

Chemistry Section A

Section Id :	67603375
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 :	67603375
Question Shuffling Allowed :	Yes

**Question Number : 31 Question Id : 6760331111 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

The true value of a result is 5.0g and a student 'A' takes two measurements and reports the result as 5.3 and 5.4g. Another student 'B' repeats the measurement and reports 4.6 and 4.7g. Pick the statement from below that correctly describes the reports of A and B.

Options :

6760333331. Reports of both A and B are both precise and accurate
6760333332. Reports of both A and B are neither precise nor accurate
6760333333. Reports of A and B are both precise but not accurate
6760333334. Reports of A and B are both accurate but not precise.

Question Number : 32 Question Id : 6760331112 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : In CH_2F_2 molecule $\angle\text{FCF}$ is less than 109.5°

Statement II : In CH_2F_2 molecule both $\angle\text{FCF}$ and $\angle\text{HCH}$ are equal

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

Options :

6760333335. Both Statement I and Statement II are correct



6760333336. Both Statement I and Statement II are incorrect

6760333337. Statement I is correct but Statement II is incorrect

6760333338. Statement I is incorrect but Statement II is correct.

Question Number : 33 Question Id : 6760331113 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The correct order of second ionization enthalpy is

Options :

6760333339. $V > Cr > Mn > Fe$

6760333340. $Fe > Mn > Cr > V$

6760333341. $Cr > Fe > Mn > V$

6760333342. $Fe > Cr > Mn > V$

Question Number : 34 Question Id : 6760331114 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Ellingham diagram does not predict the

Options :

6760333343. reducing ability of a metal

6760333344. rate of a reaction

6760333345. overall free energy of a reaction

6760333346. feasibility of a reaction

Question Number : 35 Question Id : 6760331115 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Sodium chromate reacts with hydrogen peroxide (H_2O_2) in the presence of dilute sulphuric acid to yield

Options :

6760333347. Chromyl chloride

6760333348. Chromium pentoxide

6760333349. Sodium dichromate

6760333350. Chromium sulphate

Question Number : 36 Question Id : 6760331116 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The percentage of oxides in Portland Cement decreases in the order

Options :

6760333351. $\text{CaO} > \text{SiO}_2 > \text{Al}_2\text{O}_3 > \text{MgO}$



6760333352. $\text{CaO} > \text{Al}_2\text{O}_3 > \text{MgO} > \text{SiO}_2$

6760333353. $\text{SiO}_2 > \text{CaO} > \text{MgO} > \text{Al}_2\text{O}_3$

6760333354. $\text{SiO}_2 > \text{CaO} > \text{Al}_2\text{O}_3 > \text{MgO}$

Question Number : 37 Question Id : 6760331117 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select from the following, the correct order of reducing property

Options :

6760333355. $\text{H}_2\text{S} > \text{H}_2\text{Se} > \text{H}_2\text{Te}$

6760333356. $\text{H}_2\text{Te} > \text{H}_2\text{Se} > \text{H}_2\text{S}$

6760333357. $\text{H}_2\text{Te} > \text{H}_2\text{S} > \text{H}_2\text{Se}$

6760333358. $\text{H}_2\text{Se} > \text{H}_2\text{S} > \text{H}_2\text{Te}$

Question Number : 38 Question Id : 6760331118 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify the actinoid which shows +5 oxidation state :

Options :

6760333359. Curium (Atomic no. 96)

6760333360. Thorium (Atomic no. 90)

6760333361. Americium (Atomic no. 95)

6760333362. Fermium (Atomic no. 100)

**Question Number : 39 Question Id : 6760331119 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

The correct statement for permanganate ion is

Options :

6760333363. It has highly distorted tetrahedral structure.

6760333364. It has two Mn—O double bonds.

6760333365. It can be made by reduction of MnO_4^{2-} .

6760333366. It has three π -bonds.

**Question Number : 40 Question Id : 6760331120 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**



Match List I with List II :

List I :	List II :
A. 'Blue baby' syndrome	I. Mercury
B. Eutrophication	II. Cadmium
C. Minimata disease	III. Nitrate
D. Itai-Itai disease	IV. Phosphate

Choose the correct answer from the options given below :

Options :

6760333367. A-III, B-IV, C-II, D-I

6760333368. A-III, B-IV, C-I, D-II

6760333369. A-IV, B-III, C-II, D-I

6760333370. A-IV, B-II, C-I, D-III

Question Number : 41 Question Id : 6760331121 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Histamine on Lassaigne's test gives blue colour.

Statement II : Pencillin on Lassaigne's test gives blue colour.

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

Options :

6760333371. Both Statement I and Statement II are correct

6760333372. Both Statement I and Statement II are incorrect

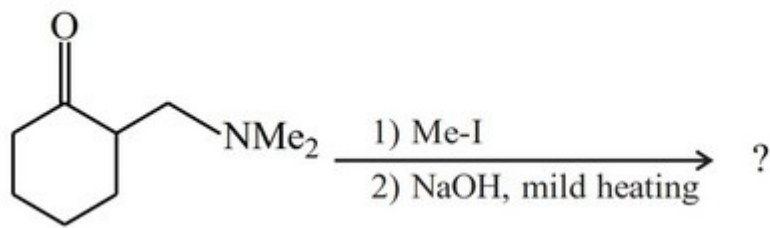
6760333373. Statement I is correct but Statement II is incorrect

6760333374. Statement I is incorrect but Statement II is correct.

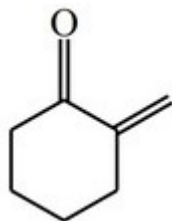
Question Number : 42 Question Id : 6760331122 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

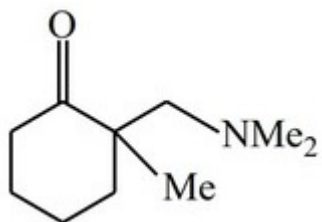
Find out the correct major product from the following reaction (Me = - CH₃)



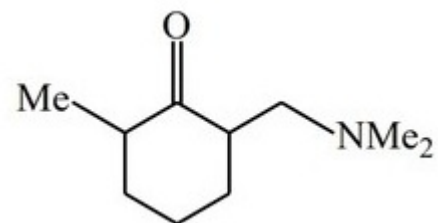
Options :



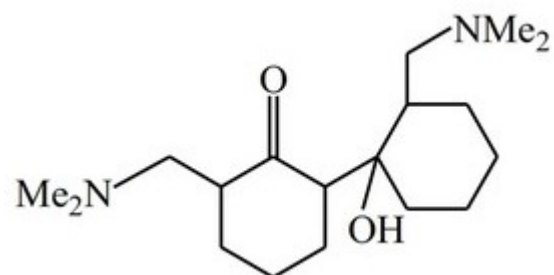
6760333375.



6760333376.



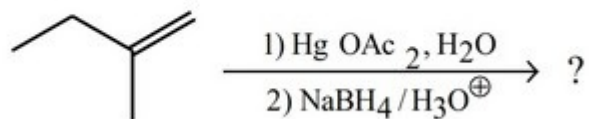
6760333377.



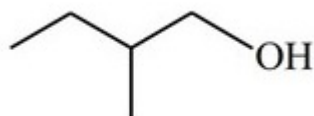
6760333378.

Question Number : 43 Question Id : 6760331123 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Find out the major product of the following reaction



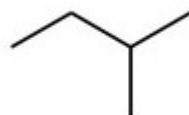
Options :



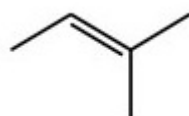
6760333379.



6760333380.



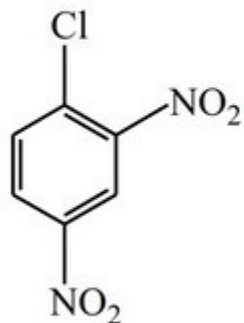
6760333381.



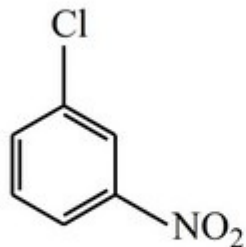
6760333382.

Question Number : 44 Question Id : 6760331124 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The correct arrangement of the following compounds in the order of increasing difficulty towards nucleophilic substitution is



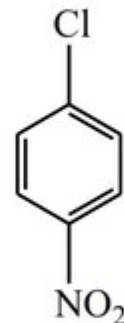
I



II



III



IV

Options :

6760333383. I, II, IV, III

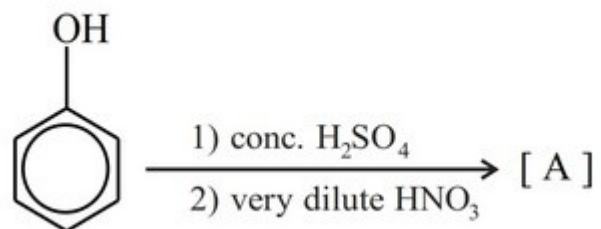
6760333384. IV, III, I, II

6760333385. I, II, III, IV

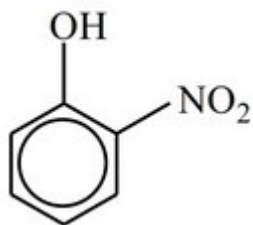
6760333386. I, IV, II, III

Question Number : 45 Question Id : 6760331125 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

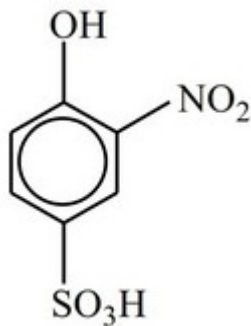
Product [A] obtained in the following transformation is



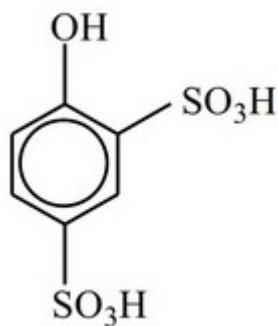
Options :



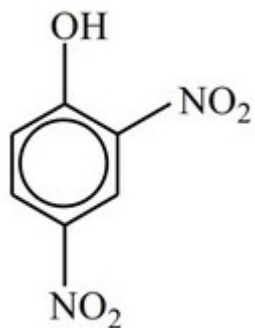
6760333387.



6760333388.



6760333389.



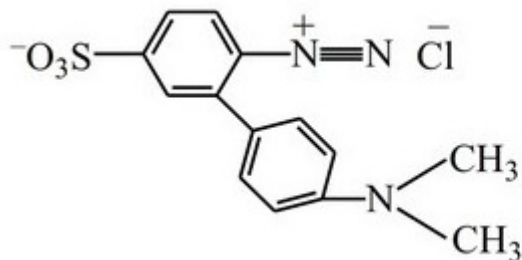
6760333390.

Question Number : 46 Question Id : 6760331126 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

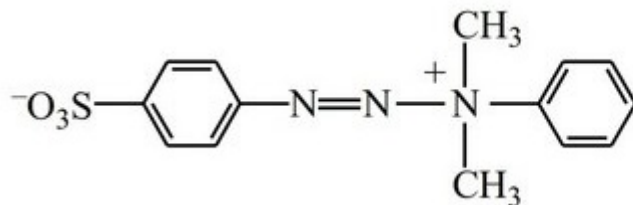
Sulphanilic acid on diazotisation and then reaction with N,N-dimethylaniline gives which of the following? Mark if their common name is correctly matched.

Options :



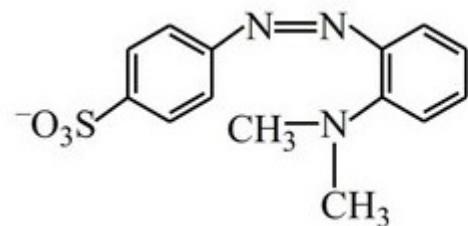
– Orange-II

6760333391.



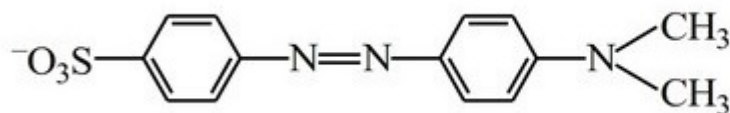
– Pink-I dye

6760333392.



– Para red

6760333393.



– Methyl orange

6760333394.

Question Number : 47 Question Id : 6760331127 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match List I with List II :

List I - Polymer	List II - Type
A. Bakelite	I. Branched chain
B. HDP	II. Linear
C. LDP	III. Network
D. Rayon	IV. Semi-synthetic

Choose the correct answer from the options given below :

Options :

6760333395. A → III, B → II, C → I, D → IV

6760333396. A → IV, B → I, C → II, D → III

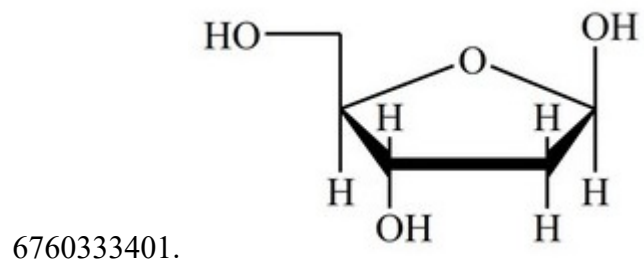
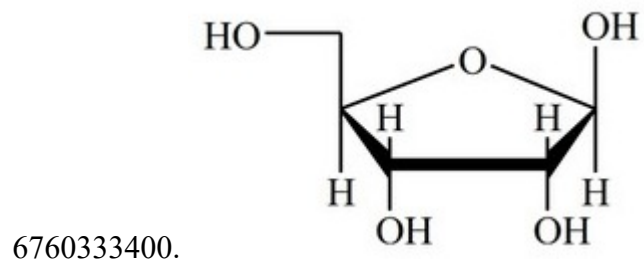
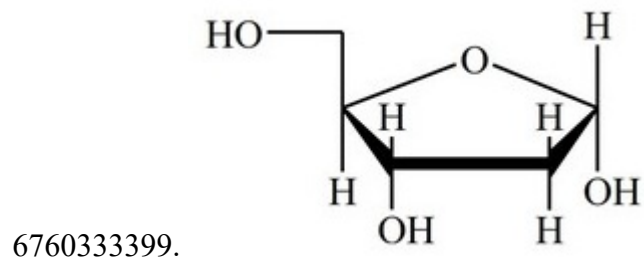
6760333397. A → III, B → I, C → II, D → IV

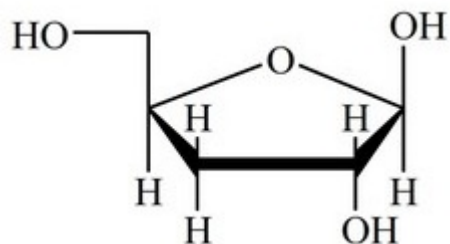
6760333398. A → II, B → III, C → I, D → IV

Question Number : 48 Question Id : 6760331128 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The correct structure of β -D-deoxyribose present in DNA is

Options :





6760333402.

Question Number : 49 Question Id : 6760331129 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List I with List II :

List I	List II
A. Hell-Volhard-Zelinsky reaction	I. Test for primary amines
B. Hinsberg's reagent	II. Preparation of α -halocarboxylic acids
C. Isocyanide test	III. Preparation of primary amines
D. Hoffmann bromamide degradation	IV. Differentiates 1 ^o , 2 ^o and 3 ^o amines.

Choose the correct answer from the options given below :

Options :

6760333403. A \rightarrow II, B \rightarrow IV, C \rightarrow I, D \rightarrow III

6760333404. A \rightarrow III, B \rightarrow IV, C \rightarrow I, D \rightarrow II

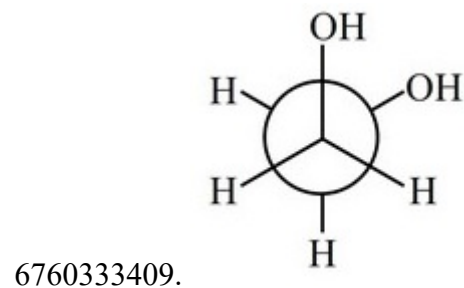
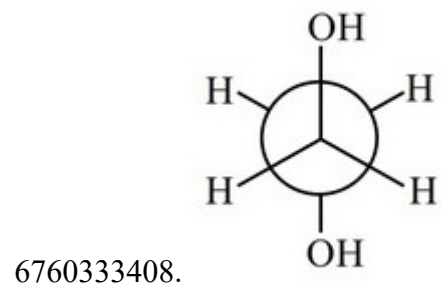
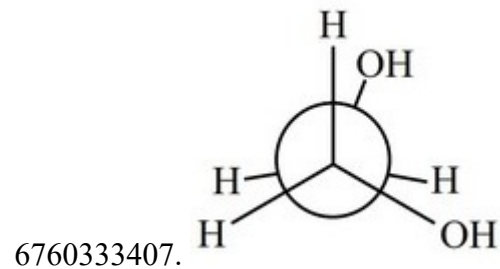
6760333405. A \rightarrow II, B \rightarrow I, C \rightarrow IV, D \rightarrow III

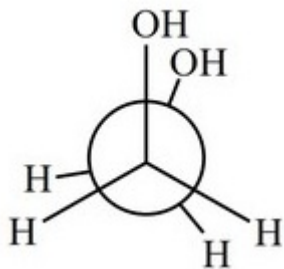
6760333406. A → III, B → I, C → II, D → IV

Question Number : 50 Question Id : 6760331130 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following is the most stable conformer?

Options :





6760333410.

Chemistry Section B

Section Id :	67603376
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 :	67603376
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 6760331131 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Assuming H_2 is an ideal gas, consider the quantity “ $P.d$ ”, where ‘ P ’ is the pressure in atm and ‘ d ’ is the density in $g L^{-1}$. For $P = 8.21$ atm, it is observed that

$$\left(\frac{\partial(Pd)}{\partial P}\right)_T = 10.0 \text{ g L}^{-1}. \text{ The corresponding temperature in K is } \underline{\hspace{2cm}}.$$

(Nearest integer)

[Assume $R = 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

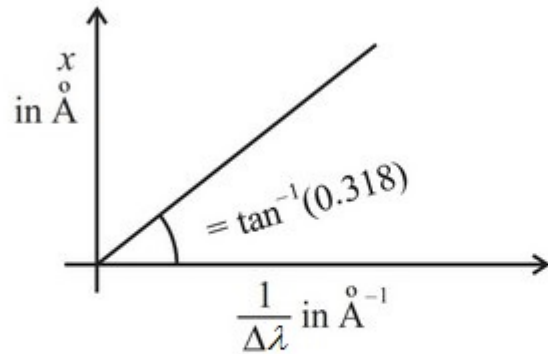
Possible Answers :

100

Question Number : 52 Question Id : 6760331132 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A graph of the uncertainty in position against the inverse of the uncertainty in wavelength of an electron is shown.



The wavelength of the electron in Å is _____. (Nearest integer)

[Assume minimum uncertainty product. Use $\pi = 3.142$, Use $\Delta(g(y)) = |g'(y)| \Delta y$; where g is an arbitrary function of y.]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

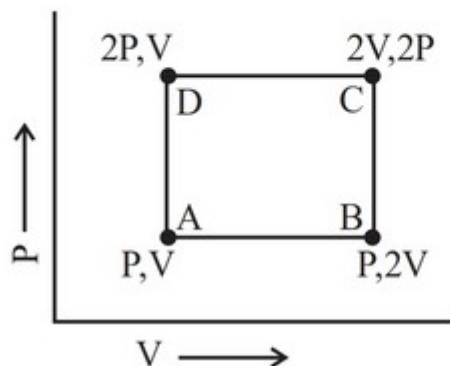
Possible Answers :

100

Question Number : 53 **Question Id :** 6760331133 **Question Type :** SA

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

An ideal monoatomic gas traverses the cycle ABCD as shown below in the figure. The work done during the cycle is xPV . 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 : 54 **Question Id :** 6760331134 **Question Type :** SA

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

The amount of ethyl alcohol (C_2H_5OH) that should be added to 1kg of water so that the solution does not freeze at $-4^\circ F$ ($K_f = 1.86 \text{ K kg mol}^{-1}$) in g is _____. (Nearest integer) (Given Atomic mass C=12.0, H=1.0, 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 : 55 Question Id : 6760331135 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If 1 M solution of acetic acid is diluted x times so that pH of the solution is doubled.

The value of x is ($K_a = 1.8 \times 10^{-5}$) _____. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

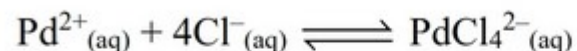
Possible Answers :

100

Question Number : 56 Question Id : 6760331136 Question Type : SA

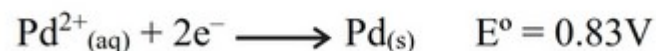
Correct Marks : 4 Wrong Marks : 0

The logarithm of equilibrium constant ($\log_{10}K$) for the reaction



is $x \times 10^{-1}$. The value of x is _____. (Nearest integer)

[Given emf for the half-cell at 25°C



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 57 Question Id : 6760331137 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The following results have been obtained during the kinetic studies of the reaction.



Experiment	[A], mol L ⁻¹	[B], mol L ⁻¹	Initial rate of formation of [C], mol L ⁻¹ min ⁻¹
1	0.60	0.60	0.20
2	0.60	1.20	0.80
3	1.20	0.60	0.40

The order of the reaction with respect to B is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 58 Question Id : 6760331138 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

200 mL of 0.85M acetic acid is shaken with 2g activated charcoal. The final concentration of the solution after adsorption is 0.75M. The mass of acetic acid in grams adsorbed per gram of charcoal is equal to _____ $\times 10^{-1}$. (Nearest integer)
(Given Atomic mass : C=12.0, H=1.0, 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 : 59 Question Id : 6760331139 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of ions produced in an aqueous solution from the octahedral complex with stoichiometry $\text{CoCl}_3 \cdot 5\text{H}_2\text{O}$, is _____.

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 : 6760331140 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The strength of 25 volume solution of hydrogen peroxide in percentage is _____ $\times 10^{-1}$. (Nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes



Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100