

Chemistry Section A

Section Id :	676033135
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 :	676033135
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 6760332011 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II :

List-I : Examples of Colloids	List-II : Type of Colloid
A. Paints	I. Emulsion
B. Hair cream	II. Gel
C. Whipped cream	III. Sol
D. Cheese	IV. Foam

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

Options :

6760336031. A-III, B-I, C-IV, D-II

6760336032. A-II, B-I, C-IV, D-III

6760336033. A-IV, B-III, C-II, D-I

6760336034. A-I, B-IV, C-III, D-II

Question Number : 32 Question Id : 6760332012 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify the element with positive value of electron gain enthalpy

Options :

6760336035. At

6760336036. F

6760336037. Kr

6760336038. Te

Question Number : 33 Question Id : 6760332013 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

During the isolation of copper from copper matte, SiO_2 is added to

Options :

6760336039. remove FeS / FeO as FeSiO_3 .

6760336040. reduce the melting point of the matte.

6760336041. reduce Cu_2S to metallic Cu.

6760336042. remove any C present.

Question Number : 34 Question Id : 6760332014 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

H_2O_2 reacts with MnO_4^- in basic medium to produce

Options :

6760336043. Mn_2O_3

6760336044. MnO_2

6760336045. MnO_4^{2-}

6760336046. Mn_2O_7

Question Number : 35 Question Id : 6760332015 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement-I : The chlorides of both beryllium and aluminium have structures in which chlorobridges are present in vapour phase.

Statement-II : Chlorides of both beryllium and aluminium are insoluble in organic solvents and are strong Lewis acids.

Choose the most appropriate answer :

Options :

6760336047. Both Statement-I and Statement-II are true.

6760336048. Both Statement-I and Statement-II are false.

6760336049. Statement-I is true but Statement-II is false.

6760336050. Statement-I is false but Statement-II is true.

Question Number : 36 Question Id : 6760332016 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The number of σ (sigma) bond present in chloric acid, chlorous acid and perchloric acid are, respectively,

Options :

6760336051. 3, 4 and 5

6760336052. 4, 3 and 5

6760336053. 1, 2 and 3

6760336054. 3, 3 and 4

Question Number : 37 Question Id : 6760332017 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Ruby and emerald are coloured due to the presence of

Options :

6760336055. Chromium(III) in both.

6760336056. Chromium(III) and Chromium(II) respectively.

6760336057. Chromium(III) and Copper(II) respectively.

6760336058. Chromium(II) and Copper(II) respectively.

Question Number : 38 Question Id : 6760332018 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The oxidation states of Mn in $\text{Mn}_2(\text{CO})_{10}$, $[\text{Mn}(\text{CO})_5\text{Br}]$ and $\text{K}[\text{Mn}(\text{CN})_6]$ are, respectively,

Options :

6760336059. 0, +6, +5

6760336060. +5, +6, +6

6760336061. 0, +1, +6

6760336062. 0, +1, +5

Question Number : 39 Question Id : 6760332019 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The set in which both ligands generally behave in a bidentate chelating mode is

Options :

6760336063. CO , SCN^-

6760336064. ethylenediamine, oxalate

6760336065. CH_3NH_2 , oxalate

6760336066. NCS^- , ethylenediamine

Question Number : 40 Question Id : 6760332020 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The INCORRECT statement among those given below regarding smog is

Options :

6760336067. Photochemical smog occurs primarily in warm, dry and sunny climate.

6760336068. Classical smog is also called oxidizing smog.

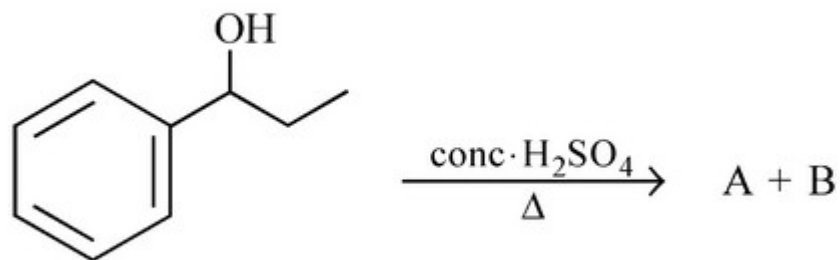
6760336069. Peroxyacetyl nitrate is a component of photochemical smog.

6760336070. Photochemical smog leads to cracking of rubber.

Question Number : 41 Question Id : 6760332021 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the reaction given below,



the products A and B formed are

Options :

6760336071. Geometrical isomers

6760336072. Position isomers

6760336073. Chain isomers

6760336074. Metamers

Question Number : 42 Question Id : 6760332022 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Reaction of $\text{CH}_3 - \text{CH} = \text{CH}_2$ with different reagents (List-I) yield different products (List-II).

Match List-I with List-II :

List-I : Reagents	List-II : Products on reaction with $\text{CH}_3 - \text{CH} = \text{CH}_2$
A. $\text{O}_3/\text{Zn}, \text{H}_2\text{O}$	I. Ethanoic acid
B. $\text{KMnO}_4/\text{H}_2\text{SO}_4$	II. Propan-2-ol
C. $\text{KMnO}_4/\text{NaOH}$	III. Ethanal
D. H_3O^+	IV. Propane-1, 2-diol

The correct match is :

Options :

6760336075. A-III, B-I, C-IV, D-II

6760336076. A-III, B-IV, C-I, D-II

6760336077. A-II, B-I, C-IV, D-III

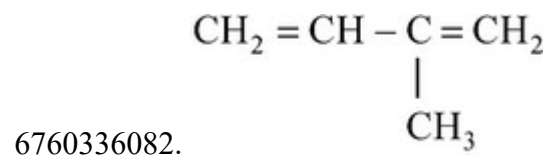
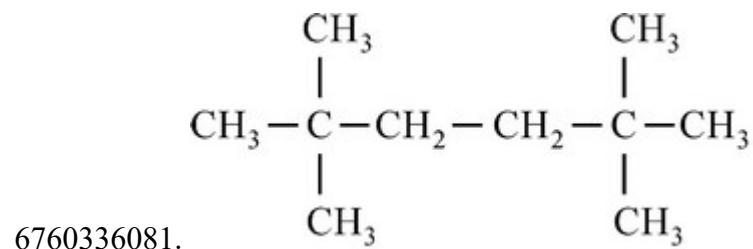
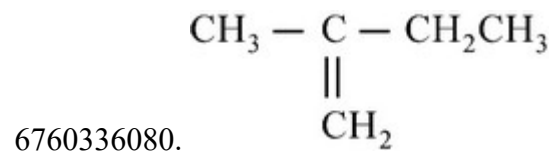
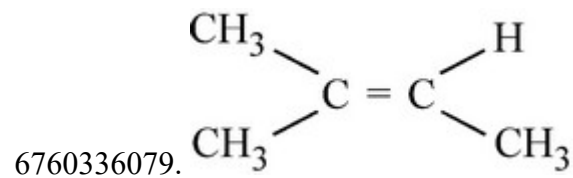
6760336078. A-IV, B-I, C-II, D-III

Question Number : 43 Question Id : 6760332023 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

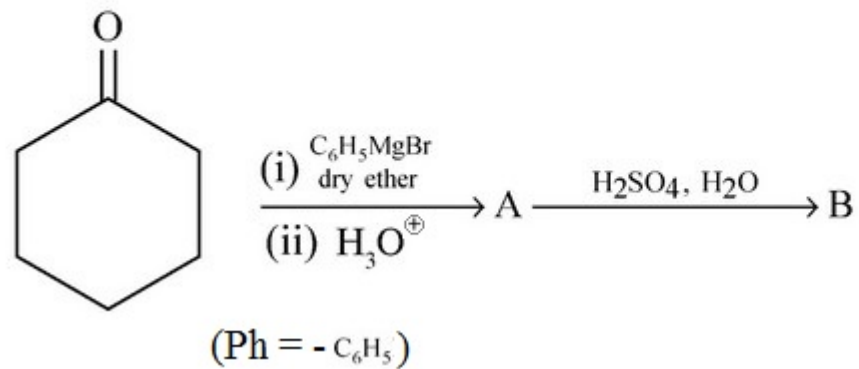
Neopentyl bromide on reaction with ethyl alcohol gives, as the major product,

Options :

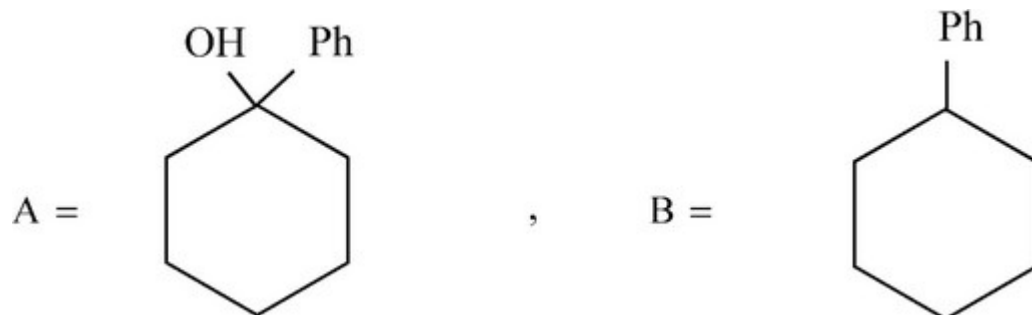


Question Number : 44 Question Id : 6760332024 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

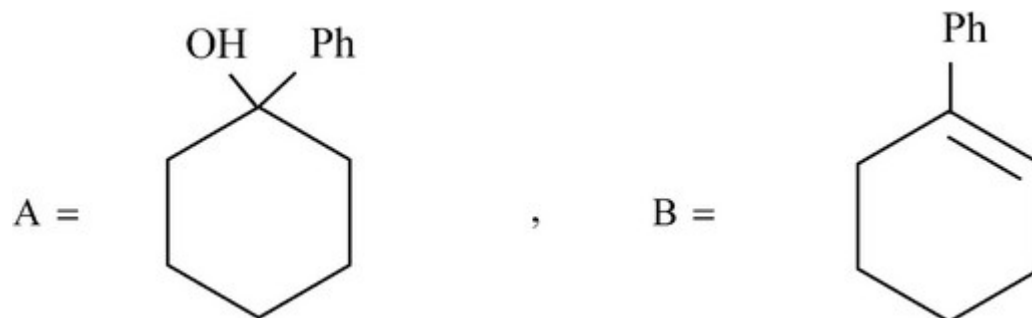
The major products A and B in the following reaction sequence are



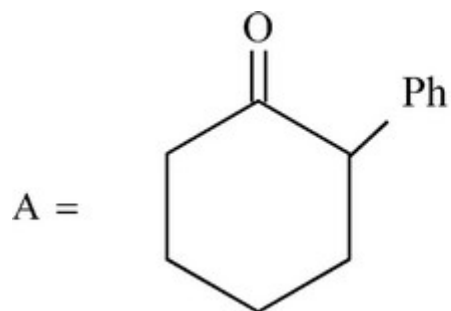
Options :



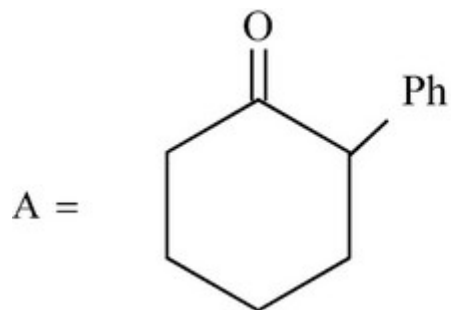
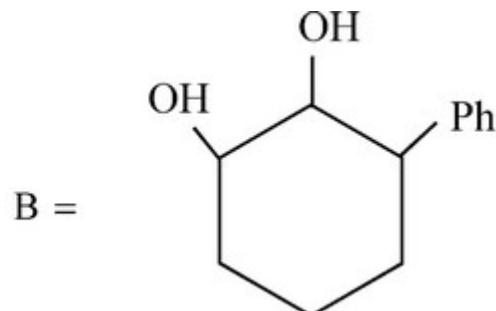
6760336083.



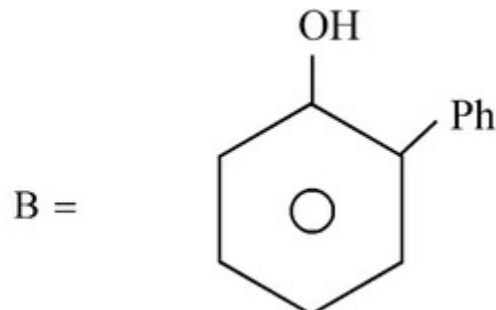
6760336084.



6760336085.



6760336086.



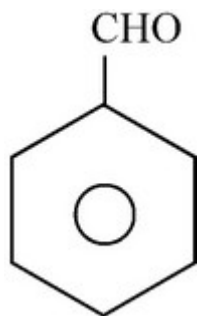
Question Number : 45 Question Id : 6760332025 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

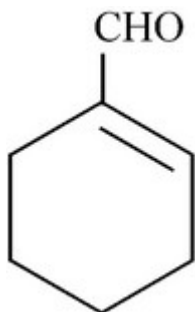
Cannizzaro reaction cannot be given by

Options :

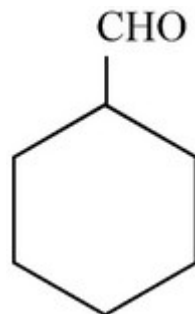
6760336087. CCl_3CHO



6760336088.



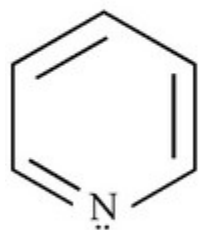
6760336089.



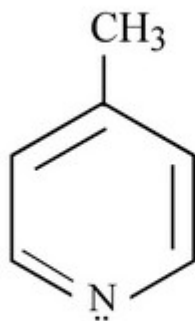
6760336090.

**Question Number : 46 Question Id : 6760332026 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

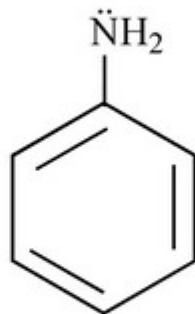
For the compounds below given



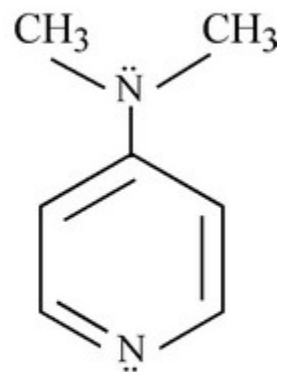
I



II



III



IV

the correct order of basicity is

Options :

6760336091. III < I < II < IV

6760336092. I < II < IV < III

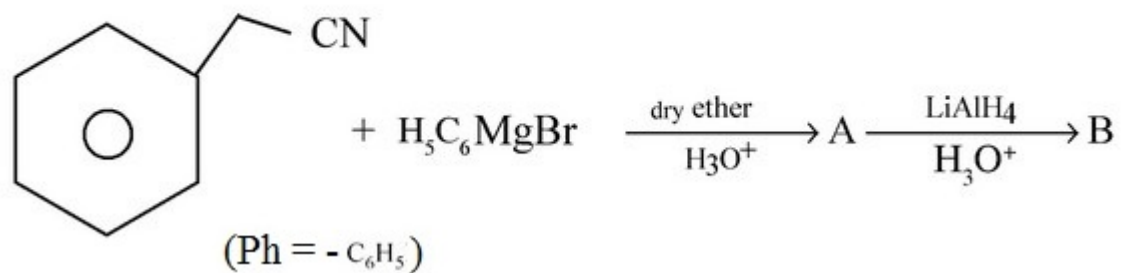
6760336093. I < II < III < IV

6760336094. III < IV < I < II

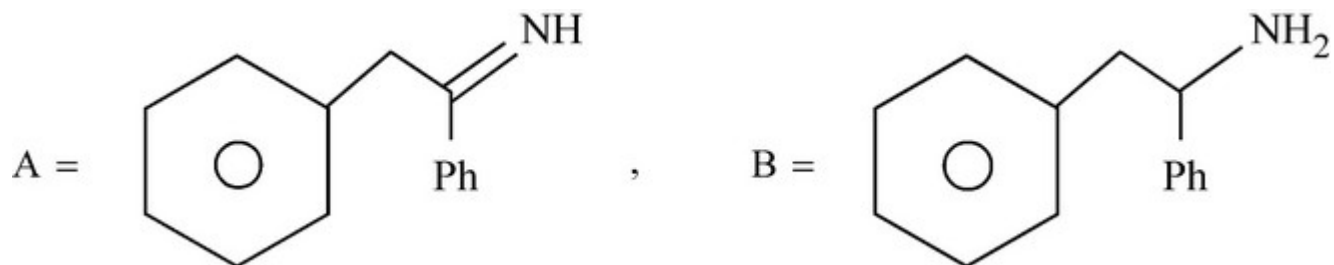
Question Number : 47 Question Id : 6760332027 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

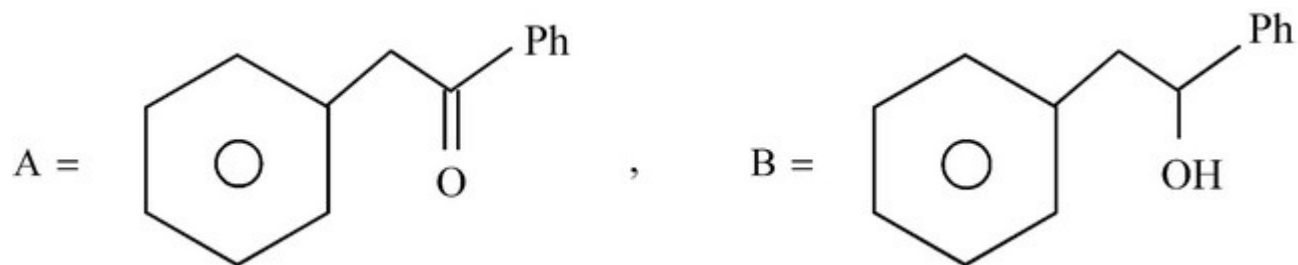
The major products A and B in the following reaction sequence are



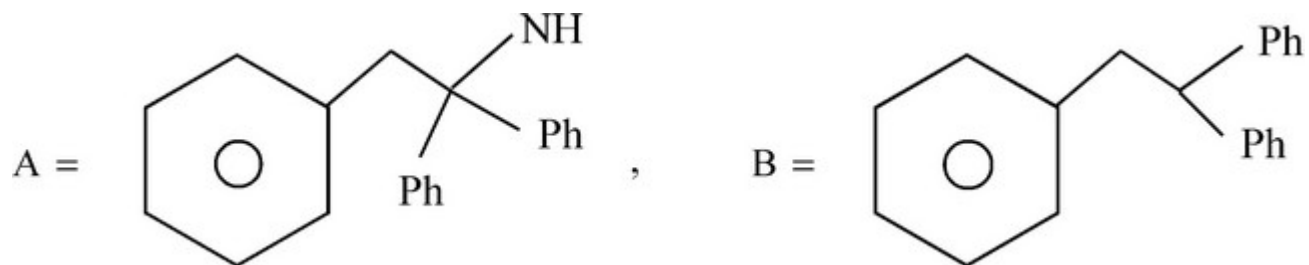
Options :



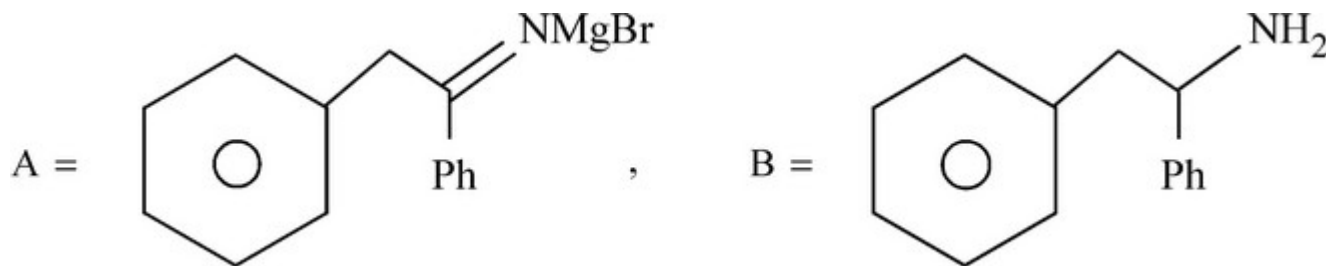
6760336095.



6760336096.



6760336097.



6760336098.

Question Number : 48 Question Id : 6760332028 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The drug that is used as an antacid is

Options :

6760336099. Cimetidine

6760336100. Veronal

6760336101. Codeine

6760336102. Iproniazid

Question Number : 49 Question Id : 6760332029 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The evidence about the cyclic structure of glucose appears from the fact that

Options :

6760336103. penta-acetate of glucose does not react with hydroxyl amine.

6760336104. glucose reacts with NH_2OH to form oxime.

6760336105. glucose does not form hexa-acetate.

6760336106. glucose produces gluconic acid with hydroxyl amine.

Question Number : 50 Question Id : 6760332030 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The reagent that gives purple coloured complex with S^{2-} ion is

Options :

6760336107. $Na_4 [Fe(CN)_5 NOS]$

6760336108. $Na_2 [Fe(CN)_5 NO]$

6760336109. $Na_2 [Fe(CN)_5 ONO]$

6760336110. $Na_4 [Fe(CN)_5 ONO]$

Chemistry Section B

Section Id :	676033136
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 :	676033136
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 6760332031 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The amount of potassium chlorate (KClO_3) that needs to be completely decomposed in order to liberate 40 dm^3 of oxygen gas at STP is _____ g.

(Nearest integer)

[Atomic Masses : $\text{K} = 39.0 \text{ u}$; $\text{Cl} = 35.5 \text{ u}$; $\text{O} = 16.0 \text{ u}$, $R = 0.0831 \text{ L bar mol}^{-1} \text{ K}^{-1}$

Assume oxygen is an ideal gas at STP; at STP molar volume of an ideal gas is 22.7 L mol^{-1}]

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 : 6760332032 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A gaseous mixture of helium and oxygen contains 20% helium by weight. If the partial pressure of oxygen in the mixture is 5 atm, the partial pressure of helium is _____ atm.

(Nearest integer)

[Atomic Masses : $\text{He} : 4.0 \text{ u}$; $\text{O} : 16.0 \text{ u}$]

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 : 6760332033 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of photons emitted by a 800 nm lamp having an average power of 5 mW in 10 s is _____ $\times 10^{17}$.

(Nearest integer)

[Given : $h = 6.626 \times 10^{-34}$ Js; $C = 3.0 \times 10^8$ ms⁻¹]

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 : 6760332034 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The bond order in NO⁺ is _____ .

(integer answer)

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 : 6760332035 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The standard reaction enthalpy for hydrogenation of propene is -124 kJ mol^{-1} .
Additionally, standard heat of combustion $\Delta_c H^\ominus(\text{propane}) = -2220 \text{ kJ mol}^{-1}$.
and standard heat of formation $\Delta_f H^\ominus(\text{water}) = -286 \text{ kJ mol}^{-1}$.

If $\Delta_c H^\ominus(\text{propene}) = -x \text{ kJ mol}^{-1}$, the value of x is _____ .

(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 : 56 Question Id : 6760332036 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

0.7 cm^3 of compound A (molar mass = 70 g mol^{-1} , density = 1.024 g cm^{-3})
is dissolved in 1 dm^3 of water. If the depression in freezing point of water is
 $0.02 \text{ }^\circ\text{C}$, the van't Hoff factor for the compound A is _____ $\times 10^{-2}$.

(Nearest integer)

[Given : K_f for $\text{H}_2\text{O} = 1.86 \text{ K kg mol}^{-1}$, Density of $\text{H}_2\text{O} = 1.0 \text{ g cm}^{-3}$]

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 : 6760332037 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$x \times 10^{-5}$ g of $\text{Ca}(\text{OH})_2$ are required to produce 200 cm^3 of an aqueous solution of pH 10.0.

The value of x is _____ .

(Nearest integer)

[Given : Atomic masses : Ca : 40.0 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

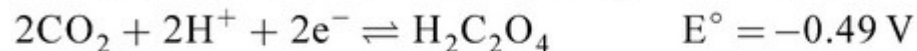
Possible Answers :

100

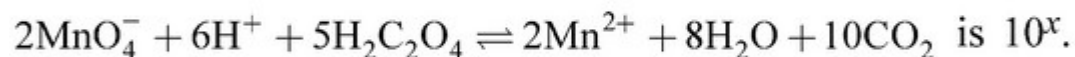
Question Number : 58 Question Id : 6760332038 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The standard electrode potentials of the reactions are given below.



The equilibrium constant for the reaction



The value of x is _____ .

(Nearest integer)

$$[\text{Given} : \frac{2.303 RT}{F} = 0.059 \text{ V}]$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

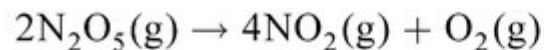
Possible Answers :

100

Question Number : 59 **Question Id :** 6760332039 **Question Type :** SA

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

N_2O_5 decomposes following first order kinetics according to the reaction



N_2O_5 is introduced in a closed vessel. After 46 minutes, the pressure in the vessel is 549.43 mm of Hg. After a very long time, the pressure saturated at 584.5 mm of Hg. The rate constant of the reaction in hr^{-1} is _____ .

(Nearest integer)

[Assume : $\ln 10 = 2.3$,

Assume all gases behave as ideal gases]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

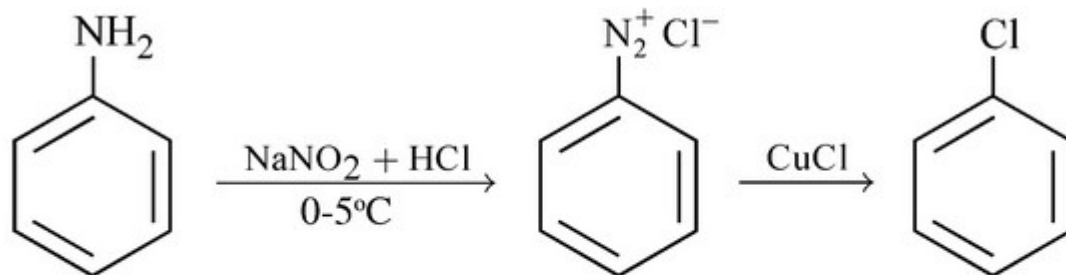
Text Areas : PlainText

Possible Answers :

100

Question Number : 60 **Question Id :** 6760332040 **Question Type :** SA

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



In the reactions above, yield of the first step is 90% and that of the second step is 80%. The overall yield of the reaction is _____ %.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100