

Chemistry Section A

Section Id :	864351916
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 :	8643511143
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 86435120200 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The interaction energy of London forces between two particles is proportional to r^x , where r is the distance between the particles. The value of x is :

Options :

86435167181. 3

86435167182. -3

86435167183. 6



86435167184. - 6

Question Number : 32 Question Id : 86435120201 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The bond order and magnetic behaviour of O_2^- ion are, respectively :

Options :

86435167185. 1 and paramagnetic.

86435167186. 1.5 and paramagnetic.

86435167187. 2 and diamagnetic.

86435167188. 1.5 and diamagnetic.

Question Number : 33 Question Id : 86435120202 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The sol given below with negatively charged colloidal particles is :

Options :

86435167189. KI added to $AgNO_3$ solution

86435167190. $AgNO_3$ added to KI solution

86435167191. FeCl_3 added to hot water

86435167192. $\text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ in water

**Question Number : 34 Question Id : 86435120203 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

Chalcogen group elements are :

Options :

86435167193. Se, Tb and Pu.

86435167194. S, Te and Pm.

86435167195. Se, Te and Po.

86435167196. O, Ti and Po.

**Question Number : 35 Question Id : 86435120204 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

Given below are two statements :

Statement I : Sphalerite is a sulphide ore of zinc and copper glance is a sulphide ore of copper.

Statement II : It is possible to separate two sulphide ores by adjusting proportion of oil to water or by using 'depressants' in a froth flotation method.

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

Options :

86435167197. Both **Statement I** and **Statement II** are true.

86435167198. Both **Statement I** and **Statement II** are false.

86435167199. **Statement I** is true but **Statement II** is false.

86435167200. **Statement I** is false but **Statement II** is true.

Question Number : 36 Question Id : 86435120205 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Heavy water is used for the study of reaction mechanism.

Reason (R) : The rate of reaction for the cleavage of O – H bond is slower than that of O – D bond.

Choose the **most appropriate** answer from the options given be

Options :



86435167201. Both (A) and (R) are true and (R) is the true explanation of (A).

86435167202. Both (A) and (R) are true but (R) is not the true explanation of (A).

86435167203. (A) is true but (R) is false.

86435167204. (A) is false but (R) is true.

Question Number : 37 Question Id : 86435120206 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Barium carbonate is insoluble in water and is highly stable.

Reason (R) : The thermal stability of the carbonates increases with increasing cationic size.

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

Options :

86435167205. Both (A) and (R) are true and (R) is the true explanation of (A).

86435167206. Both (A) and (R) are true but (R) is not the true explanation of (A).

86435167207. (A) is true but (R) is false.



86435167208. (A) is false but (R) is true.

Question Number : 38 Question Id : 86435120207 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The number of non-ionisable hydrogen atoms present in the final product obtained from the hydrolysis of PCl_5 is :

Options :

86435167209. 1

86435167210. 2

86435167211. 3

86435167212. 0

Question Number : 39 Question Id : 86435120208 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Arrange the following Cobalt complexes in the order of increasing Crystal Field Stabilization Energy (CFSE) value.

Complexes : $[\text{CoF}_6]^{3-}$, $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$ and $[\text{Co}(\text{en})_3]^{3+}$
A B C D

Choose the correct option :

Options :

86435167213. $A < B < C < D$



86435167214. $B < C < D < A$

86435167215. $C < D < B < A$

86435167216. $B < A < C < D$

Question Number : 40 Question Id : 86435120209 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Indicate the complex/complex ion which did not show any geometrical isomerism :

Options :

86435167217. $[\text{CoCl}_2(\text{en})_2]$

86435167218. $[\text{Co}(\text{CN})_5(\text{NC})]^{3-}$

86435167219. $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$

86435167220. $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$

Question Number : 41 Question Id : 86435120210 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Photochemical smog causes cracking of rubber.

Reason (R) : Presence of ozone, nitric oxide, acrolein, formaldehyde and peroxyacetyl nitrate in photochemical smog makes it oxidizing.

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

Options :

86435167221. Both (A) and (R) are true and (R) is the true explanation of (A).

86435167222. Both (A) and (R) are true but (R) is not the true explanation of (A).

86435167223. (A) is true but (R) is false.

86435167224. (A) is false but (R) is true.

Question Number : 42 Question Id : 86435120211 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Which one of the following compounds is not aromatic ?

Options :



86435167225.

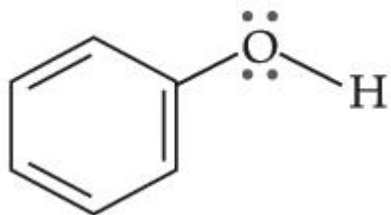
86435167226.



86435167227.



86435167228.



Question Number : 43 Question Id : 86435120212 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The number of stereoisomers possible for 1,2-dimethyl cyclopropane is :

Options :

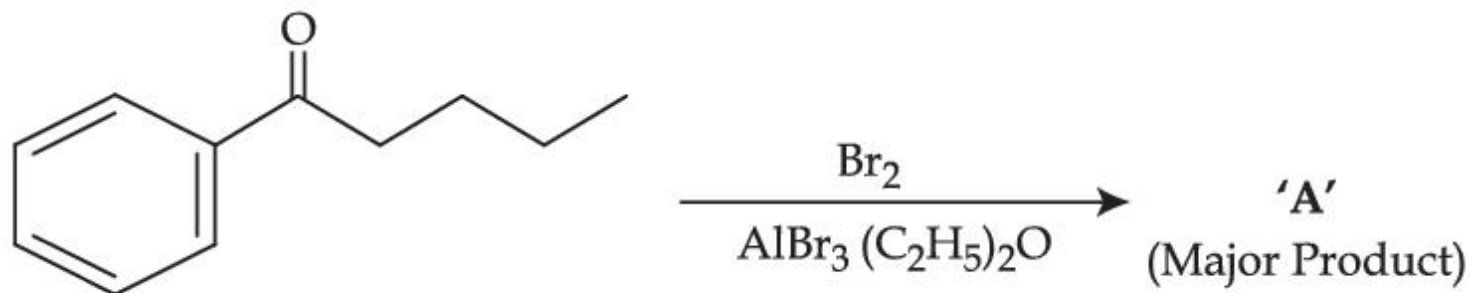
86435167229. One

86435167230. Two

86435167231. Three

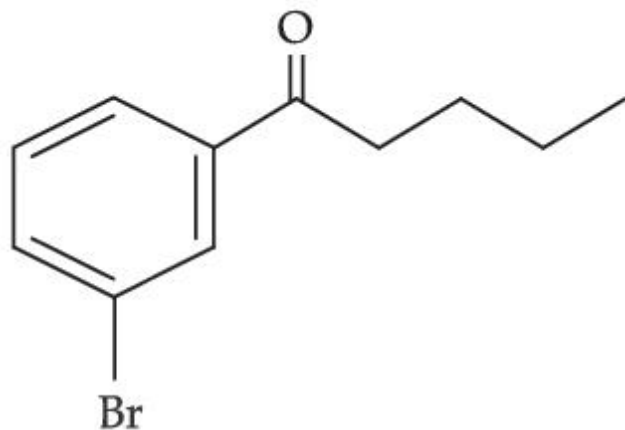
86435167232. Four

Question Number : 44 Question Id : 86435120213 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

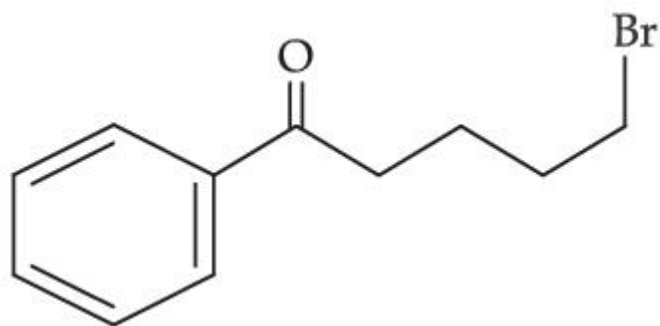


Consider the given reaction, the Product A is :

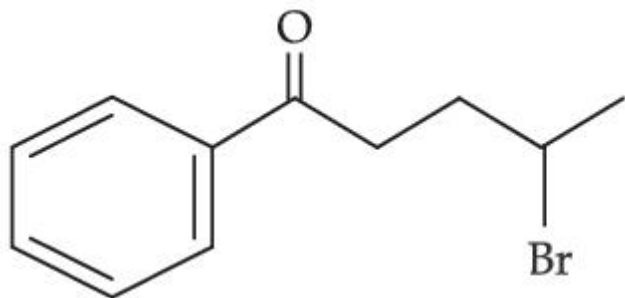
Options :



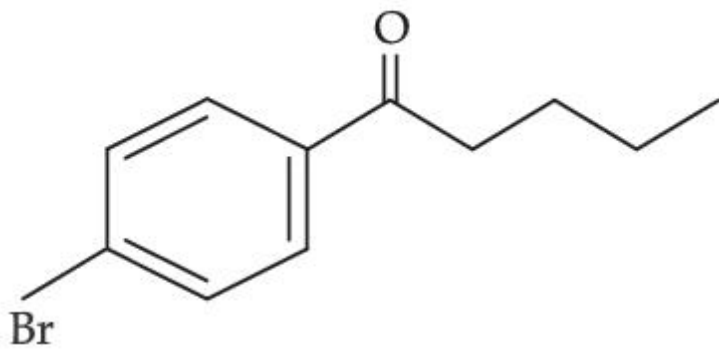
86435167233.



86435167234.



86435167235.



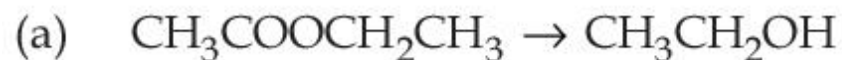
86435167236.

Question Number : 45 Question Id : 86435120214 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II.

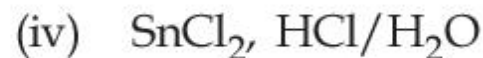
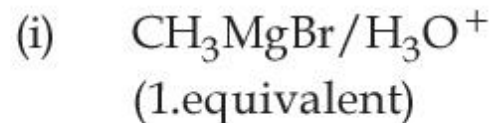
List - I

(Chemical Reaction)



List - II

(Reagent used)



Choose the **most appropriate** match.

Options :

86435167237. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

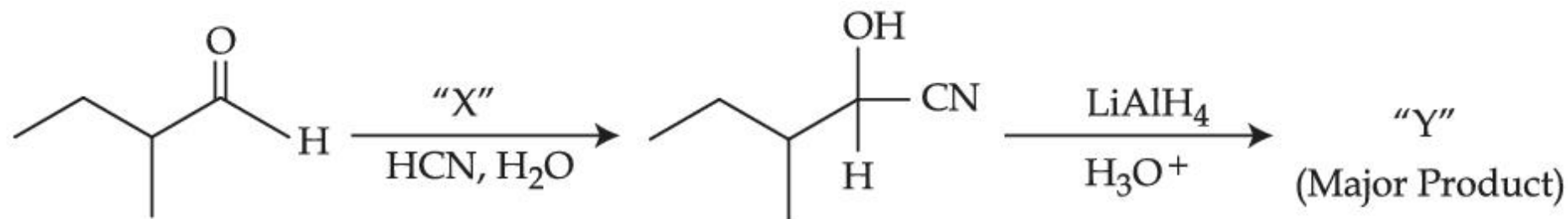
86435167238. (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

86435167239. (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)

86435167240. (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

Question Number : 46 Question Id : 86435120215 Question Type : MCQ Option Shuffling : Yes Is Correct Marks : 4 Wrong Marks : 1

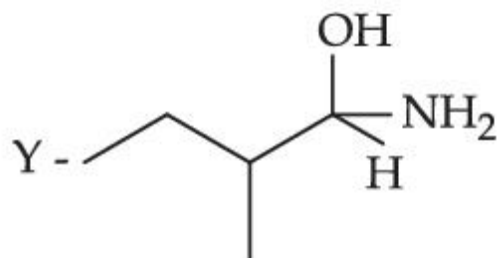




Consider the given reaction, Identify 'X' and 'Y' :

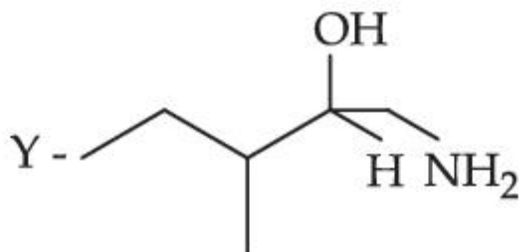
Options :

X - NaOH



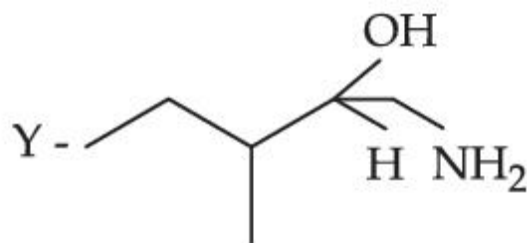
86435167241.

X - HNO₃



86435167242.

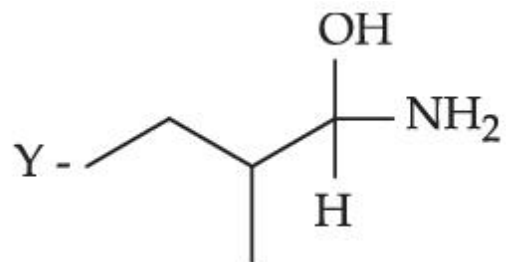
X - NaOH



86435167243.

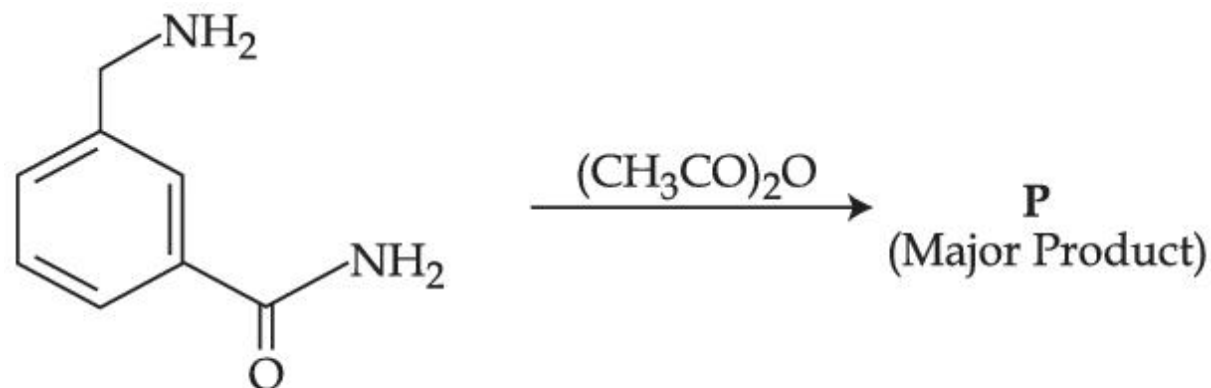


X - HNO_3



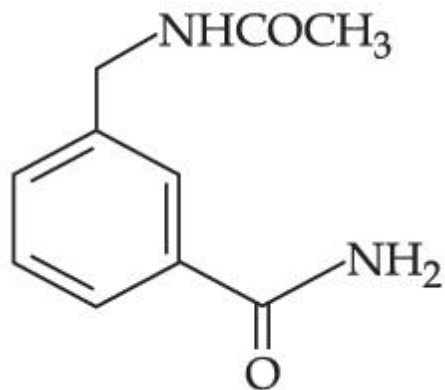
86435167244.

Question Number : 47 Question Id : 86435120216 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

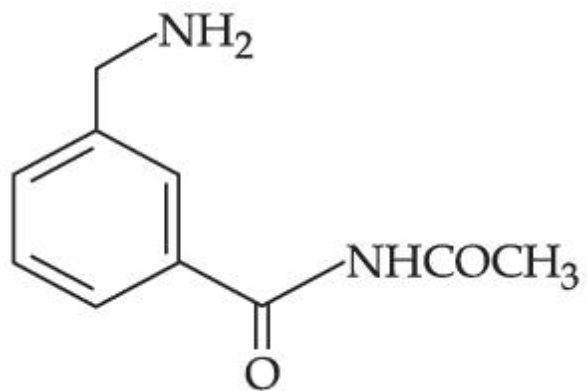


The Major Product in the above reaction is :

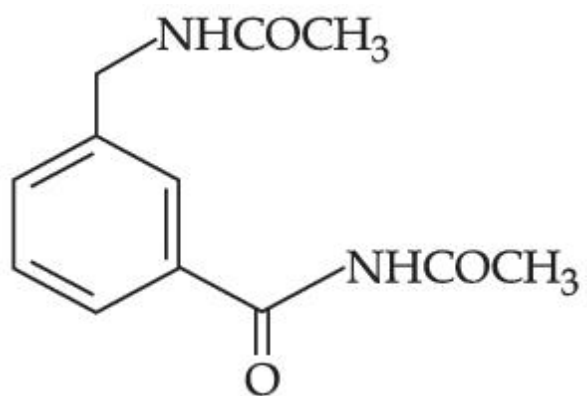
Options :



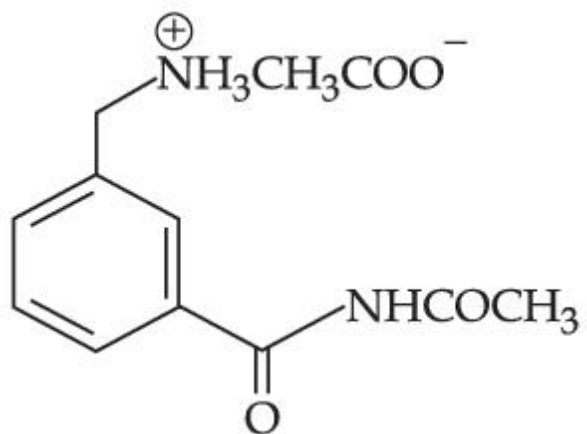
86435167245.



86435167246.

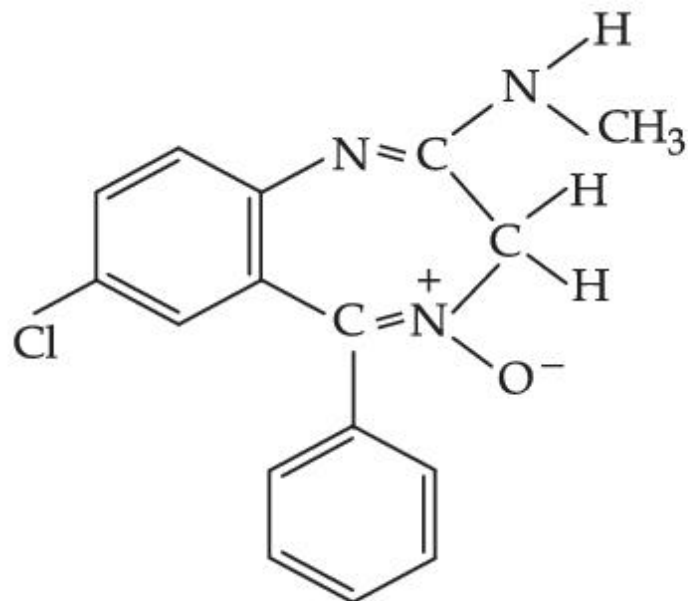


86435167247.



86435167248.

Question Number : 48 Question Id : 86435120217 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1



Chlordiazepoxide

The class of drug to which chlordiazepoxide with above structure belongs is :

Options :

86435167249. Tranquilizer

86435167250. Antibiotic

86435167251. Antacid

86435167252. Analgesic

Question Number : 49 Question Id : 86435120218 Question Type : MCQ Option Shuffling : Yes Is



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Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Sucrose is a disaccharide and a non-reducing sugar.

Reason (R) : Sucrose involves glycosidic linkage between C_1 of β -glucose and C_2 of α -fructose.

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

Options :

86435167253. Both **(A)** and **(R)** are true and **(R)** is the true explanation of **(A)**.

86435167254. Both **(A)** and **(R)** are true but **(R)** is not the true explanation of **(A)**.

86435167255. **(A)** is true but **(R)** is false.

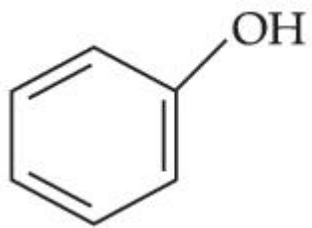
86435167256. **(A)** is false but **(R)** is true.

Question Number : 50 Question Id : 86435120219 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

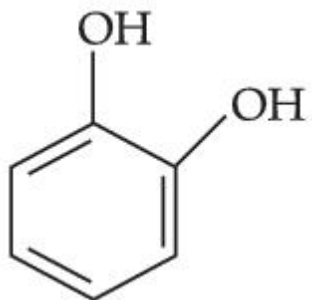
Correct Marks : 4 Wrong Marks : 1

Which one of the following phenols does not give colour when condensed with phthalic anhydride in presence of conc. H_2SO_4 ?

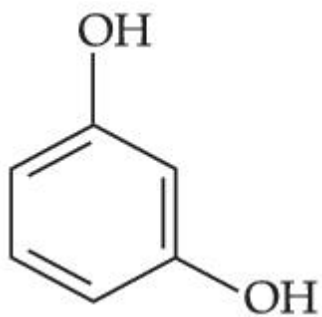
Options :



86435167257.



86435167258.



86435167259.



86435167260.

Chemistry Section B

Section Id :	864351917
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 :	8643511144
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 86435120220 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

100 mL of Na_3PO_4 solution contains 3.45 g of sodium. The molarity of the solution is _____ $\times 10^{-2}$ mol L⁻¹. (Nearest integer)

[Atomic Masses - Na : 23.0 u, O : 16.0 u, P : 31.0 u]

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 : 86435120221 Question Type : SA

Correct Marks : 4 Wrong Marks : 0



A metal surface is exposed to 500 nm radiation. The threshold frequency of the metal for photoelectric current is 4.3×10^{14} Hz. The velocity of ejected electron is _____ $\times 10^5$ ms⁻¹. (Nearest integer)

[Use : $h = 6.63 \times 10^{-34}$ Js, $m_e = 9.0 \times 10^{-31}$ kg]

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 :** 86435120222 **Question Type :** SA

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

For water $\Delta_{\text{vap}}H = 41$ kJ mol⁻¹ at 373 K and 1 bar pressure. Assuming that water vapour is an ideal gas that occupies a much larger volume than liquid water, the internal energy change during evaporation of water is _____ kJ mol⁻¹.

[Use : $R = 8.3$ J mol⁻¹K⁻¹]

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 :** 86435120223 **Question Type :** SA

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



83 g of ethylene glycol dissolved in 625 g of water. The freezing point of the solution is _____ K. (Nearest integer)

[Use : Molal Freezing point depression constant of water = $1.86 \text{ K kg mol}^{-1}$

Freezing point of water = 273 K

Atomic masses : C : 12.0 u, O : 16.0 u, H : 1.0 u]

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 :** 86435120224 **Question Type :** SA

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

The equilibrium constant K_c at 298 K for the reaction



is 100. Starting with an equimolar solution with concentrations of A, B, C and D all equal to 1 M, the equilibrium concentration of D is _____ $\times 10^{-2}$ M. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

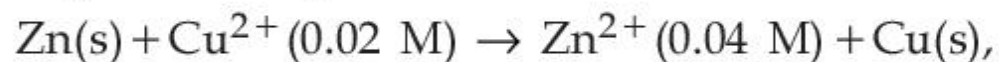
1

Question Number : 56 **Question Id :** 86435120225 **Question Type :** SA



Correct Marks : 4 Wrong Marks : 0

For the galvanic cell,



$$E_{\text{cell}} = \text{_____} \times 10^{-2} \text{ V. (Nearest integer)}$$

$$[\text{Use : } E^0_{\text{Cu}/\text{Cu}^{2+}} = -0.34 \text{ V, } E^0_{\text{Zn}/\text{Zn}^{2+}} = +0.76 \text{ V, } \frac{2.303 \text{ RT}}{\text{F}} = 0.059 \text{ V}]$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

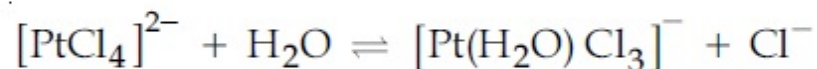
Possible Answers :

1

Question Number : 57 Question Id : 86435120226 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The reaction rate for the reaction



was measured as a function of concentrations of different species. It was observed that

$$-\frac{d[\text{PtCl}_4]^{2-}}{dt} = 4.8 \times 10^{-5} [\text{PtCl}_4]^{2-} - 2.4 \times 10^{-3} [\text{Pt}(\text{H}_2\text{O})\text{Cl}_3]^- [\text{Cl}^-].$$

where square brackets are used to denote molar concentrations. The equilibrium constant

$$K_c = \text{_____}. \text{ (Nearest integer)}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 58 **Question Id :** 86435120227 **Question Type :** SA

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

The overall stability constant of the complex ion $[\text{Cu}(\text{NH}_3)_4]^{2+}$ is 2.1×10^{13} . The overall dissociation constant is $y \times 10^{-14}$. Then y 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 : 59 Question Id : 86435120228 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In the sulphur estimation, 0.471 g of an organic compound gave 1.44 g of barium sulfate. The percentage of sulphur in the compound is _____%. (Nearest integer)

(Atomic Mass of Ba = 137 u)

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 : 86435120229 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A chloro compound "A".

(i) forms aldehydes on ozonolysis followed by the hydrolysis.

(ii) when vaporized completely 1.53 g of A, gives 448 mL of vapour at STP.

The number of carbon atoms in a molecule of compound A is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

