Chemistry Section A

Section Id :	708191552
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	708191832
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 70819115184 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following are isostructural pairs ?

A. SO_4^{2-} and CrO_4^{2-}

B. $SiCl_4$ and $TiCl_4$

C. NH_3 and NO_3^-

D. BCl_3 and $BrCl_3$

Options :

70819150701. A and B only

70819150702. A and C only

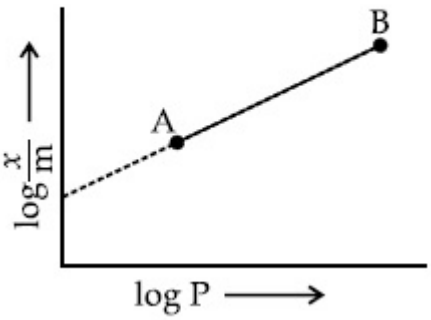
70819150703. B and C only

70819150704. C and D only

Question Number : 32 Question Id : 70819115185 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In Freundlich adsorption isotherm, slope of AB line is :



Options :

70819150705. n with (n, 0.1 to 0.5)

70819150706. log n with (n > 1)

70819150707. $\log \frac{1}{n}$ with (n < 1)

70819150708. $\frac{1}{n}$ with $\left(\frac{1}{n} = 0 \text{ to } 1\right)$

Question Number : 33 Question Id : 70819115186 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the elements Mg, Al, S, P and Si, the correct increasing order of their first ionization enthalpy is :

Options :

70819150709. $Al < Mg < Si < S < P$

70819150710. $Mg < Al < Si < P < S$

70819150711. $Mg < Al < Si < S < P$

70819150712. $Al < Mg < S < Si < P$

Question Number : 34 Question Id : 70819115187 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following ore is concentrated using group 1 cyanide salt ?

Options :

70819150713. Calamine

70819150714. Malachite

70819150715. Siderite

70819150716. Sphalerite

Question Number : 35 Question Id : 70819115188 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(A) $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

(B) $I_2 + H_2O_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2$

Choose the correct option.

Options :

70819150717. H_2O_2 acts as oxidising agent in equations (A) and (B).

70819150718. H_2O_2 acts as reducing agent in equations (A) and (B).

70819150719. H_2O_2 act as oxidizing and reducing agent respectively in equations (A) and (B).

70819150720. H_2O_2 acts as reducing and oxidising agent respectively in equations (A) and (B).

Question Number : 36 Question Id : 70819115189 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Al_2O_3 was leached with alkali to get X. The solution of X on passing of gas Y, forms Z.
X, Y and Z respectively are :

Options :

70819150721. $X = Na[Al(OH)_4],\ Y = SO_2,\ Z = Al_2O_3$

70819150722. $X = Al(OH)_3,\ Y = SO_2,\ Z = Al_2O_3.xH_2O$

70819150723. $X = Al(OH)_3,\ Y = CO_2,\ Z = Al_2O_3$

70819150724. $X = Na[Al(OH)_4],\ Y = CO_2,\ Z = Al_2O_3.xH_2O$

Question Number : 37 Question Id : 70819115190 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The electrode potential of M^{2+}/M of 3d-series elements shows positive value for :

Options :

70819150725. Fe

70819150726. Co

70819150727. Zn

70819150728. Cu

Question Number : 38 Question Id : 70819115191 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major components in "Gun Metal" are :

Options :

70819150729. Cu, Sn and Zn

70819150730. Cu, Zn and Ni

70819150731. Cu, Ni and Fe

70819150732. Al, Cu, Mg and Mn

Question Number : 39 Question Id : 70819115192 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The gas released during anaerobic degradation of vegetation may lead to :

Options :

70819150733. Acid rain

70819150734. Global warming and cancer

70819150735. Corrosion of metals

70819150736. Ozone hole

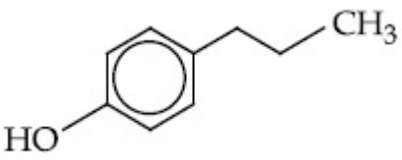
Question Number : 40 Question Id : 70819115193 Question Type : MCQ Option Shuffling : Yes

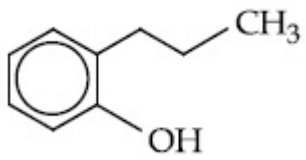
Is Question Mandatory : No

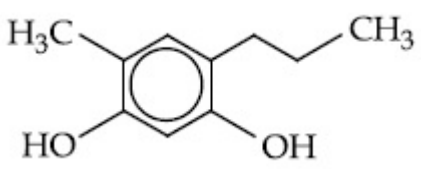
Correct Marks : 4 Wrong Marks : 1

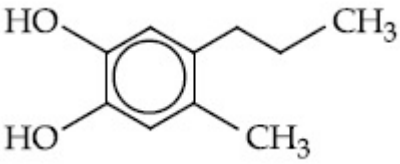
Which of the following compound gives pink colour on reaction with phthalic anhydride in conc. H_2SO_4 followed by treatment with NaOH ?

Options :

70819150737. 

70819150738. 

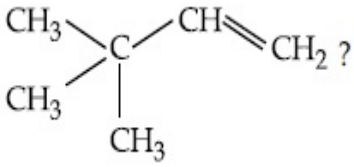
70819150739. 

70819150740. 

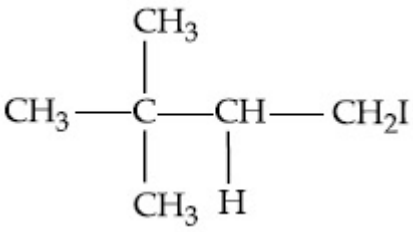
Question Number : 41 Question Id : 70819115194 Question Type : MCQ Option Shuffling : Yes

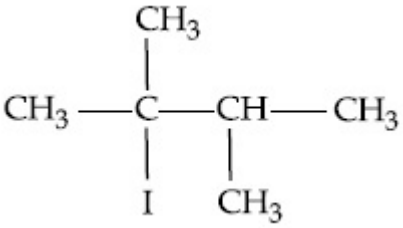
Is Question Mandatory : No

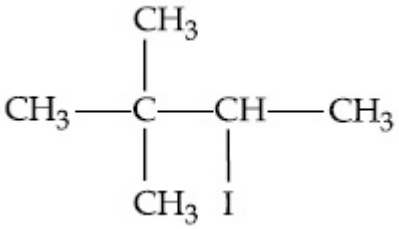
Correct Marks : 4 Wrong Marks : 1

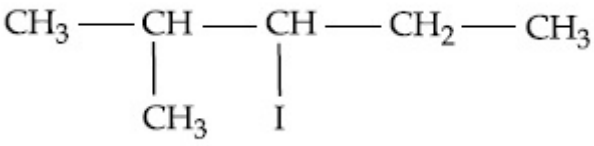
What is the major product formed by HI on reaction with  ?

Options :

70819150741. 

70819150742. 

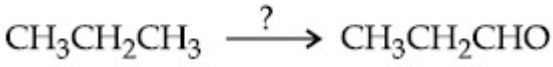
70819150743. 

70819150744. 

Question Number : 42 Question Id : 70819115195 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following reagent is used for the following reaction ?



Options :

70819150745. Copper at high temperature and pressure

70819150746. Molybdenum oxide

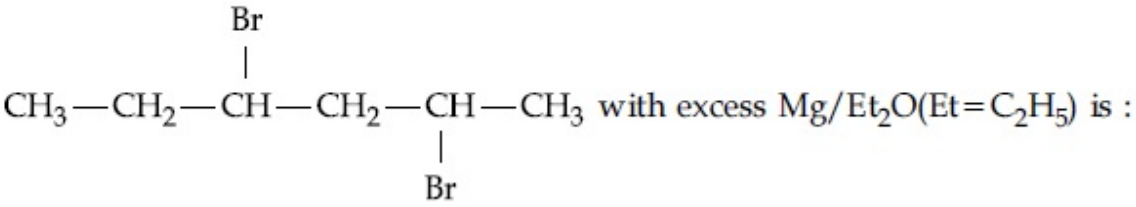
70819150747. Manganese acetate

70819150748. Potassium permanganate

Question Number : 43 Question Id : 70819115196 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

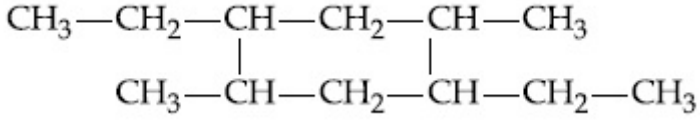
Correct Marks : 4 Wrong Marks : 1

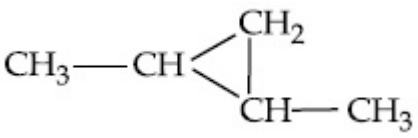
The product formed in the first step of the reaction of



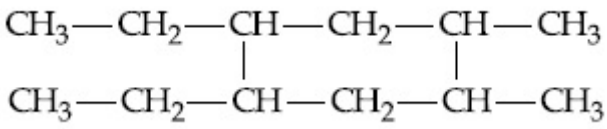
with excess $Mg/Et_2O(Et=C_2H_5)$ is :

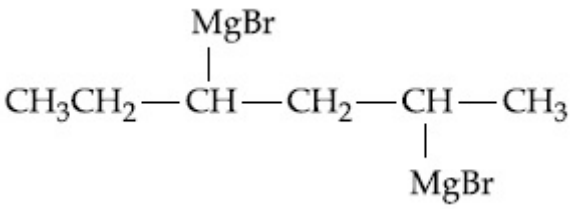
Options :

70819150749. 

70819150750. 

70819150751.





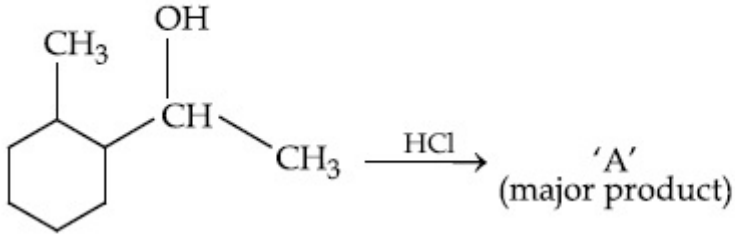
70819150752.

Question Number : 44 Question Id : 70819115197 Question Type : MCQ Option Shuffling : Yes

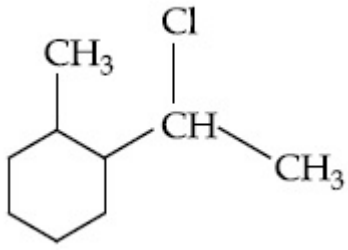
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

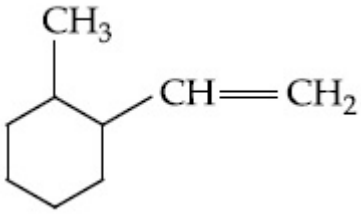
What is the final product (major) 'A' in the given reaction ?



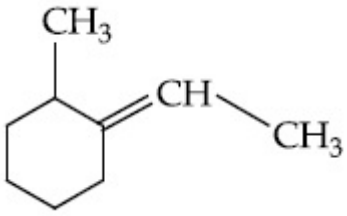
Options :



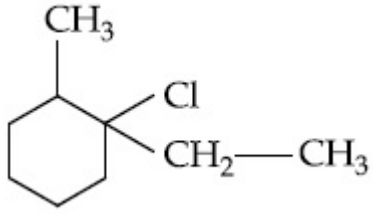
70819150753.



70819150754.



70819150755.

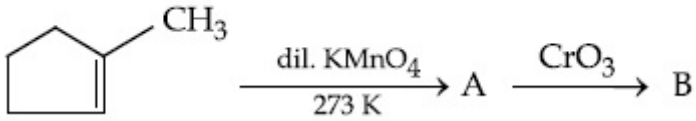
70819150756. 

Question Number : 45 Question Id : 70819115198 Question Type : MCQ Option Shuffling : Yes

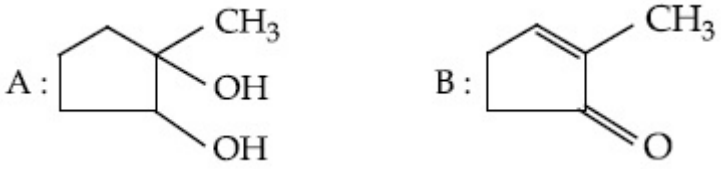
Is Question Mandatory : No

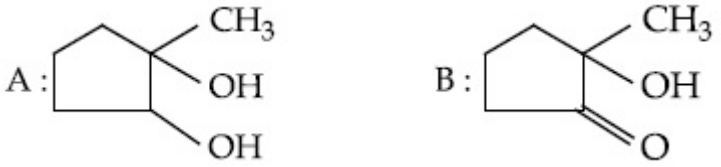
Correct Marks : 4 Wrong Marks : 1

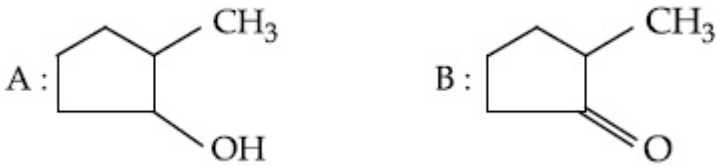
Identify products A and B.

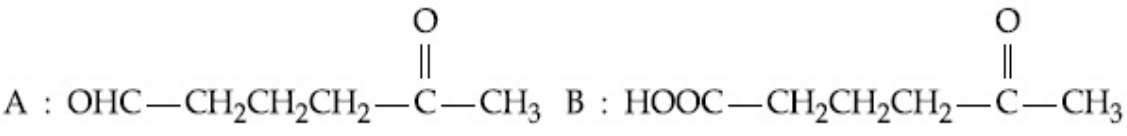


Options :

70819150757. 

70819150758. 

70819150759. 

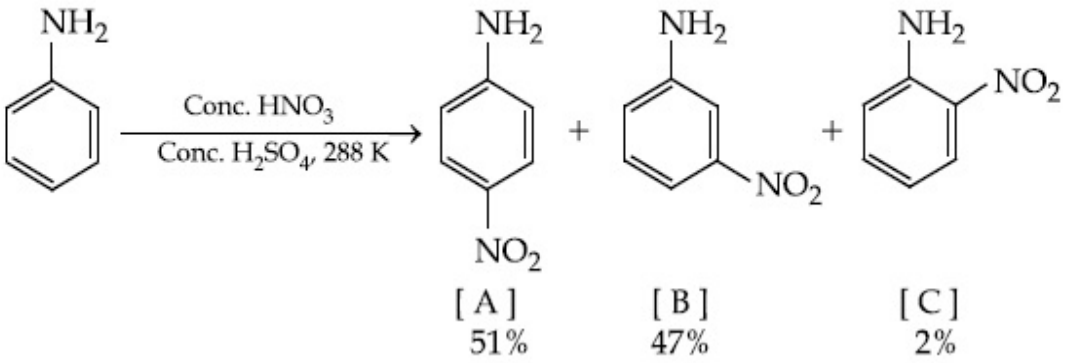
70819150760. 

Question Number : 46 Question Id : 70819115199 Question Type : MC

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the following reaction the reason why *meta*-nitro product also formed is :



[A] 51% [B] 47% [C] 2%

Options :

70819150761. $-NH_2$ group is highly *meta*-directive

70819150762. $-NO_2$ substitution always takes place at *meta*-position

70819150763. Formation of anilinium ion

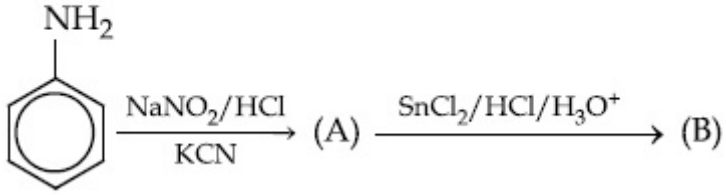
70819150764. low temperature

Question Number : 47 Question Id : 70819115200 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

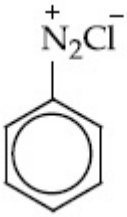
Correct Marks : 4 Wrong Marks : 1

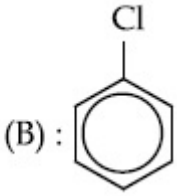
'A' and 'B' in the following reactions are :



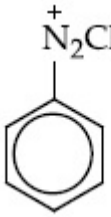
Options :

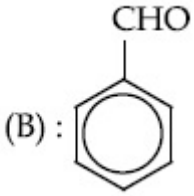
70819150765.

(A) : 

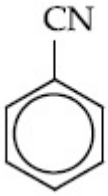
(B) : 

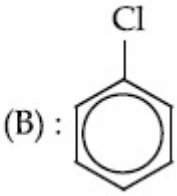
70819150766.

(A) : 

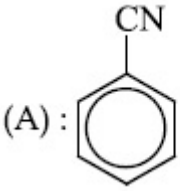
(B) : 

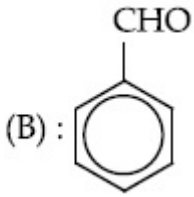
70819150767.

(A) : 

(B) : 

70819150768.

(A) : 

(B) : 

Question Number : 48 Question Id : 70819115201 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List I with List II.

	List I (Monomer Unit)		List II (Polymer)
(a)	Caprolactum	(i)	Natural rubber
(b)	2-Chloro-1,3-butadiene	(ii)	Buna-N
(c)	Isoprene	(iii)	Nylon 6
(d)	Acrylonitrile	(iv)	Neoprene

Choose the correct answer from the options given below :

Options :

70819150769. (a) → (i), (b) → (ii), (c) → (iii), (d) → (iv)

70819150770. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)

70819150771. (a) → (ii), (b) → (i), (c) → (iv), (d) → (iii)

70819150772. (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)

Question Number : 49 Question Id : 70819115202 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Out of the following, which type of interaction is responsible for the stabilisation of α-helix structure of proteins ?

Options :

70819150773. vander Waals forces

70819150774. Covalent bonding

70819150775. Ionic bonding

70819150776. Hydrogen bonding

Question Number : 50 Question Id : 70819115203 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Colourless cupric metaborate is reduced to cuprous metaborate in a luminous flame.

Statement II : Cuprous metaborate is obtained by heating boric anhydride and copper sulphate in a non-luminous flame.

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

Options :

70819150777. Both Statement I and Statement II are true

70819150778. Both Statement I and Statement II are false

70819150779. Statement I is true but Statement II is false

70819150780. Statement I is false but Statement II is true

Chemistry Section B

Section Id :	708191553
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	708191833
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 70819115204 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

4.5 g of compound A (MW = 90) was used to make 250 mL of its aqueous solution. The molarity of the solution in M is $x \times 10^{-1}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 Question Id : 70819115205 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The coordination number of an atom in a body-centered cubic structure is _____.
[Assume that the lattice is made up of atoms.]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 Question Id : 70819115206 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A proton and a Li^{3+} nucleus are accelerated by the same potential. If λ_{Li} and λ_p denote the de Broglie wavelengths of Li^{3+} and proton respectively, then the value of $\frac{\lambda_{Li}}{\lambda_p}$ is $x \times 10^{-1}$.

The value of x is _____. (Rounded off to the nearest integer)
[Mass of Li^{3+} = 8.3 mass of proton]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 Question Id : 70819115207 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

For the reaction $A_{(g)} \rightarrow B_{(g)}$, the value of the equilibrium constant at 300 K and 1 atm is equal to 100.0. The value of $\Delta_r G$ for the reaction at 300 K and 1 atm in J mol^{-1} is $-xR$, where x is _____. (Rounded off to the nearest integer)

[$R = 8.31$ J $mol^{-1}K^{-1}$ and ln 10 = 2.3)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819115208 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

When 9.45 g of $ClCH_2COOH$ is added to 500 mL of water, its freezing point drops by 0.5°C. The dissociation constant of $ClCH_2COOH$ is $x \times 10^{-3}$. The value of x is _____. (Rounded off to the nearest integer)

[$K_{f(H_2O)} = 1.86$ K kg mol^{-1}]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819115209 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

At 1990 K and 1 atm pressure, there are equal number of Cl_2 molecules and Cl atoms in the reaction mixture. The value of K_p for the reaction $Cl_{2(g)} \rightleftharpoons 2Cl_{(g)}$ under the above conditions is $x \times 10^{-1}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 Question Id : 70819115210 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The reaction of sulphur in alkaline medium is given below :

$$S_{8(s)} + a\ OH^-_{(aq)} \longrightarrow b\ S^{2-}_{(aq)} + c\ S_2O_3^{2-}{}_{(aq)} + d\ H_2O_{(l)}$$

The values of 'a' is _____. (Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819115211 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Gaseous cyclobutene isomerizes to butadiene in a first order process which has a 'k' value of $3.3 \times 10^{-4}\ s^{-1}$ at 153°C. The time in minutes it takes for the isomerization to proceed 40% to completion at this temperature is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819115212 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Number of amphoteric compounds among the following is _____.

(A) BeO (B) BaO (C) $Be(OH)_2$ (D) $Sr(OH)_2$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819115213 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The stepwise formation of $[Cu(NH_3)_4]^{2+}$ is given below :

$$Cu^{2+} + NH_3 \xrightleftharpoons{K_1} [Cu(NH_3)]^{2+}$$

$$[Cu(NH_3)]^{2+} + NH_3 \xrightleftharpoons{K_2} [Cu(NH_3)_2]^{2+}$$

$$[Cu(NH_3)_2]^{2+} + NH_3 \xrightleftharpoons{K_3} [Cu(NH_3)_3]^{2+}$$

$$[Cu(NH_3)_3]^{2+} + NH_3 \xrightleftharpoons{K_4} [Cu(NH_3)_4]^{2+}$$

The value of stability constants K_1, K_2, K_3 and K_4 are 10^4, 1.58×10^3, 5×10^2 and 10^2 respectively. The overall equilibrium constants for dissociation of $[Cu(NH_3)_4]^{2+}$ is $x \times 10^{-12}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001