Chemistry Section A

Section Id :	864351225
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 :	864351225
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 8643513361 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A central atom in a molecule has two lone pairs of electrons and forms three single bonds. The shape of this molecule is :

Options :

86435110081. planar triangular

86435110082. T-shaped

86435110083. see-saw

86435110084. trigonal pyramidal

Question Number : 32 Question Id : 8643513362 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A colloidal system consisting of a gas dispersed in a solid is called a/an :

Options :

86435110085. aerosol

86435110086. solid sol

86435110087. foam

86435110088. gel

Question Number : 33 Question Id : 8643513363 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The absolute value of the electron gain enthalpy of halogens satisfies :

Options :

86435110089. F > Cl > Br > I

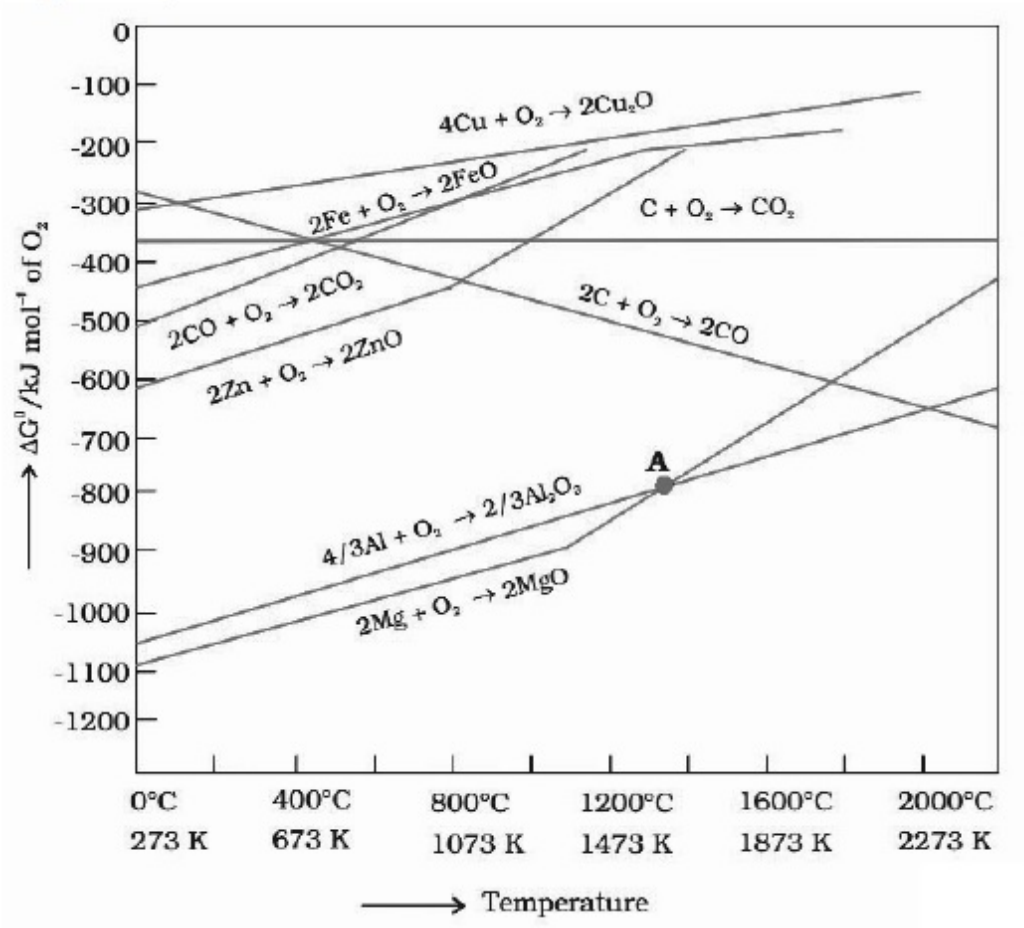
86435110090. Cl > F > Br > I

86435110091. Cl > Br > F > I

86435110092. I > Br > Cl > F

Question Number : 34 Question Id : 8643513364 Question Type : MCQ Option Shuf Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The point of intersection and sudden increase in the slope, in the diagram given below, respectively, indicates :



Options :

86435110093. $\Delta G < 0$ and decomposition of the metal oxide

86435110094. $\Delta G > 0$ and decomposition of the metal oxide

86435110095. $\Delta G = 0$ and melting or boiling point of the metal oxide

86435110096. $\Delta G = 0$ and reduction of the metal oxide

Question Number : 35 Question Id : 8643513365 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The INCORRECT statement(s) about heavy water is (are)

(A) used as a moderator in nuclear reactor

(B) obtained as a by-product in fertilizer industry

(C) used for the study of reaction mechanism

(D) has a higher dielectric constant than water

Choose the correct answer from the options given below :

Options :

86435110097. (C) only

86435110098. (B) only

86435110099. (D) only

86435110100. (B) and (D) only

Question Number : 36 Question Id : 8643513366 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct order of conductivity of ions in water is :

Options :

86435110101. $Cs^+ > Rb^+ > K^+ > Na^+$

86435110102. $Na^+ > K^+ > Rb^+ > Cs^+$

86435110103. $K^+ > Na^+ > Cs^+ > Rb^+$

86435110104. $Rb^+ > Na^+ > K^+ > Li^+$

Question Number : 37 Question Id : 8643513367 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following compound CANNOT act as a Lewis base ?

Options :

86435110105. ClF_3

86435110106. PCl_5

86435110107. NF_3

86435110108. SF_4

Question Number : 38 Question Id : 8643513368 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the spin-only magnetic moment value (BM) of a divalent metal ion with atomic number 25, in it's aqueous solution ?

Options :

86435110109. 5.0

86435110110. 5.26

86435110111. 5.92

86435110112. zero

Question Number : 39 Question Id : 8643513369 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Potassium permanganate on heating at 573 K forms potassium manganate.

Statement II : Both potassium permanganate and potassium manganate are tetrahedral and paramagnetic in nature.

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

Options :

86435110113. Both statement I and statement II are false

86435110114. Both statement I and statement II are true

86435110115. Statement I is true but statement II is false

86435110116. Statement I is false but statement II is true

Question Number : 40 Question Id : 8643513370 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Reducing smog is a mixture of :

Options :

86435110117. Smoke, fog and O_3

86435110118. Smoke, fog and SO_2

86435110119. Smoke, fog and N_2O_3

86435110120. Smoke, fog and $CH_2=CH-CHO$

Question Number : 41 Question Id : 8643513371 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Retardation factor (R_f) can be measured in meter/centimeter.

Statement II : R_f value of a compound remains constant in all solvents.

Choose the most appropriate answer from the options given below :

Options :

86435110121. Both statement I and statement II are true

86435110122. Both statement I and statement II are false

86435110123. Statement I is true but statement II is false

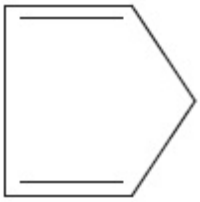
86435110124. Statement I is false but statement II is true

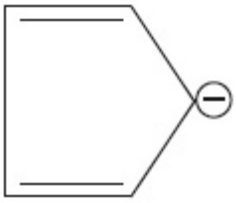
Question Number : 42 Question Id : 8643513372 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

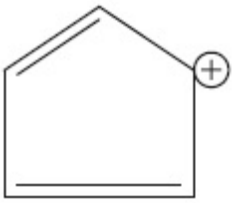
Correct Marks : 4 Wrong Marks : 1

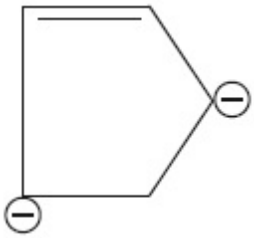
Which of the following is an aromatic compound ?

Options :

86435110125. 

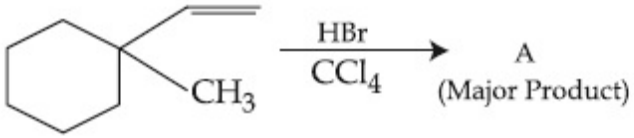
86435110126. 

86435110127. 

86435110128. 

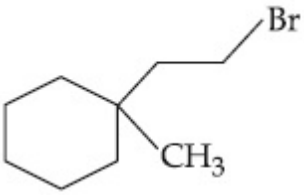
Question Number : 43 Question Id : 8643513373 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

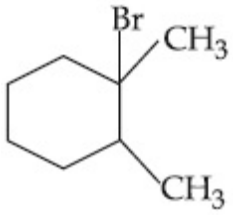
Correct Marks : 4 Wrong Marks : 1

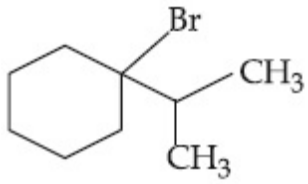


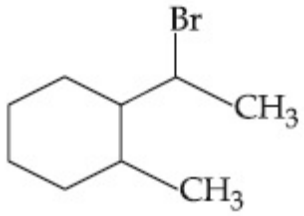
Product "A" in the above chemical reaction is :

Options :

86435110129. 

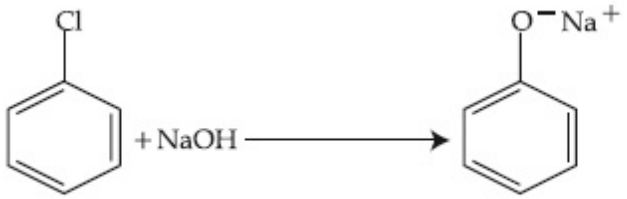
86435110130. 

86435110131. 

86435110132. 

Question Number : 44 Question Id : 8643513374 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



The above reaction requires which of the following reaction conditions ?

Options :

86435110133. 623 K, Cu, 300 atm

86435110134. 573 K, Cu, 300 atm

86435110135. 623 K, 300 atm

86435110136. 573 K, 300 atm

Question Number : 45 Question Id : 8643513375 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Mesityl oxide is a common name of :

Options :

86435110137. 4-Methyl pent-3-en-2-one

86435110138. 2,4-Dimethyl pentan-3-one

86435110139. 2-Methyl cyclohexanone

86435110140. 3-Methyl cyclohexane carbaldehyde

Question Number : 46 Question Id : 8643513376 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

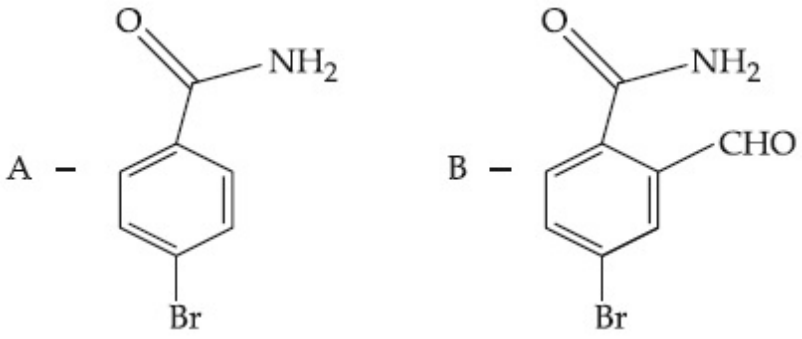
Correct Marks : 4 Wrong Marks : 1

Hoffmann bromomide degradation of benzamide gives product A, which upon heating with $CHCl_3$ and NaOH gives product B.

The structures of A and B are :

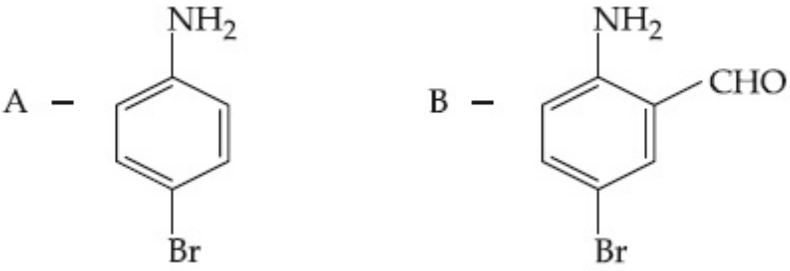
Options :

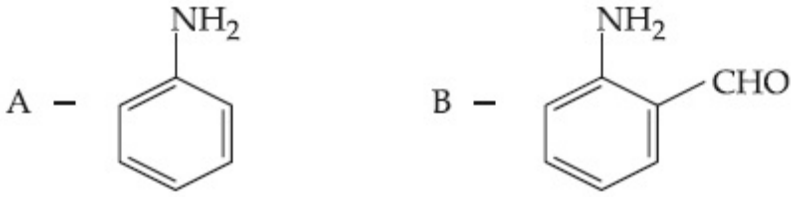
86435110141.



86435110142.

86435110143.

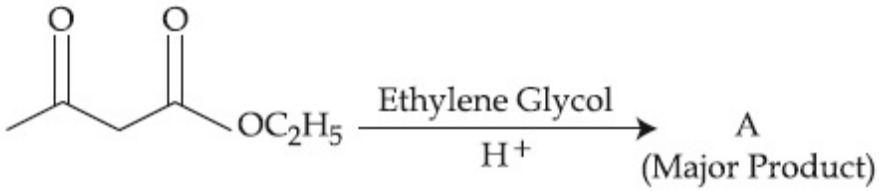




86435110144.

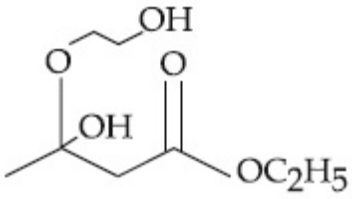
Question Number : 47 Question Id : 8643513377 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

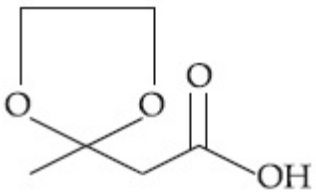


The product "A" in the above reaction is :

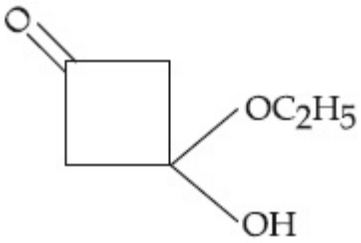
Options :



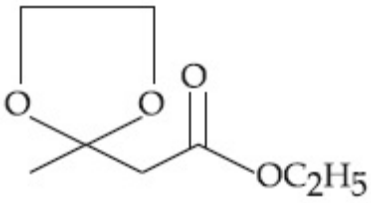
86435110145.



86435110146.



86435110147.



86435110148.

Question Number : 48 Question Id : 8643513378 Question Type : MCQ Option Shuf

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following reaction is an example of ammonolysis ?

Options :

86435110149. $C_6H_5COCl + C_6H_5NH_2 \longrightarrow C_6H_5CONHC_6H_5$

86435110150. $C_6H_5CH_2CN \xrightarrow{[H]} C_6H_5CH_2CH_2NH_2$

86435110151. $C_6H_5CH_2Cl + NH_3 \longrightarrow C_6H_5CH_2NH_2$

86435110152. $C_6H_5NH_2 \xrightarrow{HCl} C_6H_5\overset{+}{N}H_3Cl^-$

Question Number : 49 Question Id : 8643513379 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

With respect to drug-enzyme interaction, identify the wrong statement.

Options :

86435110153. Competitive inhibitor binds to the enzyme's active site

86435110154. Allosteric inhibitor changes the enzyme's active site

86435110155. Allosteric inhibitor competes with the enzyme's active site

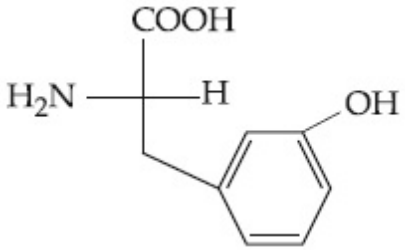
86435110156. Non-Competitive inhibitor binds to the allosteric site

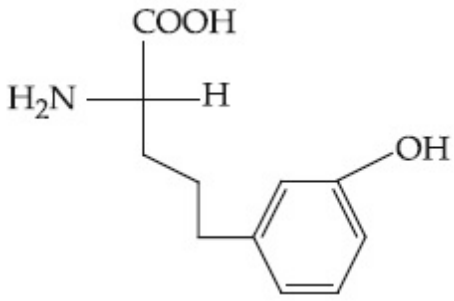
Question Number : 50 Question Id : 8643513380 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

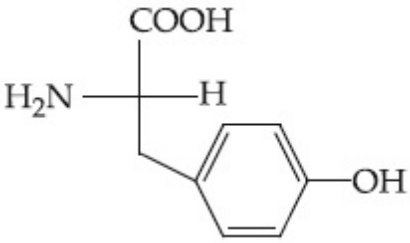
Which of the following is correct structure of tyrosine ?

Options :

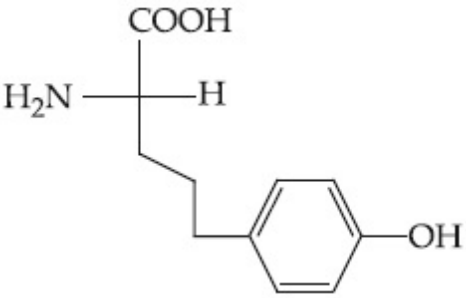
86435110157. 



86435110158.



86435110159.



86435110160.

Chemistry Section B

Section Id :	864351226
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 :	864351226
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 8643513381 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The mole fraction of a solute in a 100 molal aqueous solution is _____ $\times 10^{-2}$.
(Round off to the Nearest Integer).
[Given : Atomic masses : H : 1.0 u, O : 16.0 u]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 52 Question Id : 8643513382 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The pressure exerted by a non-reactive gaseous mixture of 6.4 g of methane and 8.8 g of carbon dioxide in a 10 L vessel at 27°C is _____ kPa.
(Round off to the Nearest Integer).
[Assume gases are ideal, $R = 8.314\ J\ mol^{-1}\ K^{-1}$
Atomic masses : C : 12.0 u, H : 1.0 u, O : 16.0 u]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 53 Question Id : 8643513383 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A certain orbital has $n = 4$ and $m_L = -3$. The number of radial nodes in this orbital is _____. (Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 54 Question Id : 8643513384 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The standard enthalpies of formation of Al_2O_3 and CaO are -1675 kJ mol^{-1} and -635 kJ mol^{-1} respectively.

For the reaction

$3CaO + 2Al \rightarrow 3Ca + Al_2O_3$ the standard reaction enthalpy $\Delta_r H^0 =$ _____ kJ.

(Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 55 Question Id : 8643513385 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The oxygen dissolved in water exerts a partial pressure of 20 kPa in the vapour above water. The molar solubility of oxygen in water is _____ $\times 10^{-5}$ mol dm^{-3}.

(Round off to the Nearest Integer).

[Given : Henry's law constant = $K_H = 8.0 \times 10^4$ kPa for O_2.
Density of water with dissolved oxygen = 1.0 kg dm^{-3}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 56 Question Id : 8643513386 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

0.01 moles of a weak acid HA ($K_a = 2.0 \times 10^{-6}$) is dissolved in 1.0 L of 0.1 M HCl solution. The degree of dissociation of HA is _____ $\times 10^{-5}$ (Round off to the Nearest Integer).

[Neglect volume change on adding HA.
Assume degree of dissociation <<1]

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

100

Question Number : 57 Question Id : 8643513387 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

15 mL of aqueous solution of Fe^{2+} in acidic medium completely reacted with 20 mL of 0.03 M aqueous $Cr_2O_7^{2-}$. The molarity of the Fe^{2+} solution is _____ $\times 10^{-2}$ M. (Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 58 Question Id : 8643513388 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

For a certain first order reaction 32% of the reactant is left after 570 s. The rate constant of this reaction is _____ $\times 10^{-3}$ s^{-1}. (Round off to the Nearest Integer).
[Given : $\log_{10}2 = 0.301$, $\ln 10 = 2.303$]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

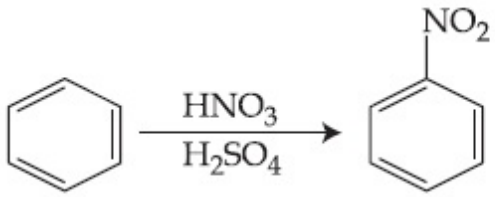
Question Number : 59 Question Id : 8643513389 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The reaction of white phosphorus on boiling with alkali in inert atmosphere resulted in the formation of product 'A'. The reaction of 1 mol of 'A' with excess of $AgNO_3$ in aqueous medium gives _____ mol(s) of Ag. (Round off to the Nearest Integer).

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

100

Question Number : 60 Question Id : 8643513390 Question Type : SA
Correct Marks : 4 Wrong Marks : 0



In the above reaction, 3.9 g of benzene on nitration gives 4.92 g of nitrobenzene. The percentage yield of nitrobenzene in the above reaction is _____%. (Round off to the Nearest Integer).

(Given atomic mass : C : 12.0 u, H : 1.0 u, O : 16.0 u, N : 14.0 u)

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

100