

Chemistry Section A

Section Id :	864351826
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 :	8643511053
Question Shuffling Allowed :	Yes

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The parameters of the unit cell of a substance are $a = 2.5$, $b = 3.0$, $c = 4.0$, $\alpha = 90^\circ$, $\beta = 120^\circ$, $\gamma = 90^\circ$. The crystal system of the substance is :

Options :

1. Triclinic
2. Hexagonal
3. Orthorhombic
4. Monoclinic

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Rutherford's gold foil experiment cannot explain the line spectrum of hydrogen atom.

Statement II : Bohr's model of hydrogen atom contradicts Heisenberg's uncertainty principle.

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

Options :

1. Both **statement I** and **statement II** are true.
2. Both **statement I** and **statement II** are false.
3. **Statement I** is true but **statement II** is false.
4. **Statement I** is false but **statement II** is true.

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For a reaction of order n , the unit of the rate constant is :

Options :

1. $\text{mol}^{1-n} \text{L}^{1-n} \text{s}^{-1}$

2. $\text{mol}^{1-n} \text{L}^{1-n} \text{s}$

3. $\text{mol}^{1-n} \text{L}^{2n} \text{s}^{-1}$

4. $\text{mol}^{1-n} \text{L}^{n-1} \text{s}^{-1}$

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II :

List - I

List - II

(a) NaOH

(i) Acidic

(b) $\text{Be}(\text{OH})_2$

(ii) Basic

(c) $\text{Ca}(\text{OH})_2$

(iii) Amphoteric

(d) $\text{B}(\text{OH})_3$

(e) $\text{Al}(\text{OH})_3$

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

Options :

1. (a)-(ii), (b)-(i), (c)-(ii), (d)-(iii), (e)-(iii)

2. (a)-(ii), (b)-(ii), (c)-(iii), (d)-(i), (e)-(iii)
3. (a)-(ii), (b)-(iii), (c)-(ii), (d)-(i), (e)-(iii)
4. (a)-(ii), (b)-(ii), (c)-(iii), (d)-(ii), (e)-(iii)

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The statement that is INCORRECT about Ellingham diagram is :

Options :

1. provides idea about reduction of metal oxide.
2. provides idea about the reaction rate.
3. provides idea about free energy change.
4. provides idea about changes in the phases during the reaction.

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The product obtained from the electrolytic oxidation of acidified sulphate solutions, is :

Options :

1. $\text{HO}_3\text{SOSO}_3\text{H}$
2. $\text{HO}_2\text{SOSO}_2\text{H}$



Question Type : MCQ 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 : Lithium halides are some what covalent in nature.

Reason R : Lithium possess high polarisation capability.

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

Options :

1. Both **A** and **R** are true and **R** is the correct explanation of **A**
2. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**
3. **A** is true but **R** is false
4. **A** is false but **R** is true

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The oxidation states of 'P' in $\text{H}_4\text{P}_2\text{O}_7$, $\text{H}_4\text{P}_2\text{O}_5$ and $\text{H}_4\text{P}_2\text{O}_6$, respectively, are :

Options :

1. 6, 4 and 5

2. 5, 4 and 3
3. 5, 3 and 4
4. 7, 5 and 6

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The type of hybridisation and magnetic property of the complex $[\text{MnCl}_6]^{3-}$, respectively, are :

Options :

1. d^2sp^3 and paramagnetic
2. sp^3d^2 and diamagnetic
3. sp^3d^2 and paramagnetic
4. d^2sp^3 and diamagnetic

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The number of geometrical isomers found in the metal complexes $[\text{PtCl}_2(\text{NH}_3)_2]$, $[\text{Ni}(\text{CO})_4]$, $[\text{Ru}(\text{H}_2\text{O})_3\text{Cl}_3]$ and $[\text{CoCl}_2(\text{NH}_3)_4]^+$ respectively, are :

Options :

1. 1, 1, 1, 1

2. 2, 0, 2, 2

3. 2, 1, 2, 1

4. 2, 1, 2, 2

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is **NOT** correct ?

Options :

1. The dissolved oxygen concentration below 6 ppm inhibits fish growth
2. Eutrophication indicates that water body is polluted
3. Eutrophication leads to increase in the oxygen level in water
4. Eutrophication leads to anaerobic conditions

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one among the following chemical tests is used to distinguish monosaccharide from disaccharide ?

Options :

1. Seliwanoff's test

2. Barfoed test
3. Tollen's test
4. Iodine test

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

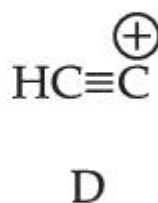
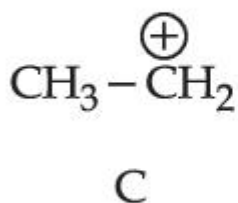
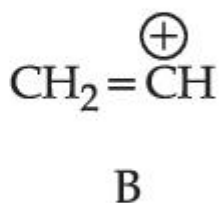
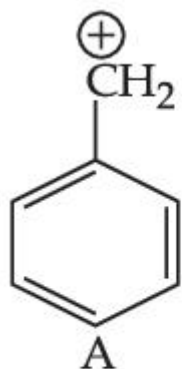
Staggered and eclipsed conformers of ethane are :

Options :

1. Rotamers
2. Mirror images
3. Enantiomers
4. Polymers

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



The correct order of stability of given carbocations is :

Options :

1. $D > B > C > A$
2. $A > C > B > D$
3. $C > A > D > B$
4. $D > B > A > C$

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Presence of which reagent will affect the reversibility of the following reaction, and change it to a irreversible reaction :



Options :

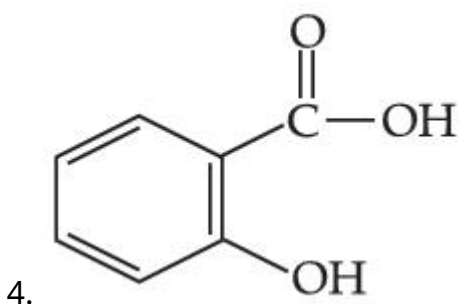
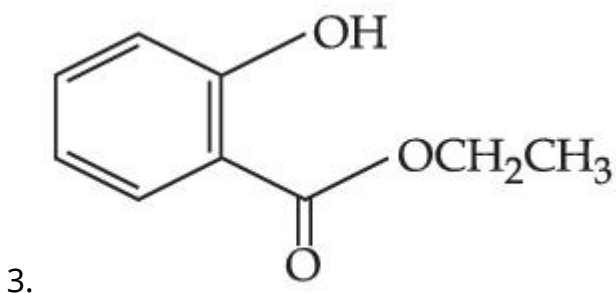
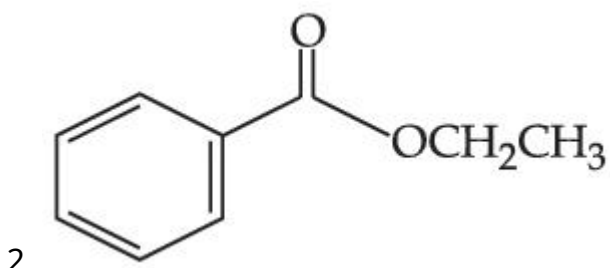
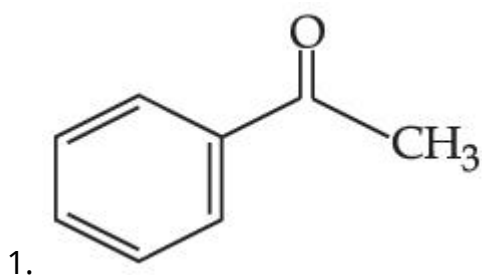
1. Concentrated HIO_3
2. HOCl
3. Liquid NH_3
4. dilute HNO_2

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

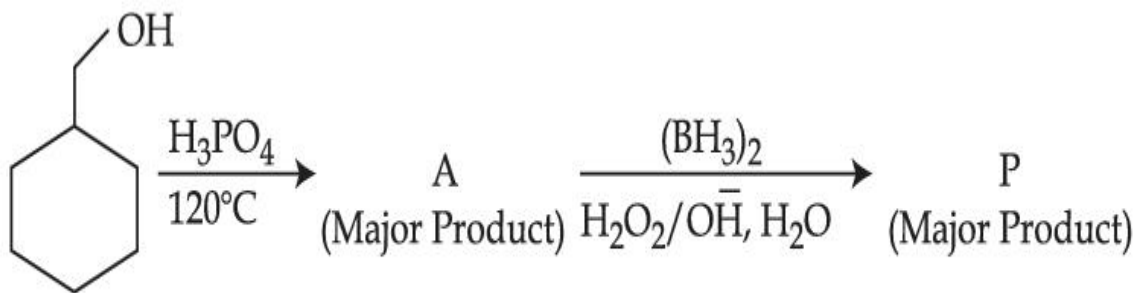
Which one of the following compounds will give orange precipitate when treated with 2,4-dinitrophenyl hydrazine ?

Options :



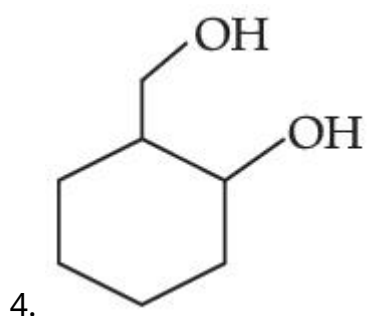
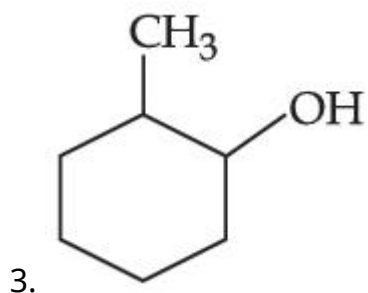
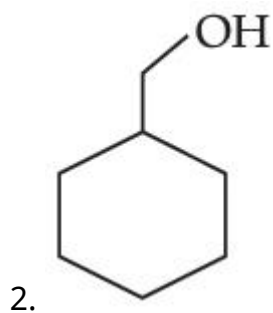
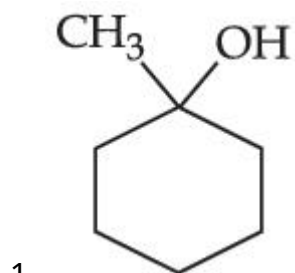
Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Consider the above reaction and identify the Product P :

Options :



Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Aniline is less basic than acetamide.

Statement II : In aniline, the lone pair of electrons on nitrogen atom is delocalised over benzene ring due to resonance and hence less available to a proton.

Choose the **most appropriate** option :

Options :

1. Both **statement I** and **statement II** are true.
2. Both **statement I** and **statement II** are false.
3. **Statement I** is true but **statement II** is false.
4. **Statement I** is false but **statement II** is true.

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match **List - I** with **List - II** :

List - I

List - II

(Drug)

(Class of Drug)

- | | |
|------------------|-------------------------------|
| (a) Furacin | (i) Antibiotic |
| (b) Arsphenamine | (ii) Tranquilizers |
| (c) Dimetone | (iii) Antiseptic |
| (d) Valium | (iv) Synthetic antihistamines |

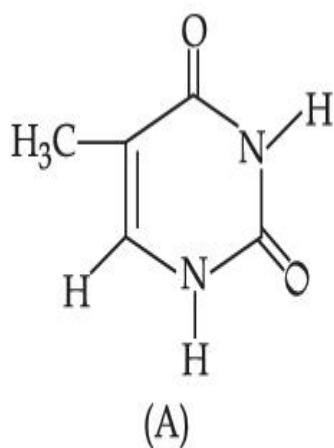
Choose the **most appropriate** match :

Options :

1. (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
2. (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)
3. (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)
4. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



The compound 'A' is a complementary base of _____ in DNA strands.

Options :

1. Guanine
2. Adenine
3. Cytosine
4. Uracil

Chemistry Section B

Section Id :	864351827
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 :	8643511054
Question Shuffling Allowed :	Yes

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The density of NaOH solution is 1.2 g cm^{-3} . The molality of this solution is _____m.

(Round off to the Nearest Integer)

[Use : Atomic masses : Na : 23.0 u O : 16.0 u H : 1.0 u

Density of H_2O : 1.0 g cm^{-3}]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The difference between bond orders of CO and NO^{\oplus} is $\frac{x}{2}$ where $x = \underline{\hspace{2cm}}$. (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 :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

For water at 100°C and 1 bar,

$\Delta_{\text{vap}} H - \Delta_{\text{vap}} U = \underline{\hspace{2cm}} \times 10^2 \text{ J mol}^{-1}$. (Round off to the Nearest Integer)

[Use : $R = 8.31 \text{ J mol}^{-1} \text{ K}^{-1}$]

[Assume volume of $\text{H}_2\text{O}(l)$ is much smaller than volume of $\text{H}_2\text{O}(g)$. Assume $\text{H}_2\text{O}(g)$ can be treated as an ideal gas]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

1.46 g of a biopolymer dissolved in a 100 mL water at 300 K exerted an osmotic pressure of 2.42×10^{-3} bar.

The molar mass of the biopolymer is _____ $\times 10^4$ g mol⁻¹. (Round off to the Nearest Integer)

[Use : R = 0.083 L bar mol⁻¹ K⁻¹]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

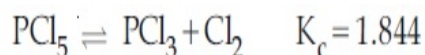
Text Areas : PlainText

Possible Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0



3.0 moles of PCl₅ is introduced in a 1 L closed reaction vessel at 380 K. The number of moles of PCl₅ at equilibrium is _____ $\times 10^{-3}$. (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 :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The conductivity of a weak acid HA of concentration 0.001 mol L^{-1} is $2.0 \times 10^{-5} \text{ S cm}^{-1}$. If $\Lambda_m^\circ(\text{HA}) = 190 \text{ S cm}^2 \text{ mol}^{-1}$, the ionization constant (K_a) of HA is equal to _____ $\times 10^{-6}$. (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 :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

CO_2 gas adsorbs on charcoal following Freundlich adsorption isotherm. For a given amount of charcoal, the mass of CO_2 adsorbed becomes 64 times when the pressure of CO_2 is doubled. The value of n in the Freundlich isotherm equation is _____ $\times 10^{-2}$. (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 :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of geometrical isomers possible in triamminetrinitrocobalt (III) is X and in trioxalatochromate (III) is Y. Then the value of X+Y is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In gaseous triethyl amine the “-C-N-C-” bond angle is _____ degree.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

An organic compound is subjected to chlorination to get compound A using 5.0 g of chlorine. When 0.5 g of compound A is reacted with AgNO_3 [Carius Method], the percentage of chlorine in compound A is _____ when it forms 0.3849 g of AgCl . (Round off to the Nearest Integer)

(Atomic masses of Ag and Cl are 107.87 and 35.5 respectively)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1