The coordination number and number of particles per unit cell in a body centered cubic (BCC) system are ___ and ___, respectively.

Options:

1. ✔️ 8.2

2. ✗ 6.1

3. ✗ 2.4
4. 8.8

Question Number : 2  Question Id : 2310983152  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66

In the case of molecular crystal of solid Cl₂, which of the following is true?

Options :
1. The Cl-Cl distance is the same as the distance between two neighboring Cl₂ molecules
2. The distance between two neighboring Cl₂ molecules is the same as the distance between two adjacent layers.
3. The distance between two neighboring Cl₂ molecules is less than the distance between two adjacent layers.
4. The distance between two neighboring Cl₂ molecules is more than the distance between two adjacent layers.

Question Number : 3  Question Id : 2310983153  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66

In which of the following solutions is the solubility of [Ag⁺] more at 298 K?

Options :
1. AgCl in water
2. AgCl in 0.1M KNO₃ (aq) solution
3. AgCl in 0.1M KCl (aq) solution
4. AgCl in 0.1M Ag₂SO₄ (aq) solution

Question Number : 4  Question Id : 2310983154  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66
The pH of solution containing 0.1 M acetic acid and 0.1M sodium acetate is (pK_a of acetic acid=4.74)

Options:
1. ✓ 4.74
2. ✗ 3.74
3. ✗ 5.74
4. ✗ 1.0

The number of EPR lines for (CH_3-CH_2) ethyl radical are:

Options:
1. ✓ 12
2. ✗ 3
3. ✗ 5
4. ✗ 2

In enzyme catalysis turnover number is:

Options:
1. ✗ number of active sites
2. ✓ number of enzyme molecules
3. ✔ Maximum number of substrate molecules converted as products by an enzyme molecule per unit time (Max. rate/ [enzyme])

4. ✔ Number of enzyme molecules per each substrate

---

**Question Number : 7  Question Id : 2310983157  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

Which of the following is unaffected in catalysis?

Options :

1. ✔ Equilibrium constant

2. ✗ Activation energy

3. ✗ Rate of reaction

4. ✗ Path of reaction

---

**Question Number : 8  Question Id : 2310983158  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

Isosteric enthalpy of adsorption is:

Options :

1. ✔ standard enthalpy of adsorption at fixed surface

2. ✗ standard enthalpy of adsorption at fixed T

3. ✗ standard enthalpy of adsorption at fixed P

4. ✗ standard enthalpy of adsorption at fixed adsorbate
The adsorption isotherm useful for multi-layer adsorption is:

Options:
1. Langmuir adsorption isotherm
2. Freundlich isotherm
3. BET isotherm equation
4. Gibbs adsorption isotherm

The plot of pressure v/s temperature for a given adsorption is called:

Options:
1. Adsorption isostere
2. Adsorption isobar
3. Adsorption isotherm
4. Adsorption isochore

The cold light emission of a glow worm is called:

Options:
1. Fluorescence
2. ✗ Phosphorescence

3. ✔ Chemiluminescence

4. ✗ Delayed fluorescence

Question Number : 12  Question Id : 2310983162  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66
Which of the following is a non-radiative transition?
Options :
1. ✗ Phosphorescence
2. ✗ Fluorescence
3. ✔ Inter-system crossing
4. ✗ Bioluminescence

Question Number : 13  Question Id : 2310983163  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66
Which of the options represents the product of the following reaction?

Options :
1. ✗
Question Number : 14  Question Id : 2310983164  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
In photo sensitisation which of the following is energy transfer step from donor to acceptor?
Options :
1. $D^3 + A \rightarrow D + A^3$
2. $D^3 + A \rightarrow D + A^3$
3. $D + A \rightarrow D+A^6$
4. $D^3 + A^1 \rightarrow D+A^5$

Question Number : 15  Question Id : 2310983165  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
The transport number of acetate ion is 0.44 and the molar conductance of sodium acetate at infinite dilution is $90 \times 10^{-4}$ S m$^2$ mol$^{-1}$. The molar conductance of acetate ion at infinite dilution is:
Options :
1. $0.44 \times 90 \times 10^{-4}$ S m$^2$ mol$^-$

2. $90 \times 10^{-4}$ S m$^2$ mol$^-$

3. $90 \times 10^{-4} / 0.44$ S m$^2$ mol$^-$

4. $0.44 / 90 \times 10^{-4}$ S m$^2$ mol$^-$

---

Question Number : 16  Question Id : 2310983166  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Correct Marks : 2  Wrong Marks : 0.66

The expression for $E_{H}$ in terms of cell EMF (in potentiometry experiment when calomel electrode and quinhydrone electrode used)

$$E_{H} = 0.6996 - 0.0591p_{H}$$
and $E_{cal} = 0.2422$ V)

Options :

1. $0.6996 - 0.2422 + E_{cell} / 0.0591$

2. $0.6996 + 0.2422 - E_{cell} / 0.0591$

3. $0.6996 - 0.2422 - E_{cell} / 0.0591$

4. $-0.6996 - 0.2422 + E_{cell} / 0.0591$

---

Question Number : 17  Question Id : 2310983167  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Correct Marks : 2  Wrong Marks : 0.66

The molecular partition function for mono atomic gases ($q$) is:

Options :

1. $q = q_{tra} \cdot q_{vib}$

2. $q = q_{tra} \cdot q_{vib} \cdot q_{ele}$
Question Number : 18  Question Id : 2310983168  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66  
Which of the following processes is non-spontaneous at all temperatures?

Options:
1. $\Delta H = +ve \quad \Delta S = +ve$
2. $\Delta H = -ve \quad \Delta S = -ve$
3. $\Delta H = +ve \quad \Delta S = -ve$
4. $\Delta H = -ve \quad \Delta S = +ve$

Question Number : 19  Question Id : 2310983169  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66  
Which of the options represents the product of the following reaction?

```
\begin{align*}
\text{(1) } & \text{ AlCl}_3, \text{ AcCl} \\
\text{(2) } & \text{ H}_2\text{O}_2, \text{ NaOH}
\end{align*}
```

Options:
1. [Product Diagram]
In a bimolecular reaction (A+B \rightarrow \text{products}) the experimental activation energy is related to enthalpy of activation as:

Options:

1. \[ E_{\text{exp}} = \Delta H^* + RT \]

2. \[ E_{\text{exp}} = \Delta H^* - 2RT \]

3. \[ E_{\text{exp}} = \Delta H^* - 2RT \]

4. \[ E_{\text{exp}} = \Delta H^* - RT \]
Which of the following is a fast kinetics technique discovered by Nobel laureates Norrish and Porter in 1967?

Options:
1. ✗ Pulse radiolysis
2. ✗ Flow method
3. ✓ Flash photolysis
4. ✗ Relaxation techniques

The expression for units of $n^{th}$ order rate constant is:

Options:
1. ✗ $L_i t^{-n} M_o l^{-n} S^{-1}$
2. ✗ $L_i t^{-n} M_o l^{-n} S^{-1}$
3. ✓ $L_i t^{n-1} M_o l^{-n} S^{-1}$
4. ✗ $L_i t^{n} M_o l^{-n} S^{-1}$

The acid catalysed hydrolysis of methyl acetate was first order in each [Acid] and [methyl acetate]. The overall order and molecularity of reaction is ___ and ___, respectively.

Options:
1. ✗ 2, 2
2. ✓ 1, 2
3. 2, 1
4. 2, 3

Question Number : 24  Question Id : 2310983174  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
Which of the following gases has least of Van der Waals constant ‘a’?
Options :
1. ✔️ Helium
2. ✗ Neon
3. ✗ Ammonia
4. ✗ Sulfur dioxide

Question Number : 25  Question Id : 2310983175  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
The correct order of most probable velocity \( (C_m) \) average velocity \( (C^-) \) and RMS velocity \( (C_{RMS}) \) is:
Options :
1. ✗ \( C_m > C^- > C_{RMS} \)
2. ✔️ \( C_m < C^- < C_{RMS} \)
3. ✗ \( C_m > C^- < C_{RMS} \)
4. ✗ \( C_{RMS} < C_m < C^- \)

Question Number : 26  Question Id : 2310983176  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
The mean free path (\( \lambda \)) of gas molecules dependence on P and T is:

Options:

1. \( \lambda \propto P \) and \( \lambda \propto T \)

2. \( \lambda \propto 1/P \) and \( \lambda \propto 1/T \)

3. \( \lambda \propto P \) and \( \lambda \propto 1/T \)

4. \( \lambda \propto 1/P \) and \( \lambda \propto T \)

The critical compressibility factor for real gas \( Z_c = \frac{P_cV_c}{RT_c} \) value is:

Options:

1. \( 1 \)

2. \( 1/R \)

3. \( \frac{3}{8} \)

4. \( \frac{8}{3} \)

Which of the following molecules exhibits C\(_{2h}\) symmetry?

Options:

1. Trans \(-\text{N}_2\text{F}_2\)

2. Cis \(-\text{N}_2\text{F}_2\)
3. **CH₂ =CH₂**

4. **acetylene**

**Question Number : 29  Question Id : 2310983179  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**  
Correct Marks : 2  Wrong Marks : 0.66  
The carbonate ion( CO₃)²⁻exhibits:  
Options :  
1. **C₃v**  
2. **D₃d**  
3. ✔ **D₃h**  
4. **C₃h**

**Question Number : 30  Question Id : 2310983180  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**  
Correct Marks : 2  Wrong Marks : 0.66  
The allowed transition in hydrogen atom is:  
Options :  
1. **2S -- → 1S**  
2. ✔ **2P → 1S**  
3. **3P → 2P**  
4. **4d → 3d**

**Question Number : 31  Question Id : 2310983181  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**
Pauli’s exclusion principle is NOT applicable to:

Options:

1. ✗ fermions

2. ✔ bosons

3. ✗ protons

4. ✗ electrons

Which of the following is a linear operator?

Options:

1. ✗ taking square root

2. ✗ +4

3. ✔ d/dx

4. ✗ ( )² - taking square

The commutator of \([x, d/dx]\) is:

Options:

1. ✔ 1
The ground state energy of a particle of mass $m$ moving in one-dimensional box of length $1\text{ nm}$ is (in SI units):

**Options:**

1. $\frac{h^2}{8m}$
2. $\frac{h^2}{8m} \times 10^{18}$
3. $\frac{h^2}{(8m \times 10^{18})}$
4. $0$

The radioactive isotope used in autoradiography in modern biology is:

**Options:**

1. $^{14}\text{C}$
2. $^{13}\text{C}$
3. $\text{H}^3$
Question Number : 36  Question Id : 2310983186  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  
Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66  
The first artificial radioactive element is:  
Options :  
1. $^{238}_{92}$U 
2. $^{226}_{88}$Ra 
3. $^{99}_{43}$Tc 
4. $^{234}_{91}$Pa 

Question Number : 37  Question Id : 2310983187  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  
Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66  
The isotope of uranium $^{235}_{92}$U is bombarded with which of the following for a nuclear fission bomb?  
Options :  
1. $^{1}_0$n 
2. $^{1}_1$H 
3. $^{4}_2$He 
4. $^{2}_1$H 

Question Number : 38  Question Id : 2310983188  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  
Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66  
Which of the following pairs have non-magnetic moment nuclei?
Question Number : 39  Question Id : 2310983189  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66

Which of the following is used in thermonuclear (hydrogen bomb) bomb?

Options :
1. ✔ LiD
2. ✗ Deuterium
3. ✗ Tritium
4. ✗ 3Li⁶

Question Number : 40  Question Id : 2310983190  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66

The nuclear liquid drop model was developed by:

Options :
1. ✔ Neils Bohr and J Wheeler
2. ✗ Aage Bohr and BR Mottelson
3. JHD Jensen and MG Mayer

4. O Hann and F Strassmann

Question Number: 41  Question Id: 2310983191  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Correct Marks: 2  Wrong Marks: 0.66
Which of the following molecular species will have all vibrations active in IR and Raman spectra?
Options:
1. ClO$_3^-$
2. NO$_3^-$
3. N$_2$
4. CO$_2$

Question Number: 42  Question Id: 2310983192  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Correct Marks: 2  Wrong Marks: 0.66
The molecule which does NOT show ESR spectrum is:
Options:
1. [Fe(CN)$_6$]$^{2-}$
2. O$_2$
3. NO$_2$
4. He
Which of the following is true about change of shape on excitation in tri atomic molecules $\text{BeH}_2, \text{H}_2\text{O}, \text{CO}_2$?

Options:

1. $\text{BeH}_2, \text{H}_2\text{O}$ and $\text{CO}_2$ change shapes

2. $\checkmark$ Only $\text{CO}_2$ changes

3. $\times$ Only $\text{BeH}_2$ changes from linear to bent

4. $\times$ Only $\text{H}_2\text{O}$ changes from bent to linear

---

Which of the following is INCORRECT for the chemical analysis of microwave spectroscopy?

Options:

1. $\times$ Microwave has been used to detect inter stellar space chemicals like ammonia and water

2. $\checkmark$ Microwave can detect the presence of $\text{-OH}^-, \text{-CH}_3$ etc.

3. $\times$ The presence of isotopes can be detected

4. $\times$ Conformational isomers with different moment of inertia can be detected

---

In IR spectroscopy of water molecule the correct order of vibrational frequencies in cm$^{-1}$ is:

Options:

1. $\times$ Symmetric stretching $> \text{ asymmetric stretching} > \text{ bending vibrational frequency}$

2. $\checkmark$ Symmetric stretching $< \text{ asymmetric stretching} < \text{ bending vibrational frequency}$
3. ✔ Bending vibrational frequency < symmetric stretching < asymmetric stretching

4. ✗ Symmetric stretching > asymmetric stretching < bending vibrational frequency

The oxygen-consuming unit in respiration cytochrome-c contains which of the following metals in active site?

Options:

1. ✔ Fe and Cu

2. ✗ Cu and Zn

3. ✗ Fe and Zn

4. ✗ Mg and Fe

Superoxide dismutase enzyme which catalyzes O²⁻ to O₂ process contains:

Options:

1. ✗ Fe and Cu

2. ✔ Cu and Zn

3. ✗ Fe and Zn

4. ✗ Mg and Fe
Which of the following statements is NOT true about Vitamin B₁₂?

Options:
1. ✗ It is the only vitamin-containing metal.
2. ✔ It is found in higher plants.
3. ✗ It is the only natural organometallic compound.
4. ✗ It has the unique ability to form metal carbon bond in biological systems.

Which of the following is INCORRECT in the context of thermogravimetry?

Options:
1. ✗ Change in weight of substance is recorded as function of temperature (T).
2. ✗ Thermogram is a plot of weight of substance (w) vs T.
3. ✔ Thermogram is a plot of dw vs dt.
4. ✗ Fast heating rate yields incorrect results.

Metal clusters of type-I compounds exhibit the oxidation states:

Options:
1. ✔ -1 to +1
2. ✗ +2, +3
3. ✗ Only zero

4. ✗ –3 to +3

Question Number: 51  Question Id: 2310983201  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  
Correct Marks: 2  Wrong Marks: 0.66  
Which of the following metal-metal bond compounds was found by Indian chemists in the 12th century?  
Options:  
1. ✗ borane  
2. ✓ Calomel  
3. ✗ [Mo₆Cl₈]⁴⁺  
4. ✗ Pb₅²⁻

Question Number: 52  Question Id: 2310983202  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  
Correct Marks: 2  Wrong Marks: 0.66  
The general formula of nido boranes is:  
Options:  
1. ✗ BₙHₙ₊₆  
2. ✗ BₙHₙ₊₂  
3. ✓ BₙHₙ₊₄  
4. ✗ BₙHₙ

Question Number: 53  Question Id: 2310983203  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Which of the following is a closo borane?

Options:
1. $\text{B}_3\text{H}_9$
2. $\text{B}_3\text{N}_3\text{H}_6$
3. $[\text{B}_6\text{H}_6]^{2-}$
4. $\text{B}_4\text{H}_{10}$

Which of the following is NOT a Zintl ion?

Options:
1. $\text{Pb}_5^{2-}$
2. $\text{Sn}_9^{4-}$
3. $\text{Bi}_9^{5+}$
4. $[\text{Mo}_6\text{Cl}_8]^{4-}$

The catalyst which yields stereo regular polymers from alkenes is:

Options:
1. $\text{KMnO}_4$
2. $\text{H}_2\text{O}_2 - \text{Fe}^{2+}$

3. $\text{K}_2\text{S}_2\text{O}_8 - \text{Ag}^+$

4. $\text{Al}_2\text{Et}_6 - \text{TiCl}_4$

Which of the following is NOT an organometallic compound?

Options:

1. $[\text{Ni(CO)}_4]$ 

2. $\text{NaCN}$

3. $\text{Me-Mg-Cl}$

4. $\text{Ferrocene}$

In which of the following ‘Carbon’ complexes does the atom acts as a ligand?

Options:

1. Carbyne complex

2. Carbene complex

3. Carbido complex
4. Carbonyl complex

Which of the following is a metallocene with the most unpaired electrons?
Options:
1. $\text{Cp}_2\text{V}$
2. $\text{Cp}_2\text{Cr}$
3. $\text{Cp}_2\text{Fe}$
4. $\text{Cp}_2\text{Mn}$

The platinum complex used to treat cancer is:
Options:
1. Trans-Platin
2. Cis-Platin
3. $[\text{Pt}\,(\text{NH}_3)_3\,\text{Cl}]^+$
4. $[\text{Pt}\,(\text{NH}_2)_3\,\text{Cl}_3]^-$

Which of the following is a Π-donor ligand?
Options:
In which of the following complexes are both, the Laporte and spin transitions allowed?

Options:

1. [TiCl₆]²⁻

2. [CoCl₄]²⁻

3. [Ti(H₂O)₆]³⁺

4. [Mn(H₂O)₆]²⁺

Which of the following is least reactive in alkali metals?

Options:

1. Li

2. Na
3. ✗ K

4. ✗ Cs

Question Number: 63  Question Id: 2310983213  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Correct Marks: 2  Wrong Marks: 0.66
Which of the following is known as a ‘magic acid’?
Options:
1. ✗ H₂SO₃F

2. ✗ HB(HSO₄)₄

3. ✓ SbF₅+HSO₃F

4. ✗ H₂S₂O₇

Question Number: 64  Question Id: 2310983214  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Correct Marks: 2  Wrong Marks: 0.66
Which of the following is true in the case of H₂SO₄?
Options:
1. ✗ Acetic acid is a strong acid.

2. ✓ Nitric acid acts as a base.

3. ✗ Urea behaves as an acid.

4. ✗ Water behaves as an acid.

Question Number: 65  Question Id: 2310983215  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Correct Marks: 2  Wrong Marks: 0.66
Which of the following oxides of nitrogen are odd electron molecules?

Options:
1. NO, N₂O₄
2. NO, NO₂
3. N₂O₃, NO₂
4. NO, N₂O

The repeating unit in phosphazines is:

Options:
1. -PX₂N- (x=halogen)
2. -PH₂N-
3. -PO₂N-
4. -PN-

The correct order of electronegativity of N in amines is:

Options:
1. Pyridine > CH₃ CN > (CH₃)₂N
2. CH₃CN > (CH₃)₂N > pyridine
3. ✓ CH₃ CN > pyridine > (CH₃)₃N

4. ✗ Pyridine < CH₃CN < (CH₃)₃N

---

**Question Number : 68  Question Id : 2310983218  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

The molecule with Cᵥ symmetry is:

Options:

1. ✓ BrF₃

2. ✗ ICl₂⁻ ion

3. ✗ NO₂⁺

4. ✗ PCl₃

---

**Question Number : 69  Question Id : 2310983219  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

Which of the following group molecules are chiral?

Options:

1. ✗ Dₐh

2. ✗ Tₐ

3. ✗ Cᵥ

4. ✓ Dₙ

---

**Question Number : 70  Question Id : 2310983220  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**
Which of the following molecular orbitals is ungerade?

Options:
1. $\Pi_{2p}$
2. $\sigma_{2s}$
3. $\sigma_{2p}$
4. $\Pi^*_{2p}$

The element with atomic number 118 as per electronic configuration in periodic table is:

Options:
1. Noble gas
2. Transition element
3. Inner transition element
4. Alkali metal

Among the following, the only element which was discovered in Asia is:

Options:
1. Hafnium-72
2. Indium-49
3. ✔ Nihonium-113

4. ✗ Astatin-85

Question Number : 73  Question Id : 2310983223  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3 Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
The most dense element among all elements is:
Options :
1. ✗ Platinum

2. ✗ Rhenium

3. ✔ Osmium

4. ✗ Iridium

---

Question Number : 74  Question Id : 2310983224  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3 Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
The elements named after living persons are:
Options :
1. ✔ Organasson-118 and Seaborgium-106

2. ✗ Organasson-118 and Einsteinium-99

3. ✗ Seaborgium-106 and Einsteinium-99

4. ✗ Seaborgium-106 and Curium-96

---

Question Number : 75  Question Id : 2310983225  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3 Option Orientation : Vertical
Correct Marks : 2  Wrong Marks : 0.66
Which of the options represents the product of the following reaction?

\[ \text{Product} = \text{Reaction} \]

**Options:**

1. ✗

2. ✓

3. ✗

4. ✗

Which among the following molecules is achiral?

**Options:**
The correct statement about the following compound is:

1. ✔️ It is a chiral molecule with homotopic methyl groups

2. ✗ It is an achiral molecule with homotopic methyl groups
3. It is a chiral molecule with enantiotopic methyl groups

4. It is a chiral molecule with diastereotopic methyl groups

<table>
<thead>
<tr>
<th>COLUMN - P</th>
<th>COLUMN - Q</th>
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<tbody>
<tr>
<td>X</td>
<td>Degree of Asynchronicity</td>
</tr>
<tr>
<td>(I) N==O</td>
<td>(a) 0.025</td>
</tr>
<tr>
<td>(II) C≡N</td>
<td>(b) 0.107</td>
</tr>
<tr>
<td>(III) Cl</td>
<td>(c) 0.198</td>
</tr>
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<td>(IV) OH</td>
<td>(d) 0.154</td>
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<tr>
<td>(V) CH₃</td>
<td>(e) 0.309</td>
</tr>
</tbody>
</table>

Options:
1. I-b, II-c, III-d, IV-a, V-e
2. I-a, II-d, III-c, IV-b, V-e
3. I-e, II-c, III-b, IV-d, V-a
4. I-d, II-e, III-b, IV-a, V-c

Question Number : 79  Question Id : 2310983229  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  
Correct Marks : 2  Wrong Marks : 0.66

Identify the major product in the following reaction.

Options:
1. ✗
The major product formed in the following reaction is:

\[
\text{1. CF}_3\text{CO}_2\text{H} \\
\text{2. H}_2\text{O}^+
\]

Options:

1. ✓
2. ×
3. ×
Question Number: 81  Question Id: 2310983231  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66

Identify the product in the following reaction.

\[
\text{H-C-C=O} \quad \xrightarrow{1 \text{ equiv. } \text{MeC(OMe)_3}, \text{MeOH}} \quad \text{MeO}\xrightarrow{\text{cat. TsOH}} \quad \text{MeO}
\]

Options:

1. ✓

2. ×

3. ×

4. ×
Identify the major product that is formed in the following reaction.

\[
\text{Bu}_3\text{SnH} / \text{AIBN} \quad \text{C}_6\text{H}_6, \text{ Reflux}
\]

Options:

1. 

2. 

3. 

4. 

Identify the product in the following reaction?

\[
\text{cat.} \quad \text{H}_3\text{C} = \text{C} = \text{O} \quad \text{CHCl}_3, 0 ^\circ \text{C}
\]

Options:

1. 

Correct Marks : 2 Wrong Marks : 0.66
Identify the product in the following reaction.

Options:

1. 

2. 

3. 

4. 
Select the correct option from the following.

The biosynthesis of isopentenyl pyrophosphate from acetyl CoA involves:

A. Two molecules of lipoic acid
B. Three molecules of ATP
C. Four molecules of acetyl CoA
D. Two molecules of NADPH

Options:

1. B and C

2. A and D

3. B and D

4. A and C

Select the statements with regard to estrone from the following that are true.

I. It is a steroidal hormone
II. It has two hydroxyl groups
III. It has one ketone and one hydroxyl group

Options:
A suitable organocatalyst for enantioselective synthesis of Wieland-Miescher ketone (P) is:

![Chemical structure](image)

(optically active)

Options:
1. (+)-menthone
2. (+)-BINOL
3. guanidine
4. (-)-proline
The reactive position of nicotinamide adenine dinucleotide (NAD) in biological redox reactions is:

Options:

1. ✔ 4-position of the pyridine ring

2. ✗ 6-position of the pyridine ring

3. ✗ 2-position of the pyridine ring

4. ✗ 5-position of the pyridine ring

The number of isoprene units present in lupeol is:

Options:

1. ✔ six

2. ✗ eight

3. ✗ four

4. ✗ two
The two-step conversion of 7-dehydrocholesterol to vitamin D₃ proceeds through:

![Chemical structure]  

Options:

1. photochemical electrocyclic disrotatory ring opening; and thermal antarafacial [1, 7]-H shift.

2. thermal electrocyclic conrotatory ring opening; and photochemical superafacial [1, 7]-H shift.

3. photochemical electrocyclic conrotatory ring opening; and thermal antarafacial [1, 7]-H shift.

4. thermal electrocyclic disrotatory ring opening; and thermal suprafacial [1, 7]-H shift.

Which of the options represents the product of the following reaction?

![Chemical structure]  

Options:

1. [Correct answer]
Which among the following statements is incorrect?

Options:

1. ✗
   Starch contains two types of glucose polymer, amylose and amylopectin. The former consists of long, unbranched chains of D-glucose residues connected by (\(\alpha_1 \to 4\)) linkages.

2. ✗
   Glycogen is the main storage polysaccharide of animal cells. Like amylopectin, glycogen is a polymer of (\(\alpha_1 \to 4\))-linked subunits of glucose, with (\(\alpha_1 \to 6\))-linked branches.

3. ✗
   Dextrans are bacterial and yeast polysaccharides made up of (\(\alpha_1 \to 6\))-linked poly-D-glucose. All have (\(\alpha_1 \to 3\)) branches, and some also have (\(\alpha_1 \to 2\)) or (\(\alpha_1 \to 4\)) branches.
4. ✔ Glycogen and starch ingested in the diet are hydrolysed by β-amylases, enzymes in saliva and intestinal secretions that break \((\alpha 1 \rightarrow 4)\) glycosidic bonds between glucose units.

**Question Number : 93  Question Id : 2310983243  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

Which among the following statements is incorrect?

**Options :**

1. ✗ Cellulose, composed of \((\beta 1 \rightarrow 4)\)-linked D-glucose residues, lends strength and rigidity to plant cell walls.

2. ✗ Chitin, a polymer of \((\beta 1 \rightarrow 4)\)-linked N-acetylglucosamine, strengthens the exoskeletons of arthropods.

3. ✔ Peptidoglycan acts as an energy storage in bacteria and animal cells.

4. ✗ Dextran forms an adhesive coat around certain bacteria.

**Question Number : 94  Question Id : 2310983244  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical**

Correct Marks : 2  Wrong Marks : 0.66

Correctly match the Lectins in column-I with the Oligosaccharide ligands they bind to/within column-II.

<table>
<thead>
<tr>
<th>Column – I (Lectins)</th>
<th>Column- II (Oligosaccharide Ligands they Bind)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cholera toxin</td>
<td>a. Gal</td>
</tr>
<tr>
<td>2. Polyoma virus protein 1</td>
<td>b. Mano1-OCH₃</td>
</tr>
<tr>
<td>3. Enterotoxin</td>
<td>c. Neu5Ac((\alpha 2 \rightarrow 3))Gal((\beta 1 \rightarrow 4))Glc</td>
</tr>
<tr>
<td>4. Concanavalin A</td>
<td>d. GM1 pentasaccharide</td>
</tr>
</tbody>
</table>

**Options :**

1. ✗ 1-b, 2-c, 3-d, 4-a
2. ✔ 1-d, 2-c, 3-a, 4-b

3. ✗ 1-a, 2-d, 3-b, 4-c

4. ✗ 1-b, 2-d, 3-a, 4-c

Which of the sugars mentioned in the options would undergo mutarotation?

Options:
1. ✗ methyl β-D-glucopyranoside

2. ✔ 2,3,4,6-tetra-O-methyl-D-mannopyranose

3. ✗ methyl 2,3,4,6-tetra-O-methyl- β-D- galactopyranoside

4. ✗ α-D-fructofuranosyl- β-D-mannopyranoside

The disaccharide melibiose is present in some plant juices. Which two monosaccharides are formed on the hydrolysis of melibiose. Also identify the glycosidic linkage between the two monosaccharide units.

Options:
1. ✗ Gulose and Allose; α1 → 4 linkage
2. \( \text{Iodose and Altrose; } \alpha_1 \rightarrow 5 \text{ linkage} \)

3. \( \text{Talose and Mannose; } \alpha_1 \rightarrow 3 \text{ linkage} \)

4. \( \text{Glucose and galactose; } \alpha_1 \rightarrow 6 \text{ linkage} \)

The structure of the major product B formed in the following reaction sequence is:

\[
\begin{align*}
\text{CHO} & \quad \text{Br}_2 \quad \text{H}_2\text{O} & \quad \text{H}_2\text{O}_2 \quad \\ 
\text{H} & \quad \text{OH} & \quad \text{F}_{\text{e}}(\text{SO}_4)_3 \\
\text{H} & \quad \text{OH} \quad \text{(A)} & \quad \text{(B)} \\
\text{CH}_2\text{OH} & \quad \text{COOH} \\
\end{align*}
\]

Options:

1. \( \text{COOH} \quad \text{HO} \quad \text{OH} \quad \text{COOH} \)

2. \( \text{HO} \quad \text{O} \quad \text{O} \quad \text{HO} \quad \text{OH} \)

3. \( \text{HO} \quad \text{CO} \quad \text{HO} \quad \text{OH} \)

4. \( \text{HO} \quad \text{O} \quad \text{O} \quad \text{HO} \quad \text{OH} \)
Question Number: 98  Question Id: 2310983248  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3
Option Orientation: Vertical
Correct Marks: 2  Wrong Marks: 0.66

Which major product is formed in the given reaction:

\[
\text{HO-} \quad \text{C}_{5}H_{11} \quad \xrightarrow{\text{t-BuOOH/Ti(OPr)\text{\textsubscript{4}} (1 eq.)}} \quad \text{P}
\]

(-)-Diisopropyltartrate

(1.2 eq.)/CH\text{\textsubscript{2}}Cl\text{\textsubscript{2}}

Options:

1. 

2. 

3. 

4. ☑
The major product formed in the following reaction sequence is:

1. **
2. ✔
3. ✗
4. ✗
The product formed in the following reaction is:

![Chemical reaction image]

Options:

1. ✓

2. ✗

3. ✗

4. ✗

Identify the product that would form out of the following reaction:

![Chemical reaction image]

Options:

1. ✗
The major product formed in the following reaction is:

\[
\text{Ph}-\overset{\text{CO}_2\text{Et}}{\text{CO}_2\text{Et}} \xrightarrow{1 \text{ mol}\% \text{ K}_2\text{OsO}_2(\text{OH})_4} \text{MeSO}_2\text{NH}_2 \quad \text{(DHQ)}_2\text{-PHAL} \quad \text{K}_3\text{Fe(CN)}_6
\]

Options:

1. ✗

2. ✓

3. ✗
Which of the following is the product of the following reaction?

\[
\text{COOEt} \quad \text{N}\_2 + \text{[Rh}_2(\text{OAc})_4] \quad \text{?}
\]

Options:

1. 

2. ✔

3. ✗

4. ✗
Which of the options represents the product of the following reaction?

\[
\text{MeLi, ether, } \text{H}_3\text{O}^+ \\
\text{-10-25°C}
\]

Options:

1. ✗

2. ✓

3. ✗

4. ✗
Which of the options represents the product of the following reaction?

\[
\text{1. } \text{Li} \quad \text{Cu} \quad \text{Me} \quad \text{THF} \\
\text{Br} \quad \text{1. } \\
\text{2. } \\
\text{3. } \\
\text{4. } \\
\text{Options:}
\]

1. ✗
2. ✗
3. ✓
4. ✗

Question Number: 106  Question Id: 2310983256  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66
Which of the options represents the product of the following reaction?

\[
\text{[Diagram of reactant]} \xrightarrow{\text{Cu(CN)Li}_2} \text{[Diagram of product]} \quad \text{THF, } 0^\circ C, 6 \text{ h}
\]

Options:

1. [Diagram of option 1]

2. [Diagram of option 2]

3. [Diagram of option 3]

4. [Diagram of option 4]
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{(-)-ipc}_2\text{BH} & \quad \text{CH}_3\text{CHO} \\
& \quad \text{NaOH, } \text{H}_2\text{O}_2
\end{align*}
\]

Options:

1. ❌

2. ✔

3. ❌

4. ❌
The major products A and B in the following reaction sequence are:

\[ \text{reaction sequence} \]

Options:

1. 

2.
Which of the options represents the product of the following reaction?

\[
\text{BrCH}_2\text{COOMe} \quad \text{Zn, THF, reflux, 71\%}
\]

Options:

1. ✓

2. ✖

3. ✖
4.

Which of the options represents the product of the following reaction?

\[
\text{MeOH} - \text{H}_2\text{O}, \text{NH}_4\text{Cl}
\]

Options:

1.

2.

3.

4. ✔
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{Cl} & \quad \text{CMe} \\
\text{Cl} & \quad \text{O} \\
\end{align*}
\begin{align*}
\text{OMe} & \quad \text{Cl} \\
\text{O} & \quad \text{Cl} \\
\end{align*}
\begin{align*}
\text{MeO} & \quad \text{Cl} \\
\text{O} & \quad \text{Cl} \\
\end{align*}
\begin{align*}
\text{OMe} & \quad \text{Cl} \\
\text{O} & \quad \text{Cl} \\
\end{align*}
\]

\[1.5\% \text{Pd}_2(\text{dba})_3, 6\% \text{P(t-Bu)}_3, \text{1.1 eq. } C_5\text{CO}_2, \text{dioxane}
\]
\[120^\circ\text{C}, 24\text{ h}, 82\%
\]

Options:

1. 
2. ✔️
3. ✗
4. ✔️

Question Number: 113  Question Id: 2310983263  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{(i)} & \quad \text{Pd(PPh}_3\text{)}_2\text{Cl}_2, \\
& \quad \text{CuI, } \text{tPr}_2\text{NH, } 95^\circ\text{C} \\
\rightarrow & \\
\text{(ii)} & \quad \text{NaOH, MeOH}
\end{align*}
\]

Options:

1. ×

2. ×

3. ×

4. ✓
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{H}_3\text{CO} & \quad \text{Me} \\
\text{N} & \quad \text{OSi Pr}_3 \\
\text{Pd}_3\text{(dba)}_3, \text{CHCl}_3 & \quad \rightarrow \\
\text{R}_3\text{N}, \text{MeCONMe}_2, & \quad 100^\circ \text{C} \\
& \quad \text{then, HCl, THF}
\end{align*}
\]

Options:

1. ✗

2. ✓

3. ✗

4. ✗

Question Number : 115  Question Id : 2310983265  Question Type : MCQ  Option Shuffling : Yes  Negative Marks Display Text : 2/3  Option Orientation : Vertical  Correct Marks : 2  Wrong Marks : 0.66
Which of the options represents the product of the following reaction?

\[
\begin{array}{c}
\text{Me} \text{CH}_2 \text{O} \text{Et} \\
\text{O} \text{Me} \\
\text{Et} \text{Me} \\
\end{array}
\]

\[
\Delta \quad - \text{CO}_2
\]

Options:

1. 

2. 

3. 

4. 

---

Identify the product formed in the following thermal reaction.

\[
\text{[Chemical structure]} \quad \Delta
\]

Options:

1. 

---

Question Number : 116 Question Id : 2310983266 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical Correct Marks : 2 Wrong Marks : 0.66
In the following reactions, the major products, X & Y, respectively, are:

[Diagram showing the reactions]

Options:

1. **

2. ✓

3. ✗

4. ✗
The major product formed in the following reaction sequence is:

\[ \text{i) } \text{OsO}_4, \text{pyridine} \]
\[ \text{ii) } p-\text{TsCl}, \text{pyridine} \]
\[ \text{iii) } \text{LiClO}_4, \text{CaCO}_3 \]

Options:
Which of the options represents the product of the following reaction?

Options:
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{OH} & \quad \text{H}^+ \\
\text{OMe} & \\
\end{align*}
\]

Options:

1. 

2. 

3. ✓

4. ✗
Identify the product (A) in the following reaction.

\[ \text{Product (A)} \]
The correct order of stability of carbocation is from the following is:

(A)  

(B)  

(C)  
Consider the following reactions:

\[ Z - 2 - \text{butene} \xrightarrow{\text{CHBr}_3, \text{t-BuOK}} (P) \]

\[ E - 2 - \text{butene} \xrightarrow{\text{CHBr}_3, \text{t-BuOK}} (Q) \]

Consider the following related statements about products P and Q:

(I) P and Q both are identical  
(II) P and Q are diastereomers  
(III) P is chiral and Q is achiral  
(IV) P is achiral and Q is chiral

Which of these statements is/are correct?
Identify the product (A) in the following reaction:

\[
\text{CO}_2\text{H} \xrightarrow{(i) \text{HNO}_2} \xrightarrow{(ii) \Delta} \text{Ph} \xrightarrow{\text{Ph}} \xrightarrow{\text{Ph}} \xrightarrow{\text{Ph}} \xrightarrow{\text{Ph}} (A)
\]

Options:

1. ✗

2. ✅

3. ✗

4. ✗
Which of the options represents the product of the following reaction?

\[
\text{O} \quad \text{N}_2 \quad \xrightarrow{h\nu} \quad \text{H}_2\text{O} \quad \xrightarrow{} \quad (A)
\]

Options:

1. 

2. √

3. ×

4. ×

Question Number: 126  Question Id: 2310983276  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Correct Marks: 2  Wrong Marks: 0.66
Which of the following statements with regard to trends in the migrating aptitude of different groups is incorrect?

Options:
1. ✗ Aryl groups exhibit higher propensity for migration than that of alkyl groups.

2. ✔ The migratory aptitude of hydrogen is predictable. Hence, the mixture of migrated products are obtained.

3. ✗ In the case of aryl groups, those with electron donating substituents at the meta or para positions migrate preferentially over those containing substituents at the ortho position.

4. ✗ The aryl groups containing electron-withdrawing groups show reduced migratory aptitude.

---

Arrange the following compounds in the increasing order of their basic strength.

I. N
II. NH₂
III. NCH₃
IV. CH₃C₅NCH₃

Options:
1. ✔ II < III < IV < I

2. ✗ III < II < IV < I

3. ✗ III < II < I < IV

4. ✗ I < II < IV < III
Which of the options represents the product of the following reaction?

\[
\text{\begin{align*}
\text{H}_2\text{N} & \overset{\text{NaNO}_2, \text{HCl}}{\longrightarrow} \text{P} \\
\text{COOH} & \quad \text{mild base} \quad \text{Q}
\end{align*}}
\]

Options:

1. ✗

2. ✗

3. ✗

4. ✔

Arrange the following compounds in the increasing order of the rates of electrophilic aromatic substitution:

Options:

1. ✔ II<III<I
Which of the options represents the product of the following reaction?

\[
\text{PhCH} = \text{CH} \quad \text{LiAlH}_4 \quad \text{-70 °C}
\]

Options:

1. 

2. 

3.
Which of the options represents the product of the following reaction?

\[
\begin{align*}
\text{N:} & \quad \text{NaOH} \quad \text{(P)} \\
\end{align*}
\]

Options:

1. ✗

2. ✔

3. ✗

4. ✗
Which of the options represents the product of the following reaction?

(i) \( \text{Me} \) \( \text{O} \) \( \text{N} \), TsOH/PhH

(ii) \( \text{CN} \), EtOH/\( \Delta \)

(iii) \( \text{H}_3\text{O}^+ \)

Options:

1. 

2. 

Which of the options represents the product of the following reaction?

\[
\text{EtO(CO)Cl, then } \text{NaN}_3 \xrightarrow{\text{EtOH, PhH, reflux}} (P)
\]

Options:
Which of the options represents the product of the following reaction?

\[ \text{Product (P)} \]

Options:

1. 

2. 

3. 

4. 

Correct Marks: 2 Wrong Marks: 0.66
Which among the following compounds is/are anti-aromatic in nature?

Options:
1. Only IV
2. Only I
3. Only III
Which among the following molecules has the lowest energy barrier for the cis-trans isomerisation?

Options:

1. ✗

2. ✓

3. ✗

4. ✗
Arrange the following compounds in the increasing order of basicity.

(I)  (II)  (III)  (IV)

Options:
1. ✗ II<1<III<IV
2. ✗ III<II<IV<I
3. ✗ I<III<IV<II
4. ✔ IV<I<II<III

Which of the options represents the product of the following reaction?

Options:
1. ✗
Which of the following statements is incorrect about the reaction of \([\text{PhC}]^+[\text{B Fr}]^-\) with 4H-pyran?

Options:

1. \([\text{PhC}]^+\) Abstracts \(H\) from 4H-pyran.

2. Pyrrole is formed as a result.

3. Pyridine is formed as a result.

4. A tetrafluoridoborate salt is formed as a result.
Which of the following five-membered rings is highest-resonance-stabilised.

Options:

1. ![Option 1](image1)
2. ![Option 2](image2)
3. ![Option 3](image3)
4. ![Option 4](image4)

Identify the most stable conformation in the following:

Options:
Which of the options represents the product of the following reaction?

\[
\text{Ph} = \underset{\text{N}_3}{\text{N}} \quad \text{HNCO} \quad \text{Mn(OAc)}_2 (10\%), \text{AcOH} \quad \text{Ph} \quad \text{CO}_2\text{Et}
\]

methanol, 40 °C

Options:

1. ❌

2. ❌

3. ✔

4. ❌
Question Number: 143  Question Id: 2310983293  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66

Arrange the following amino acids in the increasing order of their isoelectric point: Arg, Try, Pro, His

Options:

1. \( \text{Try} < \text{Pro} < \text{His} < \text{Arg} \)

2. \( \text{Try} < \text{His} < \text{Arg} < \text{Pro} \)

3. \( \text{His} < \text{Try} < \text{Pro} < \text{Arg} \)

4. \( \text{Arg} < \text{His} < \text{Try} < \text{Pro} \)

Question Number: 144  Question Id: 2310983294  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66

Which among the following heterocyclic molecules is not aromatic according to Hückel's rule?

Options:
Which of the options represents the product of the following reaction?

Options:
1.

2.

3. ✅

4. ✗

Question Number: 146  Question Id: 2310983296  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical  Correct Marks: 2  Wrong Marks: 0.66
Which of the options represents the product of the following reaction?

\[
\text{\chem{\begin{tikzpicture}[thick, scale=0.5]
  \node (n1) at (0,0) {N};
  \node (n2) at (0.5,0) {COOCH_3};
  \draw (n1) -- (n2);
\end{tikzpicture}}}
\xrightarrow{hv}
\]

Options:

1. ✗

2. ✗

3. ✗

4. ✓
The major products A and B formed in the following reaction sequence are:

\[
\text{Me} \quad \xrightarrow{\text{NaN}} \quad \text{A} \quad \xrightarrow{\text{PhCHO, PTSA, } \Delta} \quad \text{B}
\]

Options:

1. ✗

2. ✓

3. ✗

4. ✗
Which of the options represents the product of the following reaction?

\[
\text{product?} \quad \text{1) mCPBA} \quad 2) \text{TFAA; aq. Na}_2\text{CO}_3
\]

Options:

1. 

2. 

3. 

4. 

Correct Marks: 2 Wrong Marks: 0.66

Question Number: 149  Question Id: 2310983299  Question Type: MCQ  Option Shuffling: Yes  Negative Marks Display Text: 2/3  Option Orientation: Vertical
Which of the options represents the product of the following reaction?

\[
\text{EtO} - \text{N} \xrightarrow{1. \text{P}_4\text{O}_{10}, \text{heat}} \xrightarrow{2. \text{i. diethyl maleate, heat}} \xrightarrow{\text{ii. HCl, EtOH}}
\]

Options:

1. ✗
2. ✗
3. ✓
4. ✗
2.  

3.  

4.  

CO₂Et  

CO₂Et  

CO₂Et  

EtO₂C  

CO₂Et  

CO₂Et  

EtO₂C