

Chemistry Section A

Section Id :	864351904
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	8643511131
Question Shuffling Allowed :	Yes



Question Number : 31 Question Id : 86435120020 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Frenkel defects are vacancy as well as interstitial defects.

Statement II : Frenkel defect leads to colour in ionic solids due to presence of F-centres.

Choose the **most appropriate** answer for the statements from the options given below :

Options :

86435166641. Both **Statement I** and **Statement II** are true

86435166642. Both **Statement I** and **Statement II** are false

86435166643. **Statement I** is true but **Statement II** is false

86435166644. **Statement I** is false but **Statement II** is true

Question Number : 32 Question Id : 86435120021 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : According to Bohr's model of an atom, qualitatively the magnitude of velocity of electron increases with decrease in positive charges on the nucleus as there is no strong hold on the electron by the nucleus.

Statement II : According to Bohr's model of an atom, qualitatively the magnitude of velocity of electron increases with decrease in principal quantum number.

In the light of the above statements, choose the **most appropriate** answer from the options given below :



Options :

86435166645. Both **Statement I** and **Statement II** are true

86435166646. Both **Statement I** and **Statement II** are false

86435166647. **Statement I** is true but **Statement II** is false

86435166648. **Statement I** is false but **Statement II** is true

Question Number : 33 Question Id : 86435120022 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : The limiting molar conductivity of KCl (strong electrolyte) is higher compared to that of CH_3COOH (weak electrolyte).

Statement II : Molar conductivity decreases with decrease in concentration of electrolyte.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

Options :

86435166649. Both **Statement I** and **Statement II** are true

86435166650. Both **Statement I** and **Statement II** are false

86435166651. **Statement I** is true but **Statement II** is false

86435166652. **Statement I** is false but **Statement II** is true



Question Number : 34 Question Id : 86435120023 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for the adsorption of a gas at a given temperature on a solid surface ?

Options :

86435166653. $\Delta H > 0, \Delta S > 0$

86435166654. $\Delta H < 0, \Delta S > 0$

86435166655. $\Delta H > 0, \Delta S < 0$

86435166656. $\Delta H < 0, \Delta S < 0$

Question Number : 35 Question Id : 86435120024 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Given below are two statements.

Statement I : The choice of reducing agents for metals extraction can be made by using Ellingham diagram, a plot of ΔG vs temperature.

Statement II : The value of ΔS increases from left to right in Ellingham diagram.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

Options :

86435166657. Both **Statement I** and **Statement II** are true



86435166658. Both **Statement I** and **Statement II** are false

86435166659. **Statement I** is true but **Statement II** is false

86435166660. **Statement I** is false but **Statement II** is true

Question Number : 36 Question Id : 86435120025 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following methods is most suitable for preparing deionized water ?

Options :

86435166661. Clark's method

86435166662. Synthetic resin method

86435166663. Calgon's method

86435166664. Permutit method

Question Number : 37 Question Id : 86435120026 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

What are the products formed in sequence when excess of CO_2 is passed in slaked lime ?

Options :

86435166665. $\text{CaCO}_3, \text{Ca}(\text{HCO}_3)_2$



86435166666. $\text{Ca}(\text{HCO}_3)_2, \text{CaCO}_3$

86435166667. $\text{CaO}, \text{CaCO}_3$

86435166668. $\text{CaO}, \text{Ca}(\text{HCO}_3)_2$

Question Number : 38 Question Id : 86435120027 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The **incorrect** statement is :

Options :

86435166669. Cl_2 is more reactive than ClF .

86435166670. F_2 is more reactive than ClF .

86435166671. On hydrolysis ClF forms HOCl and HF .

86435166672. F_2 is a stronger oxidizing agent than Cl_2 in aqueous solution.

Question Number : 39 Question Id : 86435120028 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following when dissolved in water gives coloured solution in nitrogen atmosphere ?

Options :



86435166673. ZnCl_2

86435166674. CuCl_2

86435166675. Cu_2Cl_2

86435166676. AgCl

Question Number : 40 Question Id : 86435120029 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The conversion of hydroxyapatite occurs due to presence of F^- ions in water. The correct formula of hydroxyapatite is :

Options :

86435166677. $[3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaF}_2]$

86435166678. $[\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaF}_2]$

86435166679. $[3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{Ca}(\text{OH})_2]$

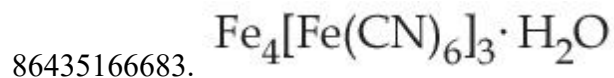
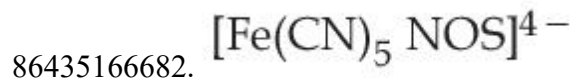
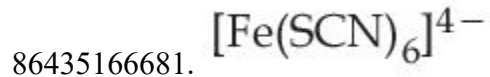
86435166680. $[3\text{Ca}(\text{OH})_2 \cdot \text{CaF}_2]$

Question Number : 41 Question Id : 86435120030 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1



Which one of the following complexes is violet in colour ?

Options :

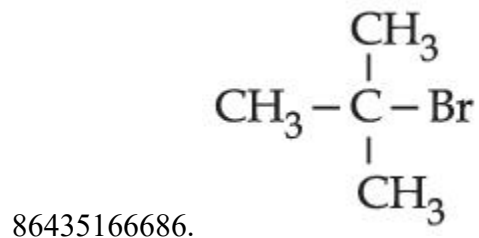
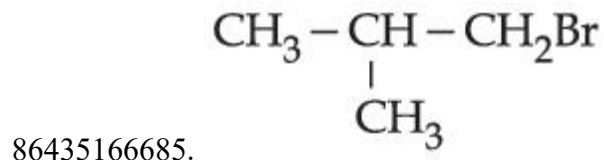


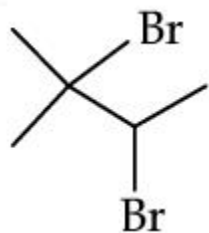
Question Number : 42 Question Id : 86435120031 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

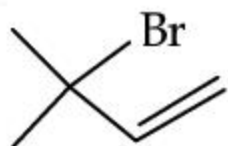
Excess of isobutane on reaction with Br_2 in presence of light at 125°C gives which one of the following, as the major product ?

Options :





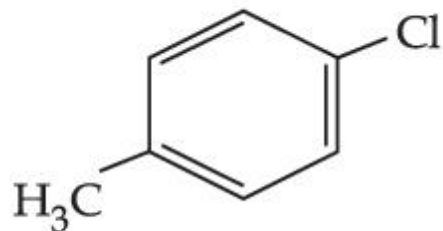
86435166691.



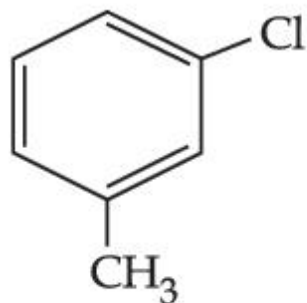
86435166692.

Question Number : 44 Question Id : 86435120033 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

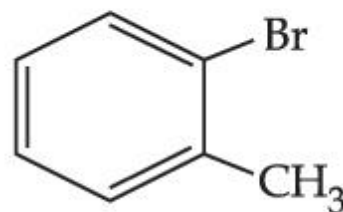
Among the following compounds I-IV, which one forms a yellow precipitate on reacting sequentially with (i) NaOH (ii) dil. HNO_3 (iii) AgNO_3 ?



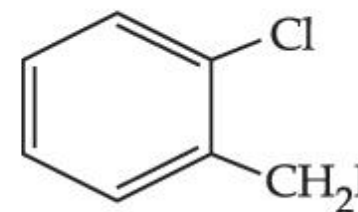
I



II



III



IV

Options :

86435166693. I

86435166694. II

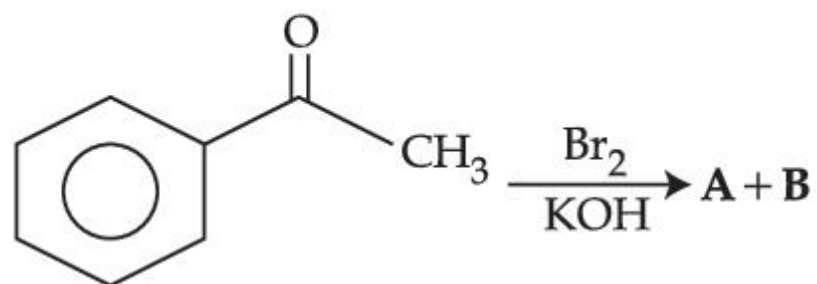


86435166695. III

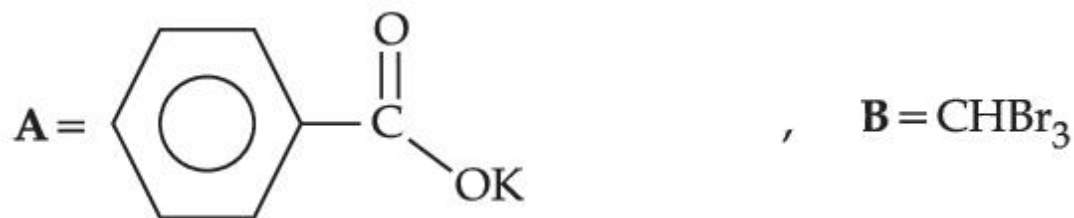
86435166696. IV

Question Number : 45 Question Id : 86435120034 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

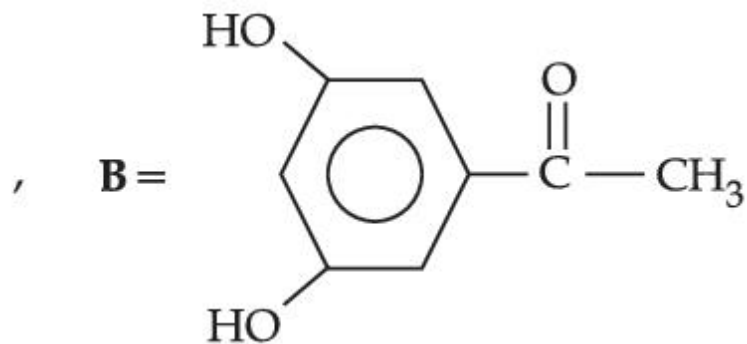
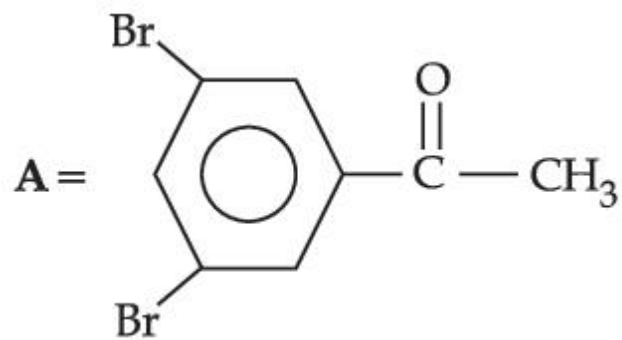
The major products formed in the following reaction sequence **A** and **B** are :



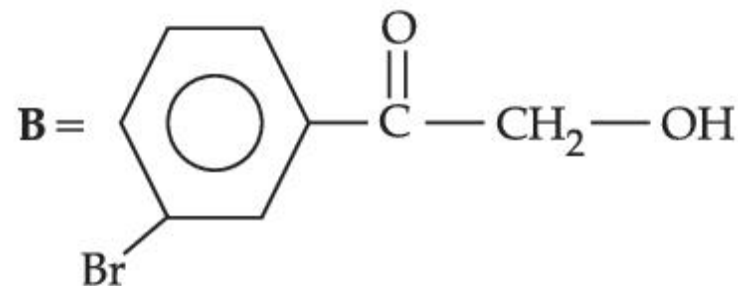
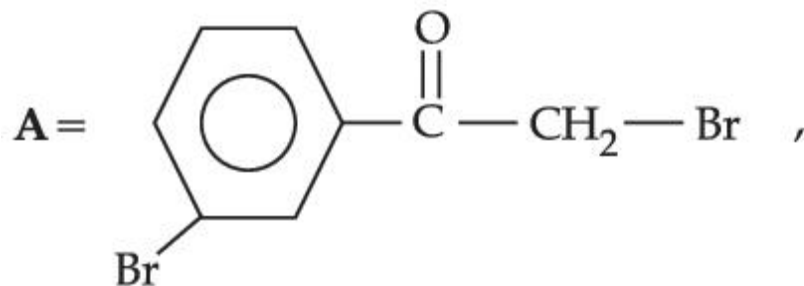
Options :



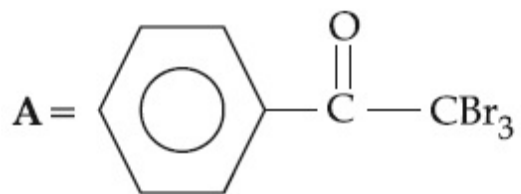
86435166697.



86435166698.



86435166699.

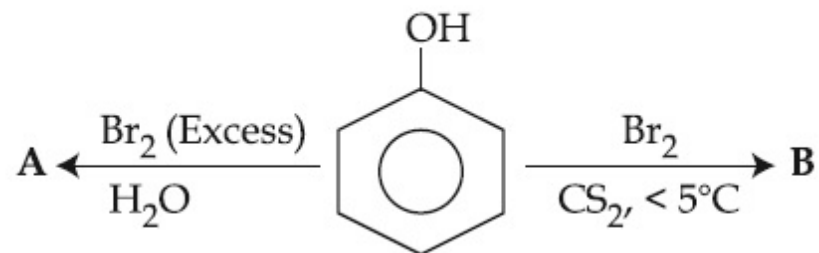


86435166700.

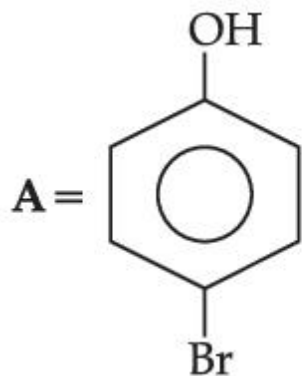
Question Number : 46 Question Id : 86435120035 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1



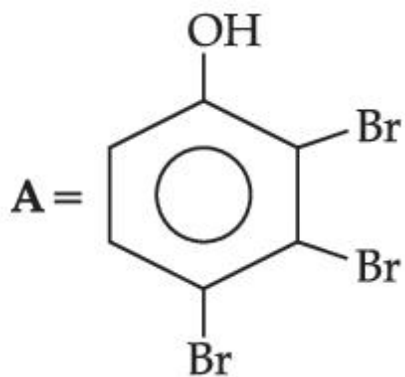
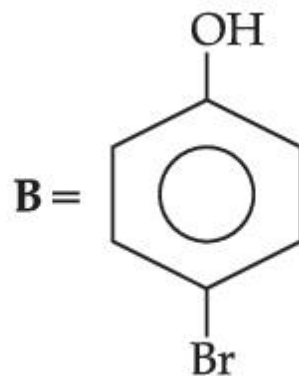
The correct options for the products A and B of the following reactions are :



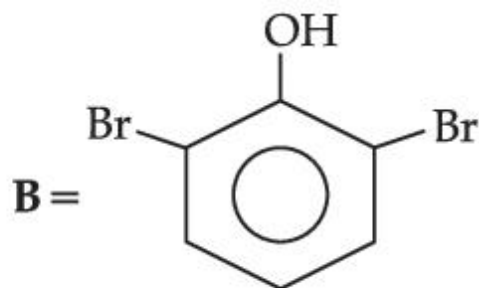
Options :

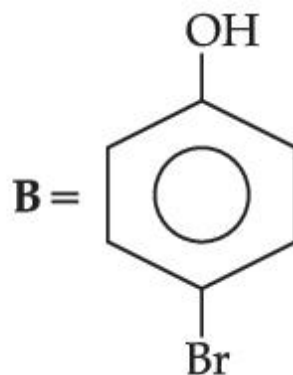
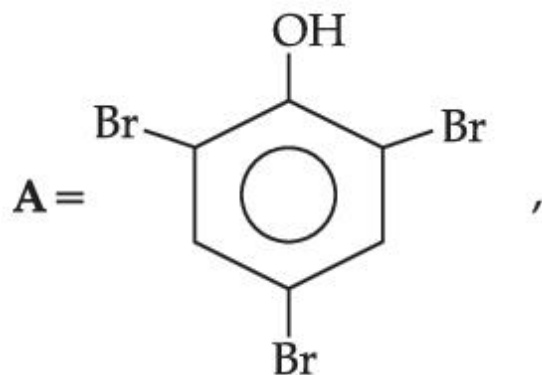


86435166701.

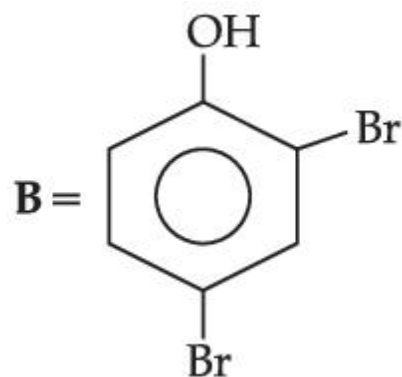
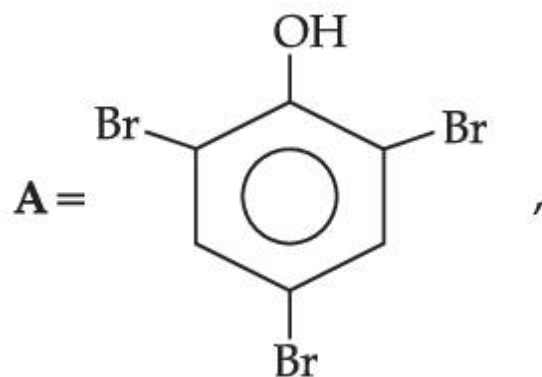


86435166702.





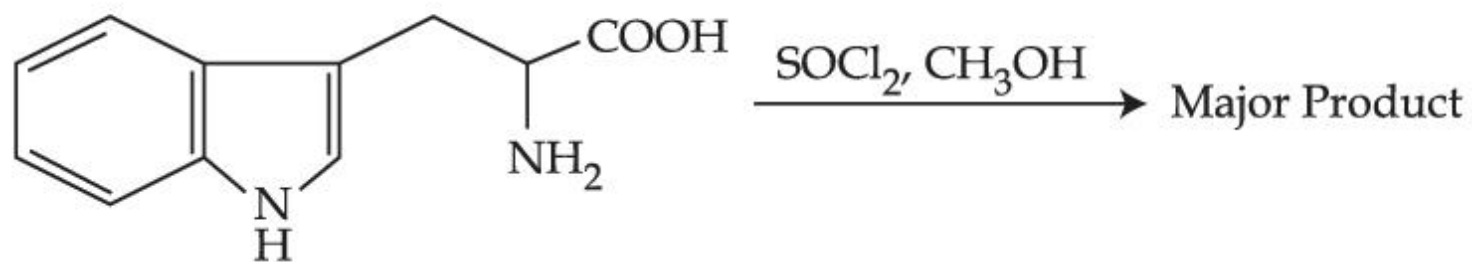
86435166703.



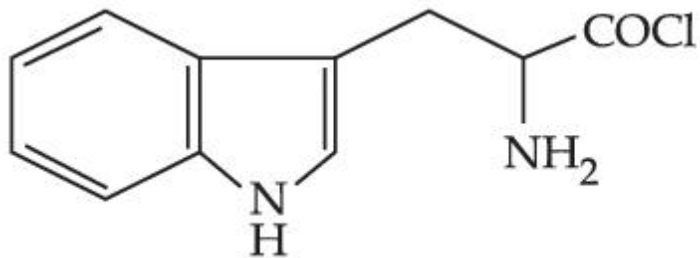
86435166704.

Question Number : 47 Question Id : 86435120036 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

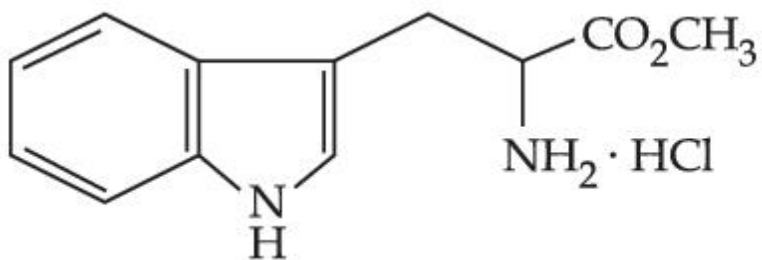
The major product formed in the following reaction is :



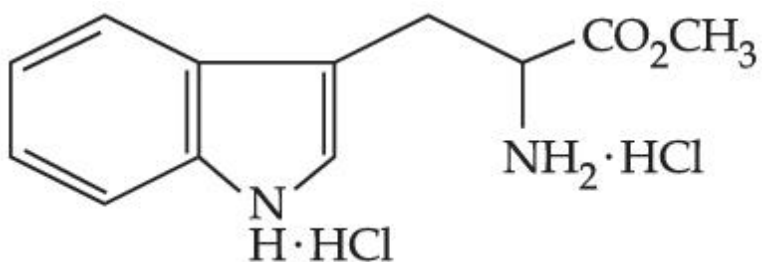
Options :



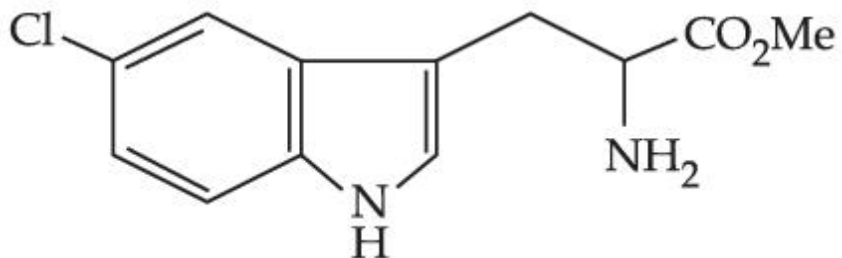
86435166705.



86435166706.



86435166707.



86435166708.

Question Number : 48 Question Id : 86435120037 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1



The correct sequential addition of reagents in the preparation of 3-nitrobenzoic acid from benzene is :

Options :

86435166709. $\text{HNO}_3/\text{H}_2\text{SO}_4$, $\text{Br}_2/\text{AlBr}_3$, Mg/ether , CO_2 , H_3O^+

86435166710. $\text{Br}_2/\text{AlBr}_3$, NaCN , H_3O^+ , $\text{HNO}_3/\text{H}_2\text{SO}_4$

86435166711. $\text{Br}_2/\text{AlBr}_3$, $\text{HNO}_3/\text{H}_2\text{SO}_4$, NaCN , H_3O^+

86435166712. $\text{Br}_2/\text{AlBr}_3$, $\text{HNO}_3/\text{H}_2\text{SO}_4$, Mg/ether , CO_2 , H_3O^+

Question Number : 49 Question Id : 86435120038 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The polymer formed on heating Novolac with formaldehyde is :

Options :

86435166713. Melamine

86435166714. Bakelite

86435166715. Polyester

86435166716. Nylon 6,6



Question Number : 50 Question Id : 86435120039 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : In the titration between strong acid and weak base methyl orange is suitable as an indicator.

Statement II : For titration of acetic acid with NaOH phenolphthalein is not a suitable indicator.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

Options :

86435166717. Both **Statement I** and **Statement II** are true

86435166718. Both **Statement I** and **Statement II** are false

86435166719. **Statement I** is true but **Statement II** is false

86435166720. **Statement I** is false but **Statement II** is true

Chemistry Section B

Section Id :	864351905
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20



Enable Mark as Answered Mark for Review and Clear Response : Yes
Sub-Section Number : 1
Sub-Section Id : 8643511132
Question Shuffling Allowed : Yes

Question Number : 51 Question Id : 86435120040 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

An aqueous KCl solution of density 1.20 g mL^{-1} has a molality of 3.30 mol kg^{-1} . The molarity of the solution in mol L^{-1} is _____. (Nearest integer)

[Molar mass of KCl = 74.5]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :

1

Question Number : 52 Question Id : 86435120041 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

AB_3 is an interhalogen T-shaped molecule. The number of lone pairs of electrons on A is _____. (Integer answer)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :

1

Question Number : 53 Question Id : 86435120042 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The Born-Haber cycle for KCl is evaluated with the following data :

$$\Delta_f H^\ominus \text{ for KCl} = -436.7 \text{ kJ mol}^{-1}; \Delta_{\text{sub}} H^\ominus \text{ for K} = 89.2 \text{ kJ mol}^{-1};$$

$$\Delta_{\text{ionization}} H^\ominus \text{ for K} = 419.0 \text{ kJ mol}^{-1}; \Delta_{\text{electron gain}} H^\ominus \text{ for Cl}_{(g)} = -348.6 \text{ kJ mol}^{-1};$$

$$\Delta_{\text{bond}} H^\ominus \text{ for Cl}_2 = 243.0 \text{ kJ mol}^{-1}$$

The magnitude of lattice enthalpy of KCl in kJ mol^{-1} is _____. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 54 Question Id : 86435120043 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Of the following four aqueous solutions, total number of those solutions whose freezing point is lower than that of 0.10 M $\text{C}_2\text{H}_5\text{OH}$ is _____. (Integer answer)

(i) 0.10 M $\text{Ba}_3(\text{PO}_4)_2$

(ii) 0.10 M Na_2SO_4

(iii) 0.10 M KCl

(iv) 0.10 M Li_3PO_4



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 55 **Question Id :** 86435120044 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

The OH^- concentration in a mixture of 5.0 mL of 0.0504 M NH_4Cl and 2 mL of 0.0210 M NH_3 solution is $x \times 10^{-6}$ M. The value of x is _____. (Nearest integer)

[Given $K_w = 1 \times 10^{-14}$ and $K_b = 1.8 \times 10^{-5}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

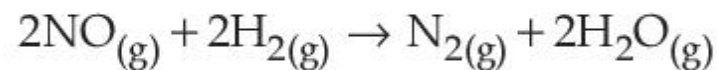
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Question Number : 56 **Question Id :** 86435120045 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0



The following data was obtained for chemical reaction given below at 975 K.



	[NO]	[H ₂]	Rate
	mol L ⁻¹	mol L ⁻¹	mol L ⁻¹ s ⁻¹
(A)	8×10^{-5}	8×10^{-5}	7×10^{-9}
(B)	24×10^{-5}	8×10^{-5}	2.1×10^{-8}
(C)	24×10^{-5}	32×10^{-5}	8.4×10^{-8}

The order of the reaction with respect to NO is _____. [Integer answer]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 57 **Question Id :** 86435120046 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0



These are physical properties of an element

- (A) Sublimation enthalpy
- (B) Ionisation enthalpy
- (C) Hydration enthalpy
- (D) Electron gain enthalpy

The total number of above properties that affect the reduction potential is _____.
(Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 **Question Id :** 86435120047 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

The number of $4f$ electrons in the ground state electronic configuration of Gd^{2+} is _____.

[Atomic number of Gd = 64]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

SA



Correct Marks : 4 Wrong Marks : 0

The ratio of number of water molecules in Mohr's salt and potash alum is _____ $\times 10^{-1}$.
(Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 Question Id : 86435120049 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The total number of negative charge in the tetrapeptide, Gly-Glu-Asp-Tyr, at pH 12.5 will be _____.
(Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1