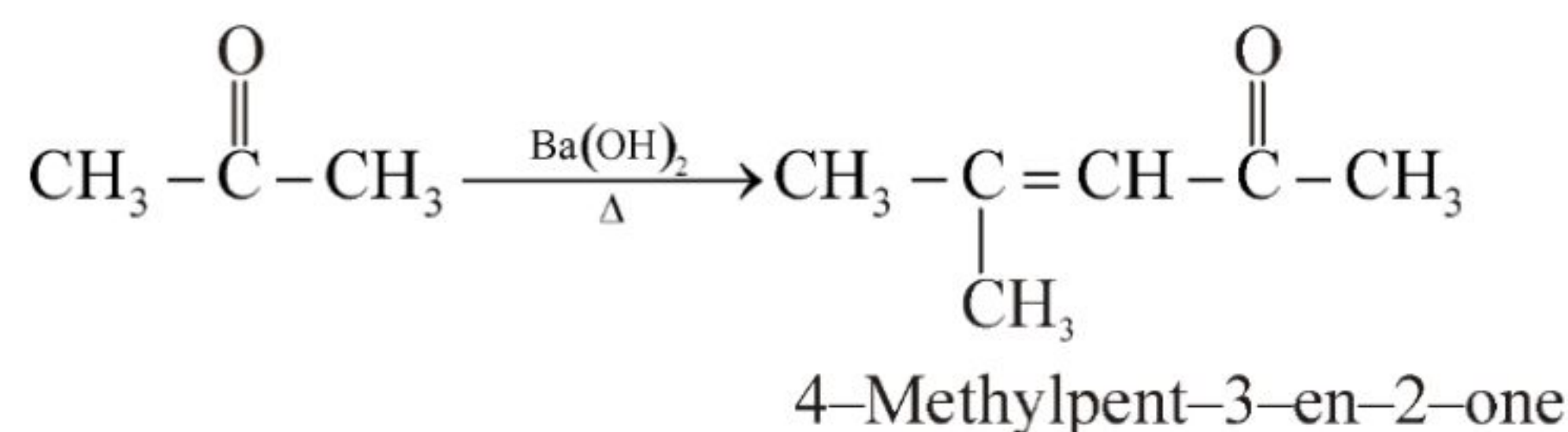
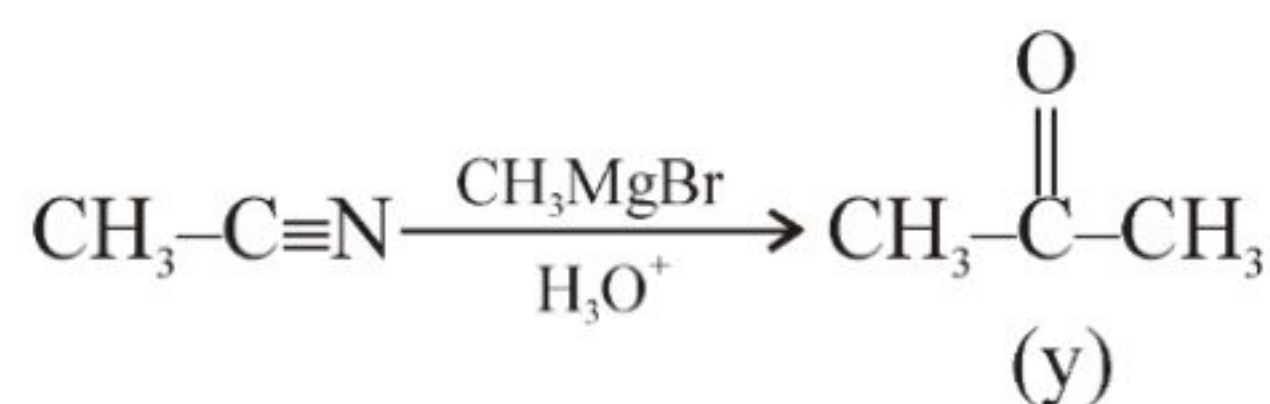
Ans. (2)



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Question Id : 6911211265

65. An optically active alkyl bromide $\text{C}_4\text{H}_9\text{Br}$, reacts with ethanolic KOH to form major compound [A] which reacts with bromine to give compound [B]. Compound [B] reacts with ethanolic KOH and sodamide to give compound [C]. One molecule of water adds to compound [C] on warming with mercuric sulphate and dilute sulphuric acid at 333 K to form compound [D]. The functional group in compound D will be confirmed by :

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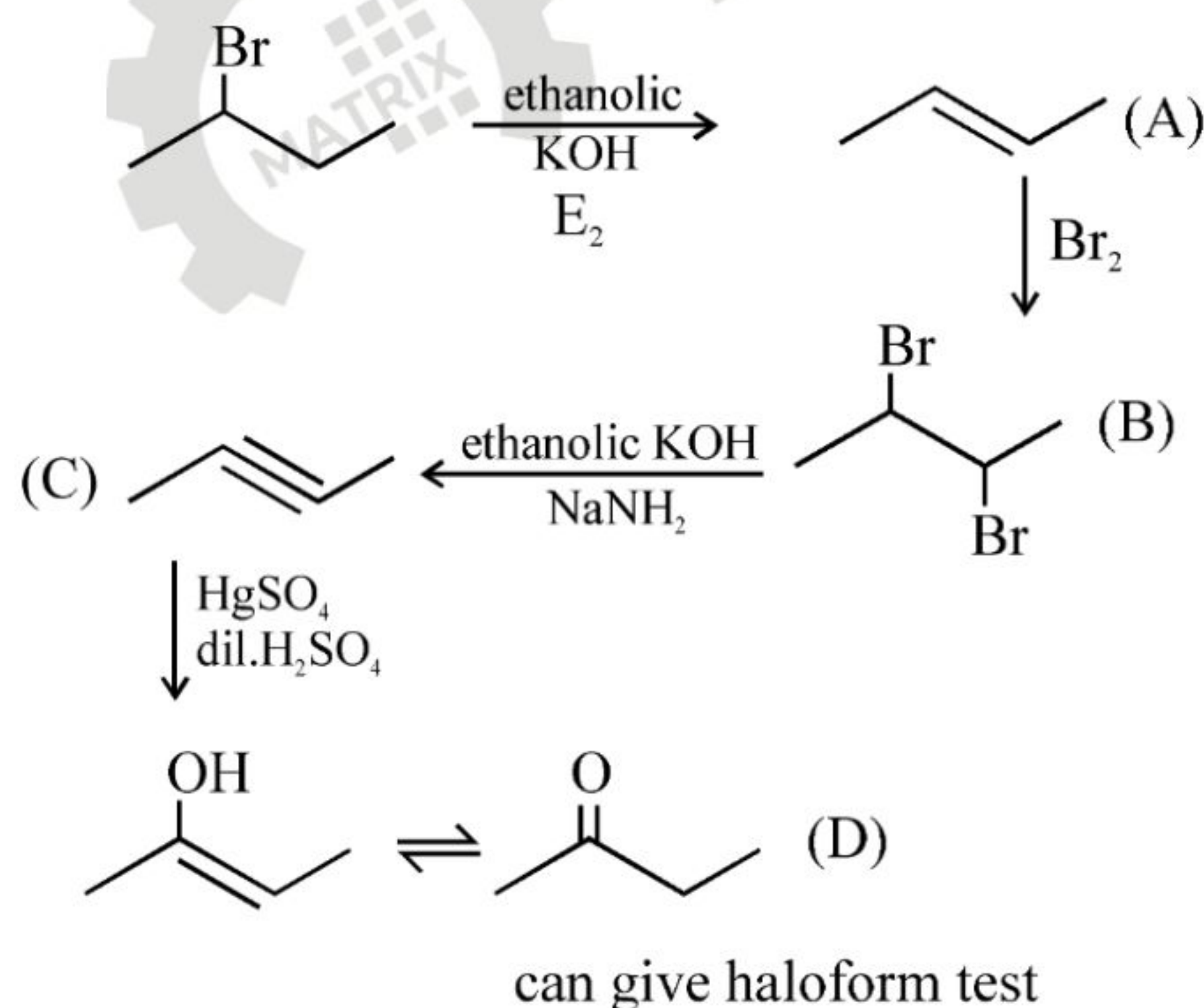
(1) Haloform test

(2) Lucas test

(3) Silver mirror test

(4) Benedict test

Ans. (1)

Sol.


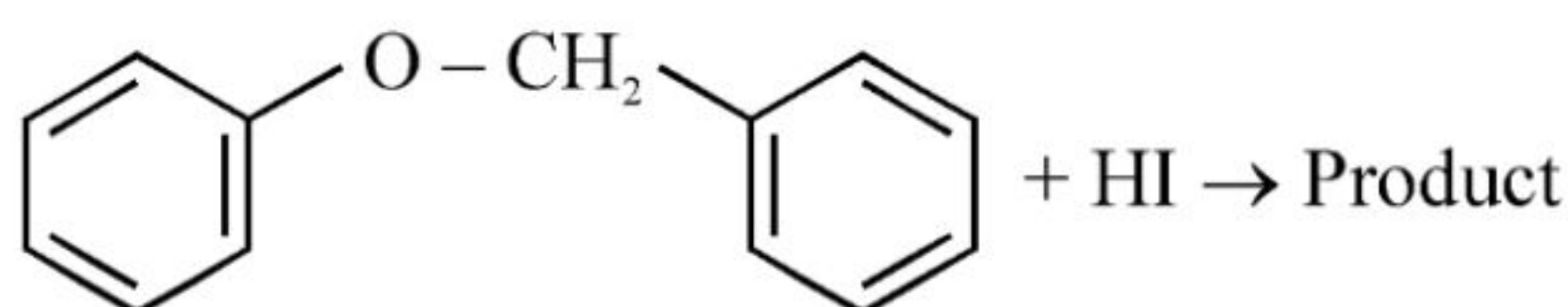
Question ID : 6911211266

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66. Consider the following reaction.



Statement I: In the above reaction, product formed will be a mixture of benzyl alcohol and iodobenzene.

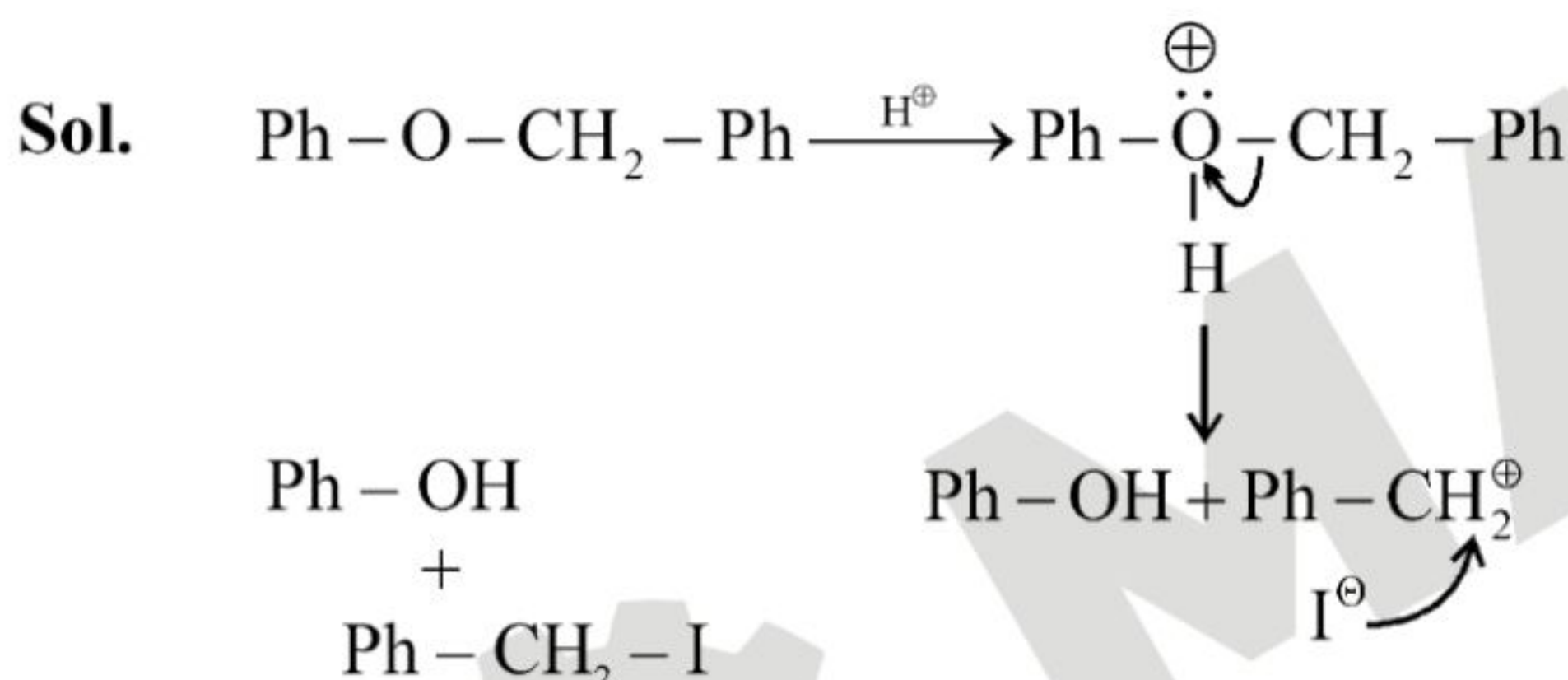
Statement II : In the above reaction, the $\text{-O-CH}_2\text{-}$ bond is cleaved to give the product.

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

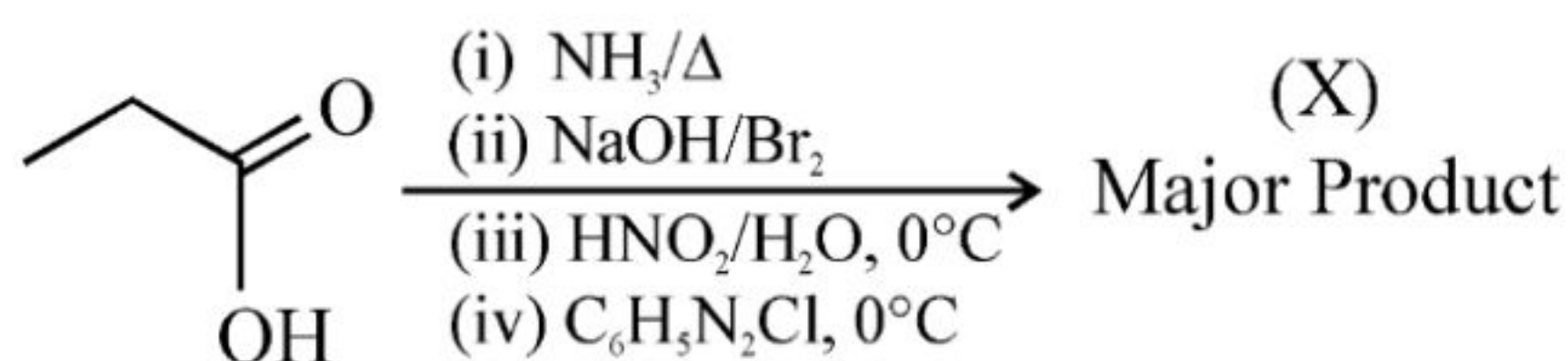
Ans. (4)



Statement I is false
Statement II is true

Question ID : 6911211267

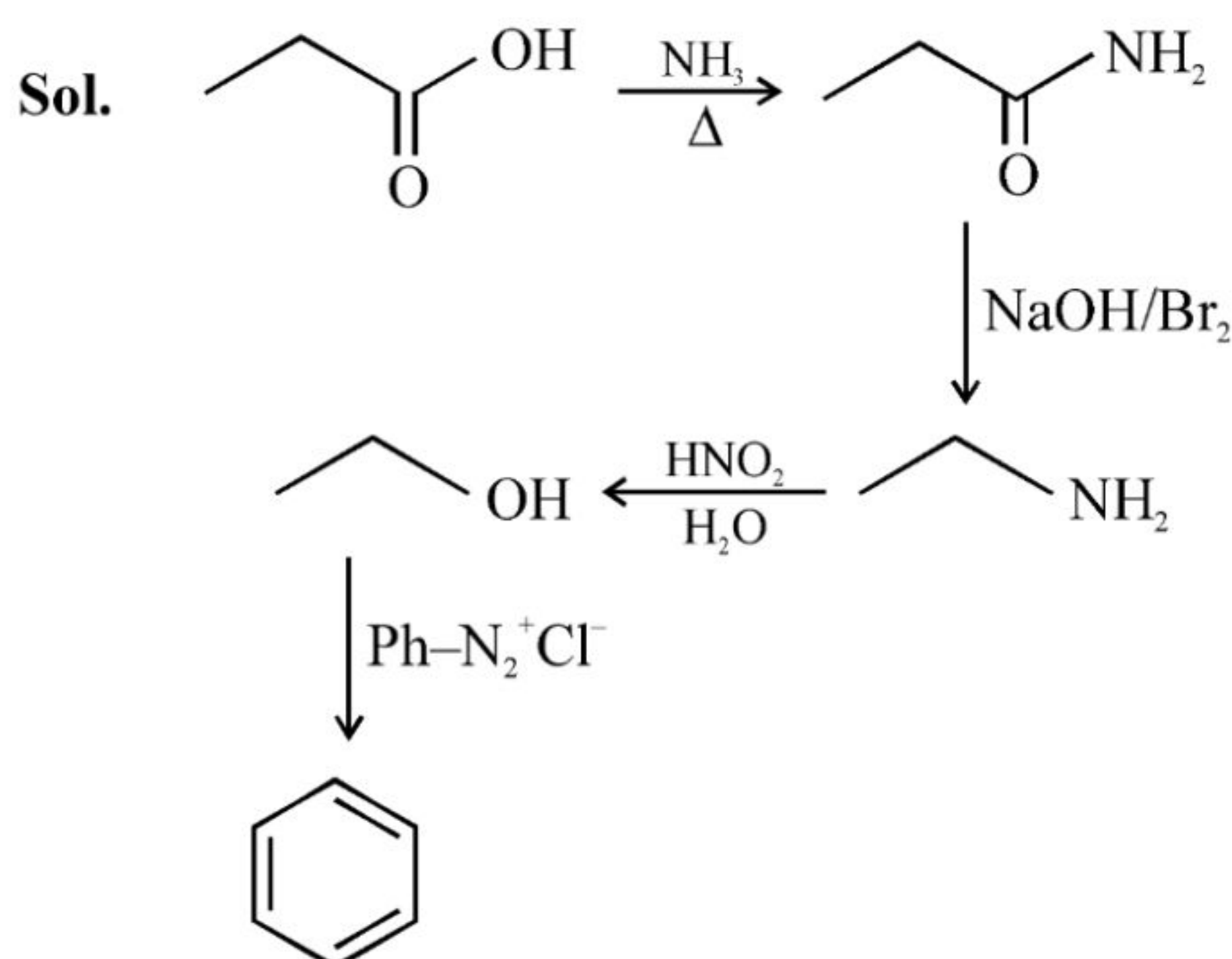
67. Consider the following organic reaction sequence. Choose the final product (X) from the following (consider the major product in all intermediate reactions)



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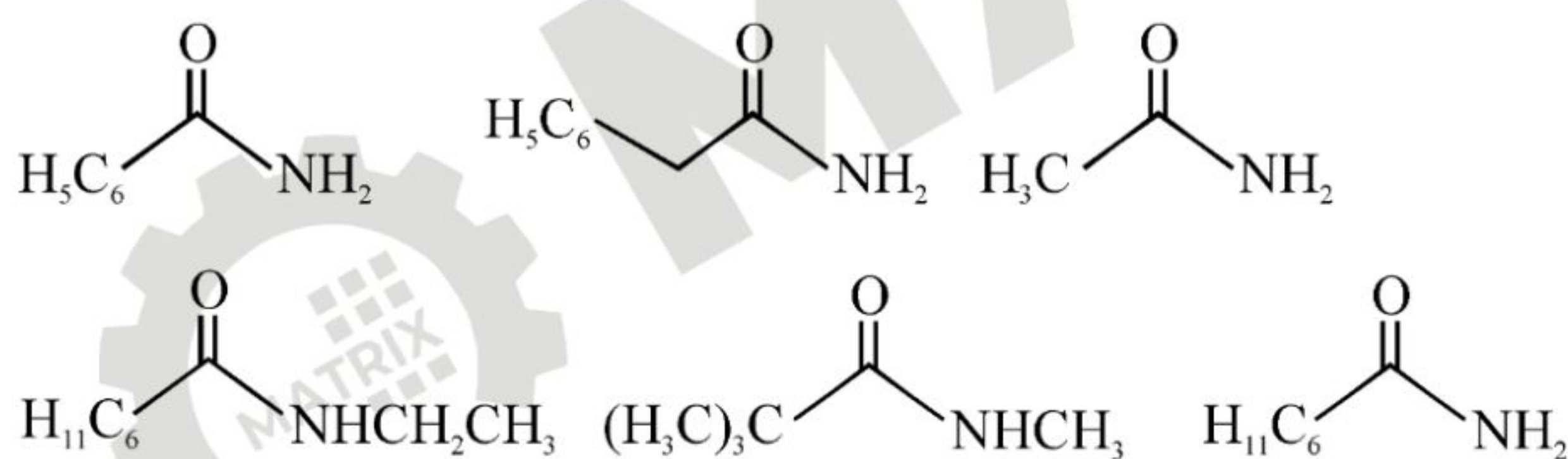
- (1) Benzene
- (2) Phenol
- (3) Propanol
- (4) Chlorobenzene

Ans. (1)



Question ID : 6911211268

68. The number of compounds from the following which can undergo reaction with Br_2/KOH (alcoholic) to give respective products and these respective products can also be obtained separately by Gabriel phthalimide reaction is :



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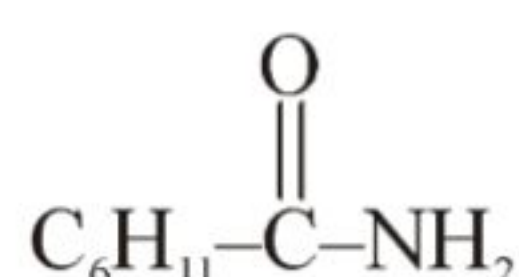
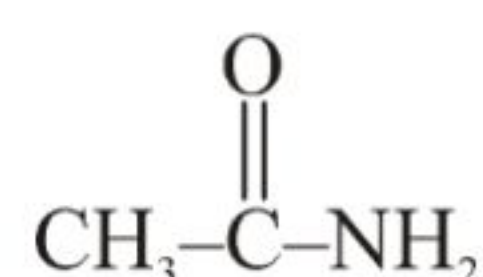
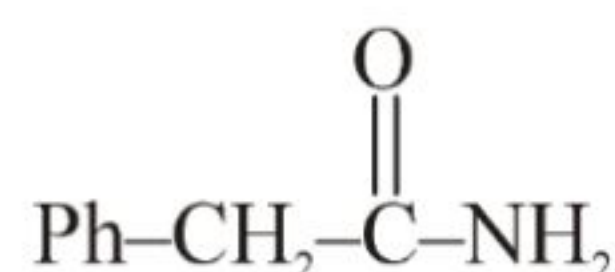
(1) 5

(2) 4

(3) 3

(4) 6

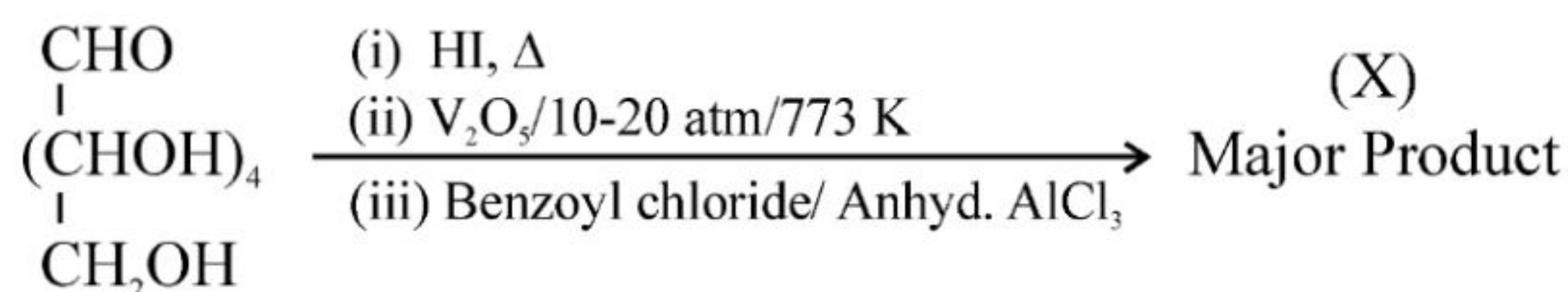
Ans. (3)

 Sol. $1^\circ \text{amide} \xrightarrow[\text{KOH}]{\text{Br}_2} 1^\circ \text{amine}$
 1° amine can also be prepared by Gabriel phthalimide reaction.


1° amine from $\text{Ph}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$ cannot be prepared by Gabriel phthalimide reaction.

Question ID : 6911211269

69. Consider the following reactions. Total number of electrons in the π bonds and lone pair of electrons in the product (X) is:



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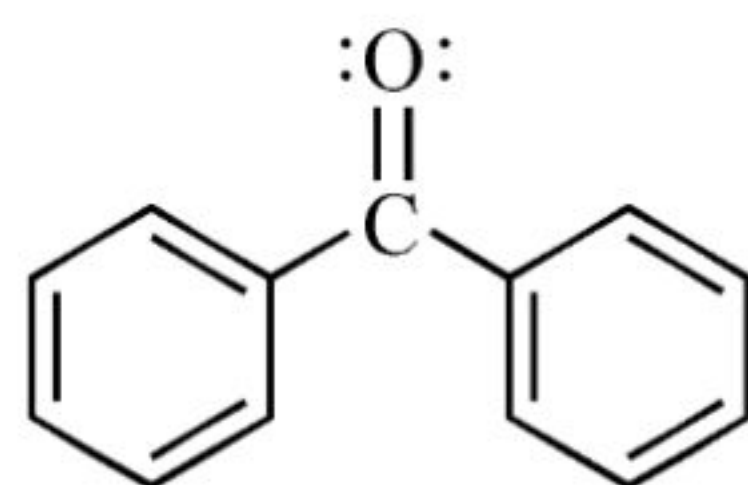
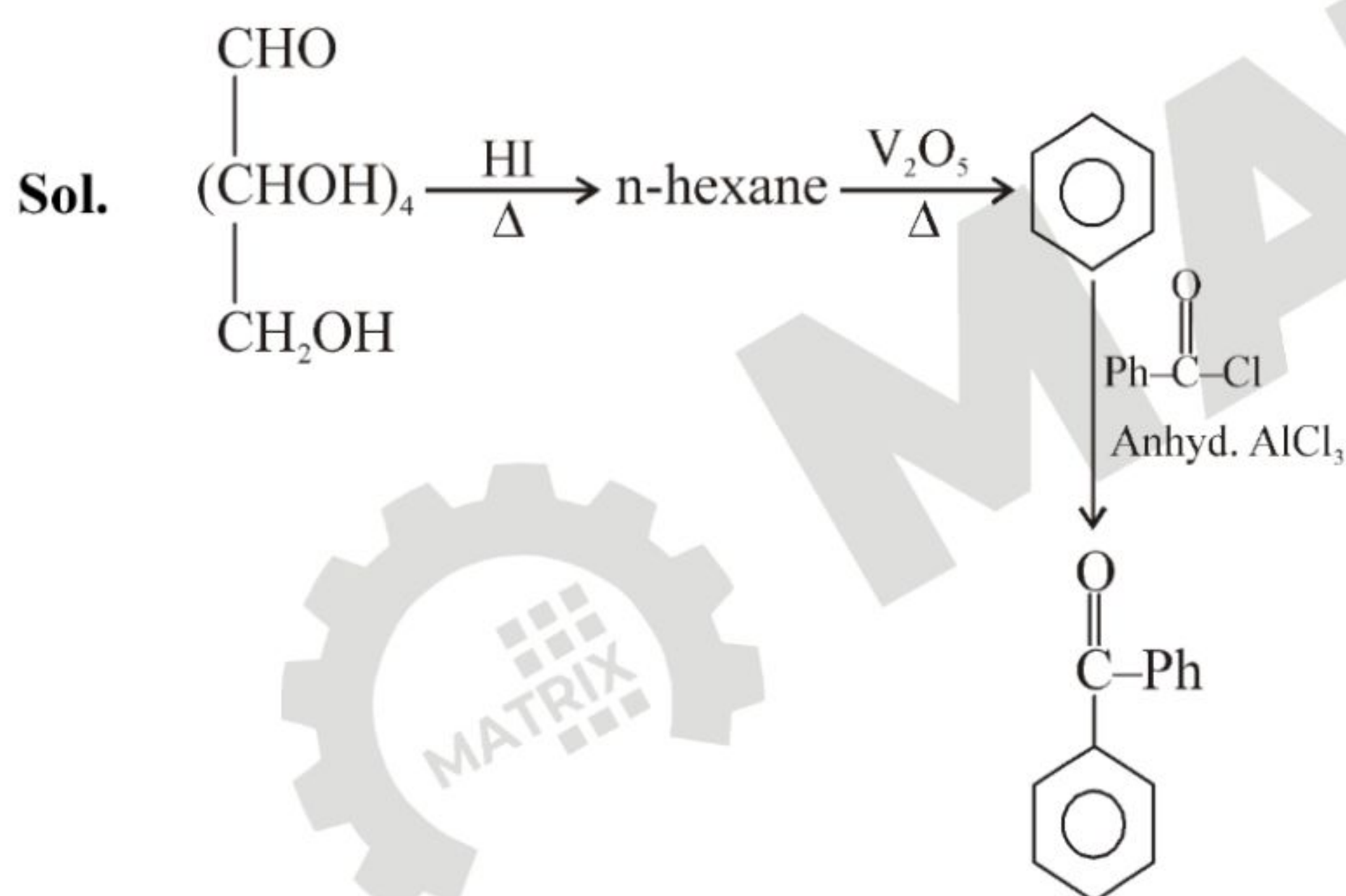
(1) 12

(2) 16

(3) 14

(4) 18

Ans. (4)



no. of π bonds = 7

No. of e^- in π bond	= 14	} → 18
No. of lone pair	= 2	
No. of e^- in lone pair	= 4	

Question ID : 6911211270

70. Treatment of a gas 'X' with a freshly prepared ferrous sulphate solution gives a compound 'Y' as a brown ring. The compounds X and Y are.

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- (1) NO and $[\text{Fe}(\text{NO})]\text{SO}_4$
- (2) NO_2 and $[\text{Fe}(\text{NO}_2)]\text{SO}_4$
- (3) N_2O and $[\text{Fe}(\text{N}_2\text{O})]\text{SO}_4$
- (4) N_2O_4 and $[\text{Fe}(\text{N}_2\text{O}_4)]\text{SO}_4$

Ans. (1)

Sol. $\text{NO} + \text{FeSO}_4 \longrightarrow [\text{Fe}(\text{NO})]\text{SO}_4$
 gas Brown ring

SECTION - B

Question ID : 6911211271

71. An excess of AgNO_3 is added to 100 mL of a 0.05 M solution of tetraaquadichloridochromium (III) chloride. The number of moles of AgCl precipitated will be $\text{_____} \times 10^{-3}$. (Nearest integer)

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Ans. (5)

Sol. $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl} + \text{AgNO}_3 \longrightarrow \text{AgCl} \downarrow$
 100 mL excess
 0.05 M
 M moles 5 5
 M moles of $\text{AgCl} = 5$
 Moles of $\text{AgCl} = 5 \times 10^{-3}$

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72. An alkane (Y) requires 8 moles of oxygen for complete combustion and on chlorination with $\text{Cl}_2/h\nu$ (Y) gives only one monochlorinated product (Z). The total number of primary carbon atoms in (Y) is _____.

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Ans. (4)

Sol. $\text{C}_x\text{H}_y + \left(x + \frac{y}{4}\right)\text{O}_2 \rightarrow x\text{CO}_2 + \frac{y}{2}\text{H}_2\text{O}$

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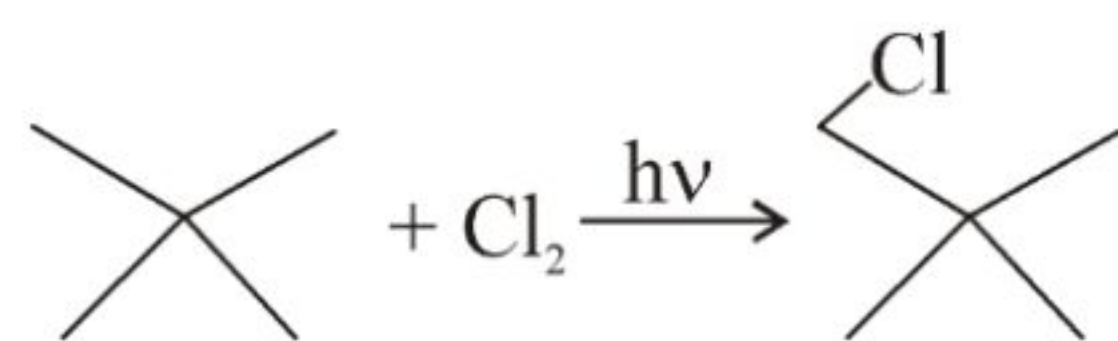
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$$x + \frac{y}{4} = 8$$

$$\text{So, } x = 5$$

$$y = 12$$

C_5H_{12} is the alkane



Only one mono chlorinated product

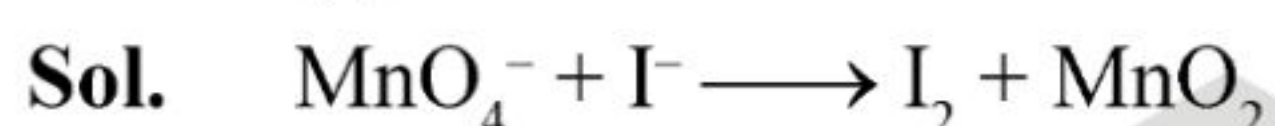
4 Primary C atoms

Question ID : 6911211273

73. 500 mL of 0.2M MnO_4^- solution in basic medium when mixed with 500 mL of 1.5 M KI solution, oxidises iodide ions to liberate molecular iodine. This liberated iodine is then titrated with a standard $x\text{ M}$ thiosulphate solution in presence of starch till the end point. If 300 mL of thiosulphate was consumed, then the value of x is _____.

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Ans. (1)



$$\text{Meq. of MnO}_4^- = 500 \times 0.2 \times 3 = 300$$

$$\text{Meq. of KI} = 500 \times 1.5 \times 1 = 750$$

$$\text{Meq. of I}_2 \text{ liberated} = 300$$

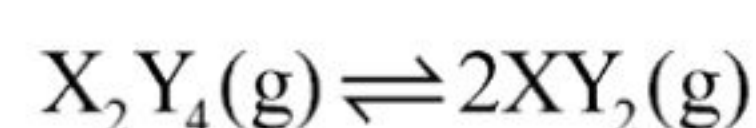
$$\text{Meq. I}_2 = \text{M eq. thiosulphate}$$

$$300 = x \times 300 \times 1$$

$$x = 1$$

Question ID : 6911211274

74. In a closed flask at 600 K , one mole of $\text{X}_2\text{Y}_4(\text{g})$ attains equilibrium as given below :



At equilibrium, 75% $\text{X}_2\text{Y}_4(\text{g})$ was dissociated and the total pressure is 1 atm . The magnitude of $\Delta_r G^\ominus$ (kJ mol^{-1}) at this temperature is _____. (Nearest Integer)

(Given : $R = 8.3\text{ J mol}^{-1}\text{ K}^{-1}$; $\ln 10 = 2.3$, $\log 2 = 0.3$, $\log 3 = 0.48$, $\log 5 = 0.69$, $\log 7 = 0.84$)

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Ans. (8)

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Sol. $X_2Y_4 \rightleftharpoons 2XY_2$

P

$P - P\alpha \quad 2P\alpha$

$P - P\alpha + 2P\alpha = P_T$

$$P_T = \frac{P}{1 + \alpha}$$

$$K_p = \frac{(2P\alpha)^2}{P(1 - \alpha)}$$

$$= \frac{4P\alpha^2}{1 - \alpha} \quad \alpha = 0.75$$

$$= \frac{4P_T\alpha^2}{1 - \alpha^2}$$

$$= 5.14$$

$$\Delta G^\circ = -RT \ln K_p$$

$$= -8153.99$$

$$\approx -8154$$

$$\approx -8.154 \text{ kJ/mole}$$

Question ID : 6911211275

75. Decomposition of a hydrocarbon follows the equation $k = (5.5 \times 10^{11} \text{ s}^{-1}) e^{\frac{-28000 \text{ K}}{T}}$. The activation energy of reaction is _____ kJ mol⁻¹. (Nearest Integer)

Given : R = 8.3 J K⁻¹ mol⁻¹

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Ans. (232)

Sol. $K = Ae^{\frac{E_a}{RT}}$

$$= 5.5 \times 10^{11} e^{\frac{28000}{T}}$$

$$\frac{E_a}{R} = 28000$$

$$E_a = 232400$$

$$= 232.4 \text{ kJ mol}^{-1}$$