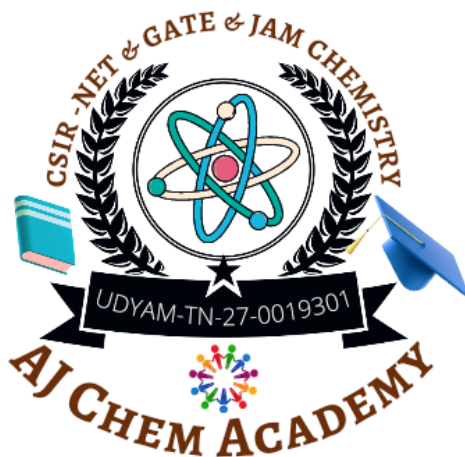


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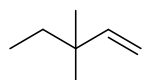
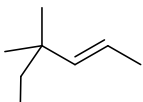
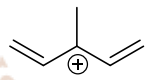
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Q.1 – Q.75 MCQ, carry Four marks each. (for each wrong answer: -1).

You are required to Answer All Questions.

- Predict the major product in the following reaction, $(\text{CH}_3)_3\text{C}-\text{Br} + \text{C}_2\text{H}_5\text{O}^- \rightarrow$**
 (a) $(\text{CH}_3)_3\text{C}-\text{OC}_2\text{H}_5$ (b) $(\text{CH}_3)_3\text{C}-\text{OH}$ (c) $(\text{CH}_3)_2\text{C}=\text{CH}_2$ (d) $(\text{CH}_3)_3\text{C}-\text{OCH}_3$
- Phenylbenzoate can be prepared from phenol using which of the following name reaction?**
 (a) Schotten Baumann reaction (b) Fries Rearrangement
 (c) Claisen Rearrangement (d) Hauben-Hoesch reaction
- Which of the following structure will show the $\sigma(\text{C}-\text{H})-\pi$ hyperconjugation?**
 (a)  (b) 
 (c)  (d) 
- If the collision diameter of H_2 gas is 'x' m and the collision frequency is Z_{H_2} , what will be the collision frequency of O_2 gas (Z_{O_2}) if its collision diameter is '2x'?**
 (a) $Z_{\text{H}_2} = Z_{\text{O}_2}$ (b) $Z_{\text{H}_2} = 2Z_{\text{O}_2}$ (c) $Z_{\text{H}_2} = 4Z_{\text{O}_2}$ (d) $2Z_{\text{H}_2} = Z_{\text{O}_2}$
- Arachno and nido structure of Boranes have general formula respectively**
 (a) $[\text{B}_n\text{H}_n]^{2-}$ and $\text{B}_n\text{H}_{2n+2}$ (b) B_nH_{n+2} and $[\text{B}_n\text{H}_n]^{2-}$
 (c) B_nH_{n+6} and B_nH_{n+4} (d) B_nH_{n+4} and B_nH_{n+6}
- Given below are two statements: One is labelled as Assertion(A) and other is labelled as Reason(R).**

Assertion(A) : Order and molecularity are same.

Reason(R) : Order is determined experimentally and molecularity is the sum of the stoichiometric coefficient of rate determining elementary step.

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

- Both (A) and (R) are correct and (R) is the correct explanation of (A)
 - Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 - (A) is correct but (R) is not correct
 - (A) is not correct but (R) is correct
7. **Consider the following pair of electrons:**

	n	ℓ	m _ℓ	m _s		n	ℓ	m _ℓ	m _s
P.	3	1	1	$+\frac{1}{2}$	and	3	2	1	$+\frac{1}{2}$
Q.	3	2	-2	$-\frac{1}{2}$	and	3	2	-1	$-\frac{1}{2}$
R.	3	2	2	$+\frac{1}{2}$	and	4	2	2	$+\frac{1}{2}$

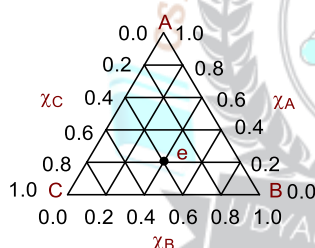
The pair of electrons present in degenerate orbitals is/are

- (a) Only P (b) Only Q (c) Only R (d) Only Q and R

8. According to **Huckel's Rule** which of the following is **not aromatic**?



9. The **triangular coordinates** for **three-component system** is given in the triangle. The mole fractions of χ_A , χ_B and χ_C for point e are:



	χ_A	χ_B	χ_C
(a)	0.10	0.20	0.70
(b)	0.20	0.40	0.40
(c)	0.20	0.75	0.05
(d)	0.25	0.25	0.50

10. Which of the following **photophysical processes** are **non-radiative**?

P. Internal conversion

Q. Inter system crossing

R. Fluorescence

S. Phosphorescence

Choose the correct answer from the options given below.

- (a) P and Q only (b) Q and R only (c) R and S only (d) P and R only

11. Given below are two statements:

Statement-I : The value of Madelung constant is determined by the geometry of the crystal lattice and is independent of ionic radius.

Statement-II : The Born exponent depends on the type of ion involved in Born Lande equation.

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

- (a) Both statement I and statement II are correct

- (b) Both statement I and statement II are incorrect
 (c) Statement I is correct but statement II is incorrect
 (d) Statement I is incorrect but statement II is correct

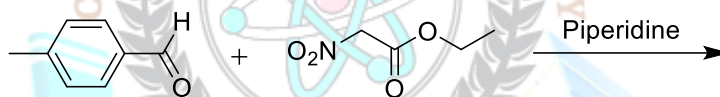
12. Match List-I with List-II.

	List-I	List-II
(P)	Cubic (i)	$\alpha = \beta = 90^\circ, \gamma = 120^\circ$
(Q)	Hexagonal (ii)	$\alpha \neq \beta \neq \gamma = 90^\circ$
(R)	Monoclinic (iii)	$\alpha = \beta = \gamma = 90^\circ$
(S)	Triclinic (iv)	$\alpha = \beta = 90^\circ, \gamma \neq 90^\circ$

Choose the correct answer from the options given below:

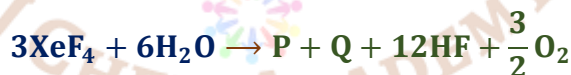
(P)	(Q)	(R)	(S)	(P)	(Q)	(R)	(S)
(a)	(i) ; (ii) ; (iii) ; (iv)	(b)	(iii) ; (i) ; (iv) ; (ii)				
(c)	(ii) ; (i) ; (iii) ; (iv)	(d)	(iii) ; (i) ; (ii) ; (iv)				

13. Identify the major product in the following reaction



- (a) $(p\text{-CH}_3)\text{C}_6\text{H}_4\text{CH}_2\text{COOH}$ (b) $(p\text{-CH}_3)\text{C}_6\text{H}_4\text{CH}_2\text{COEt}$
 (c) $(p\text{-CH}_3)\text{C}_6\text{H}_4\text{COOH}$ (d) $(p\text{-CH}_3)\text{C}_6\text{H}_4\text{CH}=\text{C}(\text{NO}_2)(\text{CO}_2\text{Et})$

14. What will be P and Q in the following reaction?



- (a) $\text{P} = \text{XeO}_2$ and $\text{Q} = 2\text{XeO}_2$ (b) $\text{P} = 2\text{Xe}$ and $\text{Q} = \text{XeO}_2$
 (c) $\text{P} = 2\text{Xe}$ and $\text{Q} = \text{XeO}_3$ (d) $\text{P} = 2\text{Xe}_2\text{O}$ and $\text{Q} = \text{XeO}_2$

15. Among the following mono nitrophenols which one is most acidic.

- (a) o-Nitrophenol (b) p-Nitrophenol
 (c) m-Nitrophenol (d) All three isomers have same acidity

16. Match List-I with List-II.

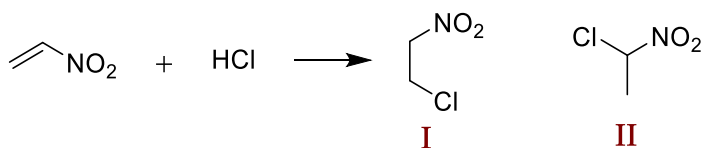
	List-I	List-II
(P)	Tungsten (i)	$5f^{12}7s^2$
(Q)	Actinide (ii)	ns^1
(R)	Alkali metal (iii)	$2s^22p^5$
(S)	Most electronegative element (iv)	$4f^{14}5d^46s^2$

Choose the correct answer from the options given below:

	(P)	(Q)	(R)	(S)
(a)	(iii)	(i)	(iv)	(ii)
(c)	(i)	(iv)	(iii)	(ii)

	(P)	(Q)	(R)	(S)
(b)	(iv)	(i)	(ii)	(iii)
(d)	(iv)	(i)	(iii)	(ii)

17. Predict the correct **major product(s)** in the following reaction.



- (a) Only I as major
(b) Only II as major
(c) I and II in equal amounts
(d) Neither I nor II

18. A capillary tube of radius **0.105 mm** is dipped into a liquid whose density is **0.79 g cm⁻³**. The liquid rises in this capillary to a height of **6.30 cm**. Calculate the **surface tension** of the liquid (**$g = 980 \text{ cm sec}^{-2}$**).

(a) 25.6 dynes cm⁻¹ (b) 51.2 dynes cm⁻¹ (c) 12.8 dynes cm⁻¹ (d) 20.6 dynes cm⁻¹
19. When a **nucleophilic substitution** reaction is carried out in **DMSO**, which of the following act as **strongest nucleophile**?

- (a) CH₃CO₂[⊖] (b) Cl[⊖] (c) I[⊖] (d) CH₃O[⊖]

20. The **experimental magnetic moment (3.4 BM)** of a hydrated salt of **Eu³⁺** at **300 K** is significantly different from calculated value. The difference is due to

(Given atomic number of Eu = 63)

- (a) Population of electrons at higher J level(s) via thermal excitation
(b) Strong ligand field splitting of *f*-orbitals
(c) Large spin-orbit coupling constant
(d) Pairing of electrons in *f*-orbitals
21. The **number of phases** in a system when **calcium carbonate undergoes thermal decomposition**
(a) 0 (b) 1 (c) 2 (d) 3
22. Given below are two statements: One is labelled as **Assertion(A)** and other is labelled as **Reason(R)**.

Assertion(A) : Terpenes are polyisoprenes with formula (C₅H₈)_n. The value of n is used to determine the types in terpenes as mono, di, tri etc.

Reason(R) : Terpenes are made up of the arrangement of 2-methyl-1,3-butadiene units in head to tail manner.

In the light of the above statements, choose the correct options given below:

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 (c) (A) is true but (R) is false
 (d) (A) is false but (R) is true
23. The **Addition reaction** between **Borazine ($B_3N_3H_6$)** and **HCl** will produce
 (a) N-chloro product $(BH)_6(NHCl)_3$ (b) B-chloro product $(BHCl)_3(NH_2)_3$
 (c) Mixture of N- and B-chloro product (d) Only hydrogenated product $B_3N_3H_{12}$
24. A sample was excited by **4358 Å** line of mercury. A **Raman line** was observed at **4447 Å**. Calculate **Raman Shift in cm^{-1}**
 (a) 435.8 cm^{-1} (b) 4600 cm^{-1} (c) 46 cm^{-1} (d) 460 cm^{-1}
25. The values of **van't Hoff factors** for **NaCl**, **KCl** and **K_2SO_4** , respectively are
 (a) 1, 1, 2 (b) 1, 1, 1 (c) 2, 2, 2 (d) 2, 2, 3
26. Given below are two statements: One is labelled as **Assertion(A)** and other is labelled as **Reason (R)**.
Assertion(A) : The structure of XeF_6 is distorted octahedron.
Reason(R) : The molecular orbital approach predicts correct structure of XeF_6 .
- In the light of the above statements, choose the most appropriate answer from the options given below:
 (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 (c) (A) is correct but (R) is not correct
 (d) (A) is not correct but (R) is correct
27. In which of the following reactions **H_2O_2** is **not an oxidising agent**?
 (a) $2FeCl_2 + H_2O_2 + 2HCl \rightarrow FeCl_3 + 2H_2O$ (b) $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$
 (c) $H_2SO_3 + H_2O_2 \rightarrow H_2SO_4 + H_2O$ (d) $2HI + H_2O_2 \rightarrow 2H_2O + I_2$
28. Identify the **incorrect** statement regarding **pyridine** from the following
 (a) Pyridine is less basic than pyrrole
 (b) All carbon-carbon bond lengths in pyridine are of equal length
 (c) Pyridine has resonance energy of 125.5 kJ mol^{-1}
 (d) All atoms in pyridine are sp^2 -hybridized
29. Which among the following compounds will show the least **C–O stretching frequency**?

- (a) $[\text{Fe}(\text{CO})_4]^{2-}$ (b) $[\text{Co}(\text{CO})_4]^-$ (c) $[\text{Mn}(\text{CO})_6]^+$ (d) $[\text{Cr}(\text{CO})_6]$

30. Given below are two statements:

Statement I : N_2 is isoelectronic with CO

Statement II : N_2 is significantly poorer σ -donor than CO

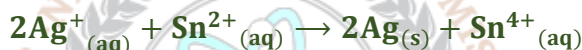
Choose the correct answer from the options given below:

- (a) Both statement I and statement II are true
 (b) Both statement I and statement II are false
 (c) Statement I is true but statement II is false
 (d) Statement I is false but statement II is true

31. Given the following **standard reduction potentials**:

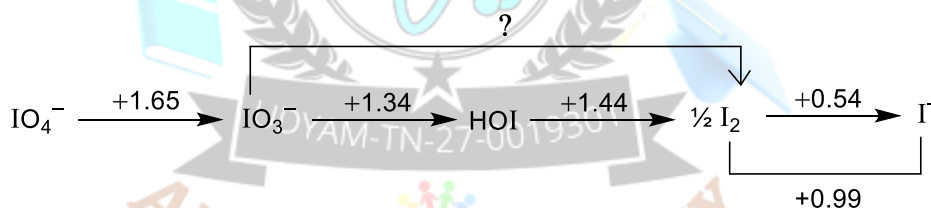


The **value of ΔG°** for the reaction is:



- (a) $-1.3 \times 10^5 \text{ J}$ (b) $1.3 \times 10^3 \text{ J}$ (c) $-0.65 \times 10^5 \text{ J}$ (d) $+0.65 \times 10^5 \text{ J}$

32. Considering the following reactions and their **reduction potentials in acidic medium**



What will be the **free energy change (ΔG)** of the reaction. $\text{IO}_3^- \rightarrow \frac{1}{2} \text{I}_2$

- (a) -3.57 F (b) -4.76 F (c) -5.39 F (d) -6.80 F

33. Which of the following is the **weakest chemical force**?

- (a) Ion induced dipole interaction (b) Dipole induced dipole interaction
 (c) Dipole-dipole interaction (d) Ion-dipole interaction

34. Which of the following can act as **electrophile**?

- (a) SiF_4 (b) CCl_4 (c) CH_4 (d) NH_3

35. A solution containing **2.44 g** of a solute dissolved in **75 g** of water boils at **100.413 °C**. Calculate the **molar mass** of the solute?

$[\text{K}_b \text{ for water} = 0.52 \text{ K kg mol}^{-1}]$

- (a) 409.6 g mol^{-1} (b) 40.96 g mol^{-1} (c) 4096 g mol^{-1} (d) 4.096 g mol^{-1}

36. A **monochromatic radiation** is incident on a solution of **0.05 molar concentration** of an absorbing substance. The intensity of the radiation is reduced to one fourth of

- the initial value after passing through 10 cm length of the solution. Calculate the molar extinction coefficient of the substance.
- (a) $12.04 \text{ dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$ (b) $1.204 \text{ dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$
 (c) $120.4 \text{ dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$ (d) $120.4 \text{ cm}^{-2} \text{ mol}^{-1}$
37. The initial rate of a reaction in which the substrate S, undergoes a reaction in the presence of catalyst C, was found to be equal to $v_0 = \frac{k_2[S]_0[C]_0}{[S]_0 + K_m}$. The probable condition in which the reaction took place was
- (a) $[C]_0 \ll [S]_0$ (b) $[C]_0 \gg [S]_0$ (c) $[C]_0 = [S]_0$ (d) Insufficient information
38. The hydrolysis products of Al_4C_3 and Be_2C are
- (a) Propyne, Methane (b) Methane, Methane (c) Propyne, Ethyne (d) Ethyne, Methane
39. When 3 moles of gas-A is mixed with 1 mole of gas-B at room temperature and 1 atm pressure, the entropy of mixing is _____ ($\log 3 = 0.4771$, $\log 4 = 0.6020$)
- (a) -18.70 J K^{-1} (b) $+18.70 \text{ J K}^{-1}$ (c) $+4.65 \text{ J K}^{-1}$ (d) -4.65 J K^{-1}
40. The orbital angular momentum of an electron in 2S orbital is
- (a) $+\frac{1}{2} \frac{h}{2\pi}$ (b) zero (c) $-\frac{1}{2} \frac{h}{2\pi}$ (d) $\frac{h}{2\pi}$
41. Among the following compounds, which one is used as Hinsberg reagent for identification of 1°, 2° and 3° amines?
- (a) Acetyl chloride (b) Benzoyl chloride
 (c) Benzenesulphonyl chloride (d) Benzylchloride
42. The number of geometrical isomers for complex $[\text{MA}_2\text{B}_2\text{C}_2]$ is
- (a) Three (b) Four (c) Five (d) Six
43. The partial molar Gibbs free energy for an ideal gas is given by the expression
- (a) $\mu_i = \mu_i(T) + RT \ln x_i$ (b) $\mu_i = \mu_i^\circ(T) + RT \ln p$
 (c) $\mu_i = \mu_i(\text{pure}) + RT \ln x_i$ (d) $\mu_i = \mu_i(\text{pure}) + RT \ln p$
44. The solubility of alkaline earth metal sulphates in water decrease in the order
- $$\text{BeSO}_4 > \text{MgSO}_4 > \text{CaSO}_4 > \text{SrSO}_4 > \text{BaSO}_4$$

This is because,

- P. Hydration energy increases down the group
- Q. The rate of decrease of hydration energy is higher than the rate of decrease of Lattice energy
- R. Lattice energy increases down the group
- S. Hydration energy of Be^{2+} and Mg^{2+} are very high

T. Covalency is increasing down the group

Choose the correct answer from the options given below.

- (a) P and R only (b) Q only (c) Q and S only (d) T only

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

Assertion(A) : Halogenation of 2-methyl propane gives $(\text{CH}_3)_2\text{CHCH}_2\text{X}$ (Minor) and $(\text{CH}_3)_3\text{C-X}$ (Major) with chlorination giving a larger amount of minor product than bromination.

Reason(R) : Tertiary free radicals are more stable than primary ones.

In the light of the above statements, choose the correct answer from the options given below:

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 (c) (A) is true but (R) is false
 (d) (A) is false but (R) is true

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

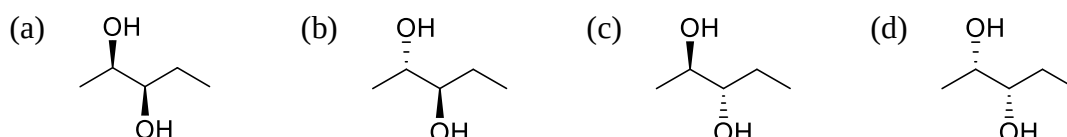
Assertion(A) : Interhalogens are more reactive than halogens.

Reason(R) : The central atom in interhalogens is always more electronegative halogen atom.

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

- (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 (c) (A) is correct but (R) is not correct
 (d) (A) is not correct but (R) is correct

47. Which of the following compound represent the correct structure of **(2R, 3S)-2, 3-pentanediol**?

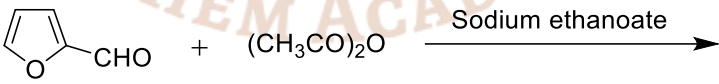


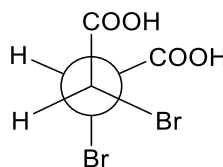
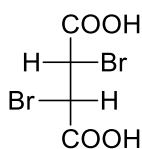
48. The structure of a **carborane**, $\text{C}_2\text{B}_5\text{H}_7$ is

- (a) Seven vertex polyhedron, nido structure

- (b) Six vertex polyhedron, closo structure
 (c) Six vertex polyhedron, nido structure
 (d) Seven vertex polyhedron, closo structure
49. For the following reaction: $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$
 The free energy changes at 25 °C and 35 °C are -33.089 and -28.018 kJ respectively. The heat of the reaction is
 (a) +184.20 kJ (b) -184.20 kJ (c) -33.089 kJ (d) +33.089 kJ
50. Two equal and opposite charges i.e, $\pm q = 1.6 \times 10^{-19} \text{ C}$ are separated by a distance of 0.25 nm. Compute the dipole moment in D
 (a) 1.1994 D (b) 11.994 D (c) $4 \times 10^{-29} \text{ D}$ (d) 4 D
51. Phenol derivatives can be prepared from corresponding chlorobenzene derivatives via nucleophilic substitution reaction only when it contains
 (a) Electron releasing groups (b) Electron withdrawing groups
 (c) Electronically neutral groups (d) Reaction not possible
52. What are the most common electronic transition(s) associated with carbonyl functional group?

$\sigma \rightarrow \pi$	$\sigma \rightarrow n$	$n \rightarrow \pi^*$	$\pi \rightarrow \pi^*$
P	Q	R	S

 (a) P and S only (b) Q and R only (c) R and S only (d) P and Q only
53. Identify the major product in the following reaction

 (a) 2-(α-Furyl)-acrylic acid (b) 3-(α-Furyl)-acrylic acid
 (c) 2-(β-Furyl)-acrylic acid (d) 3-(β-Furyl)-acrylic acid
54. A first order reflection from the (111) planes of a cubic crystal was observed at a glancing angle of 11.5° when X-rays of wavelength 151 pm were used. The length of the side of the crystal is (Given $\sin 11.5^\circ = 0.199$)
 (a) 657 pm (b) 786 pm (c) 379 pm (d) 752 pm
55. What is the relation between the following pair of compounds?



P**Q**

- (a) Enantiomers (b) Homomers (c) Identical (d) Diastereomers

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

Assertion(A) : Ammonium nitrate is used as a salt bridge

Reason(R) : In ammonium nitrate $t_+ = t_-$

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

- (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 (c) (A) is correct but (R) is not correct
 (d) (A) is not correct but (R) is correct

57. In the **Ellingham plots** for **metal oxides** and **carbon monoxide** the value of ΔS respectively are

- (a) Positive and negative (b) Positive and positive
 (c) Negative and positive (d) Negative and Negative

58. Postulates of **collision theory** are

- P.** Particles must collide with proper energy
Q. Colliding particles must be of proper size
R. Colliding particles must have proper orientation
S. Colliding particles must be unreactive to atmosphere

Choose the correct answer from the options given below:

- (a) P and Q only (b) P, Q and S only (c) P and R only (d) Q, R and S only

59. Which of the **oxygen carrier** and **metal** are found in **arthropods** and **molluscs**?

- (a) Haemocyanin and Cu (b) Haemocyanin and Fe
 (c) Haemerythrins and Cu (d) Haemerythrins and Zn

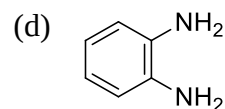
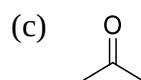
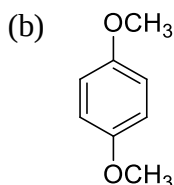
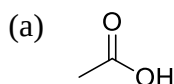
60. Given below are two statements: One is labelled as **Assertion(A)** and other is labelled as **Reason(R)**.

Assertion(A) : Pyrrole is less basic than pyridine

Reason(R) : Lone pair of electrons on N-atom are delocalised to the ring in the case of pyrrole.

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

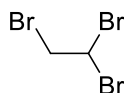
- (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 (c) (A) is correct but (R) is not correct
 (d) (A) is not correct but (R) is correct
61. In an experiment to determine the **quantum yield of a photochemical reaction**, the absorbing substance was exposed to **500 nm** light from a **100 W** source for **3000 s**, with **80%** of the incident light being absorbed. If **0.40 mol** of the absorbing substance was decomposed, then the **primary quantum yield** is
 (a) 0.65 (b) 0.40 (c) 0.80 (d) 0.36
62. The **relative order of stability** of conformers of **1, 3-dimethylcyclohexane** is **(equatorial-e, axial-a)**
 (a) $e,e > e,a = a,e > a,a$ (b) $a,a > e,a = a,e > e,e$
 (c) $e,e > a,a > e,a = a,e$ (d) $e,a = a,e > a,a > e,e$
63. Which of the following factors affects the magnitude of crystal field splitting (Δ)?
P. Oxidation state of metal ion **Q. Coordination number of metal ion**
R. EN of the donor atom of ligand **S. Position of metal ion in d block**
 Choose the correct option:
 (a) P and Q only (b) R and S only (c) P, Q and R only (d) P, Q, R and S
64. A state (n_1, n_2) for a particle in a **rectangular box** with sides of length $L_1 = L$ and $L_2 = 2L$ that is **accidentally degenerate** with the state (**4, 4**) is
 (a) $n_1 = 2; n_2 = 8$ (b) $n_1 = 8; n_2 = 2$ (c) $n_1 = 4; n_2 = 6$ (d) $n_1 = 2; n_2 = 2$
65. The activity of '**m**' molar **CuSO₄** solution can be expressed in terms of its **mean activity coefficient**
 (a) $m^2\gamma_{\pm}^2$ (b) $4m^3\gamma_{\pm}^3$ (c) $16m^4\gamma_{\pm}^4$ (d) $108m^5\gamma_{\pm}^5$
66. Predict the **correct major product** in the following reaction.
-
- (a) (b) n-Butane (c) (d) $H_3C-CH=CH-CH_3$
67. Which of the following compounds gives **only one peak** in the proton NMR?



68. Which of the following assumption was **not** considered during the derivation of **Langmuir adsorption isotherm**?

- (a) The layer of the gas adsorbed on the solid surface is one molecule thick
- (b) The adsorbed layer is uniform
- (c) There is no attraction between the adjacent molecules
- (d) The attraction between the adsorbent molecule is extremely large

69. What is **splitting pattern of NMR signals** in increasing order of δ in the following compound?

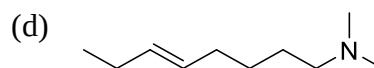
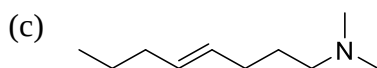
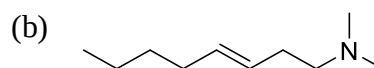
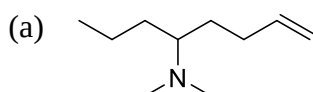
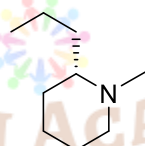


- (a) Doublet followed by triplet
- (b) Triplet followed by doublet
- (c) Singlet followed by doublet
- (d) Triplet followed by singlet

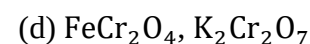
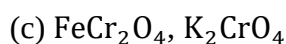
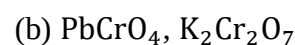
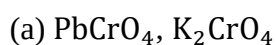
70. Find out the **degree of dissociation** of HF in 1M aqueous solution. The value of K for the **ionic equilibrium** $\text{HF} \rightleftharpoons \text{H}^+ + \text{F}^-$ is 7.2×10^{-4}

- (a) 7.2×10^{-2}
- (b) 2.7×10^{-4}
- (c) 2.7×10^{-2}
- (d) 7.2×10^{-4}

71. Identify, which of the following is **not** the product of the given compound when it is subjected to **Hoffmann's exhaustive methylation-elimination reaction** using CH_3I .



72. When Chromite ore (**A**) is fused with sodium carbonate in excess of air and the product is dissolved in water, a yellow solution of compound (**B**) is obtained. On treating **B** with sulphuric acid, compound (**C**) can be crystallised from the solution. When compound (**C**) is treated with KCl, orange crystals of compound (**D**) crystallise out. **Identify A and D.**



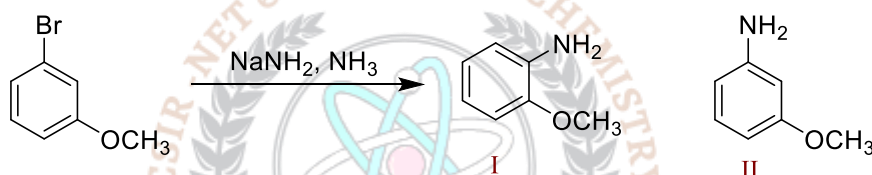
73. Match List-I with List-II.

	List-I (Reaction)		List-II (Metallo enzyme)
(P)	$R-H + O_2 + 2H^+ + 2e^- \rightarrow R-OH + H_2O$	(i)	Cytochrome P-450
(Q)	$2H_2O_2 \rightarrow 2H_2O + O_2$	(ii)	Catalase
(R)	e-transfer protein	(iii)	Ferredoxin
(S)	$O_2 + 4H^+ + 4e^- \rightarrow 2H_2O$	(iv)	Cytochrome (oxidase)

Choose the correct answer from the options given below:

(P)	(Q)	(R)	(S)	(P)	(Q)	(R)	(S)
(a) (i) ; (ii) ; (iii) ; (iv)	(b) (iv) ; (ii) ; (iii) ; (i)						
(c) (i) ; (iii) ; (ii) ; (iv)	(d) (iv) ; (iii) ; (ii) ; (i)						

74. Predict the correct product(s) in the following reaction



- (a) Only I (b) Only II (c) Both I and II (d) Neither I nor II

75. Which among the following will **not** follow the **effective Atomic Number rule**?

- (a) $[Mn(CO)_5]^-$ (b) $Co_2(CO)_8$ (c) $Rh_2(CO)_4Cl_2$ (d) $Ni(PF_3)_4$

Answer Key

Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans
1.	c	16.	b	31.	a	46.	c	61.	b
2.	a	17.	a	32.	d	47.	c	62.	a
3.	c	18.	a	33.	b	48.	d	63.	d
4.	a	19.	d	34.	a	49.	b	64.	a
5.	c	20.	a	35.	b	50.	b	65.	a
6.	d	21.	d	36.	b	51.	b	66.	c
7.	b	22.	b	37.	a	52.	c	67.	c
8.	b	23.	b	38.	b	53.	b	68.	d
9.	b	24.	d	39.	b	54.	a	69.	a

CUET-PG-2023

10.	a
11.	a
12.	b
13.	d
14.	c
15.	b

25.	d
26.	c
27.	b
28.	a
29.	a
30.	a

40.	b
41.	c
42.	c
43.	c
44.	c
45.	b

55.	d
56.	a
57.	c
58.	c
59.	a
60.	a

70.	c
71.	b
72.	d
73.	a
74.	b
75.	c

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