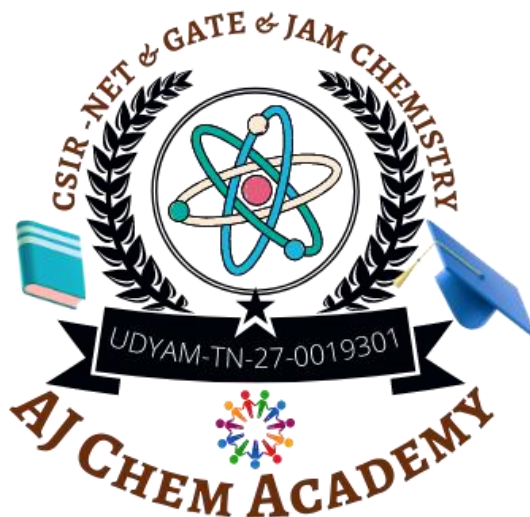


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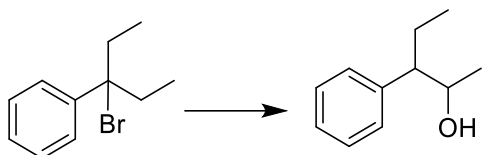
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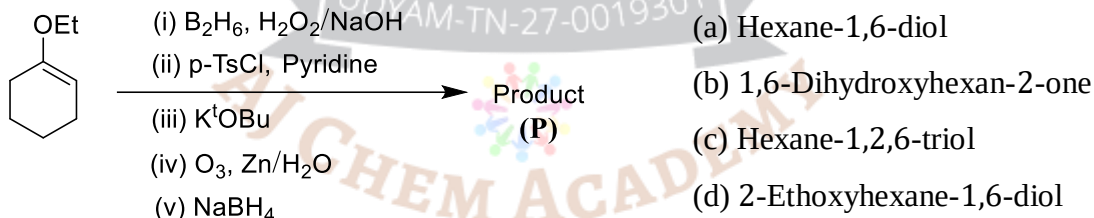
Q.1 – Q.75 MCQ, carry Four marks each. (for each wrong answer: -1).

You are required to Answer All Questions.

1. Below conversion is carried out using



- (a) (i) KOH (alc.), (ii) oxymercuration-demercuration
 (b) (i) KOH (aq.), (ii) conc. H_2SO_4
 (c) (i) KOH (alc.), (ii) Hydroboration-oxidation
 (d) (i) Nucleophilic addition-elimination (ii) oxymercuration-demercuration
2. The biomedical applications of **polyphosphazene polymers** are:
P. As structural materials for the construction of heart valves and blood vessels
Q. They are used in drug delivery systems
R. Biodegradable support for in vivo bone regeneration
 Choose the correct answer from the options given below,
 (a) P and Q only (b) Q and R only (c) P, Q and R (d) P and R only
3. The **major product (P)** in the following transformation is

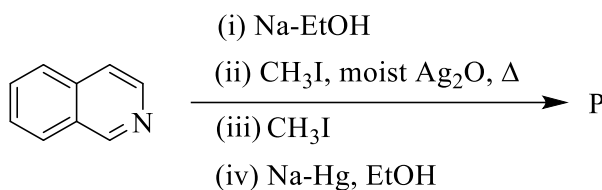


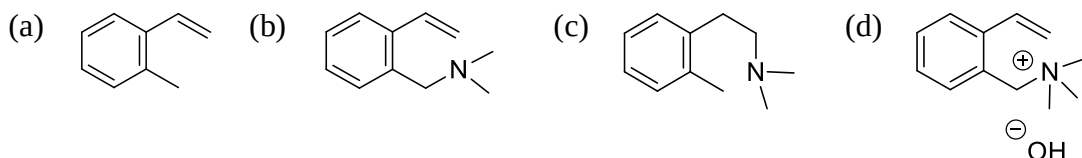
4. Arrange the following ligands in their **increasing d-orbital splitting**:



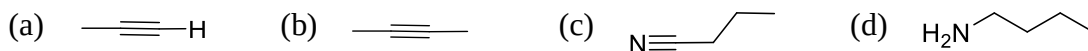
Choose the correct answer from the options given below:

- (a) P, Q, R, S (b) P, R, Q, S (c) Q, P, S, R (d) R, Q, P, S
5. The **final product (P)** is





6. Which of the following compound shows sharp band at 2150 cm^{-1} and 3300 cm^{-1} (approx.) in IR-spectrum?



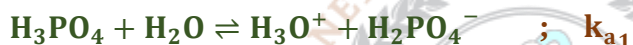
7. For a two component system, the degree of freedom is given by:

(a) $F = 1 - P$ (b) $F = 2 - P$ (c) $F = 3 - P$ (d) $F = 4 - P$

8. The effective nuclear charge (Z_{eff}) experienced by 4s electrons of Cu(29) is

(a) 3.70 (b) 2.70 (c) 1.70 (d) 0.70

9. Arrange the dissociation constant of phosphoric acid in increasing order



(a) $k_{a1} = k_{a2} = k_{a3}$ (b) $k_{a1} > k_{a2} > k_{a3}$ (c) $k_{a1} < k_{a2} < k_{a3}$ (d) $k_{a1} > k_{a3} > k_{a2}$

10. Match List-I with List-II

	Reaction name		Reactant
P.	Friedlander's synthesis	(i)	o-Aminobenzaldehyde
Q.	Doebner-Miller's synthesis	(ii)	β -Phenylethylamide
R.	Hantzsch's synthesis	(iii)	Aniline
S.	Bischler-Napieralski's synthesis	(iv)	β -Ketoester

Choose the correct answer from the options given below:

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

(b)	(i)	;	(iii)	;	(iv)	;	(ii)		
(d)	(iii)	;	(iv)	;	(i)	;	(ii)		

11. Arrange the following in increasing order of covalent character:

LiF	LiBr	LiCl	LiI
P	Q	R	S

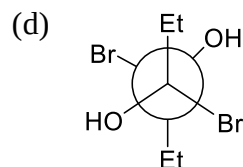
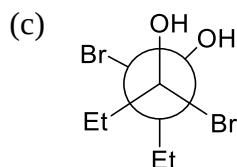
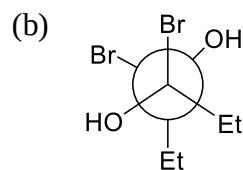
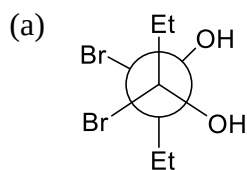
Choose the correct answer from the options given below:

(a) P, Q, R, S (b) P, R, Q, S (c) Q, P, S, R (d) R, Q, S, P

12. Which of the following set of peaks (m/z) appears in the mass spectrum of 2-pentanone?

- (a) $m/z = 86, 71, 43, 15$ (b) $m/z = 86, 57, 29$
 (c) $m/z = 86, 71, 58, 43, 15$ (d) $m/z = 86, 57, 29, 15$
13. In the **vibrational Raman Spectra** the value of **transition energy for the first overtone** ($\Delta \epsilon_{\text{overtone}}$) is:
 (a) $\bar{\omega}_e(1 - 2\chi_e)\text{cm}^{-1}$ (b) $2\bar{\omega}_e(1 - 3\chi_e)\text{cm}^{-1}$
 (c) $3\bar{\omega}_e(1 - 4\chi_e)\text{cm}^{-1}$ (d) $4\bar{\omega}_e(1 - 5\chi_e)\text{cm}^{-1}$
14. Arrange the following compounds in **decreasing order of their rates of hydrolysis with water**,
- | Acetamide | Acetyl chloride | Ethyl acetate | Acetic anhydride |
|----------------|-----------------|----------------|------------------|
| P | Q | R | S |
| (a) P, R, S, Q | (b) P, R, Q, S | (c) Q, S, R, P | (d) Q, S, P, R |
15. On **descending the alkali metal group**, the **lattice enthalpies of both the oxide and peroxide (or superoxide) decreased**, because:
 (a) Radii of the cations increased (b) Charges on the cations increased
 (c) Charges on the cations decreased (d) It depends on the charges of the oxides
16. The **number of radial nodes present in 4f orbital** is
 (a) 0 (b) 1 (c) 2 (d) 3
17. Which of the following compounds exhibits **two $^1\text{H-NMR}$ signals and three $^{13}\text{C-NMR}$ signals**?
 (a) 1,2,3,5-tetramethylbenzene (b) 1,4-diethylbenzene
 (c) 1,2,4,5-tetramethylbenzene (d) 1,2-diethylbenzene
18. Arrange the following spectral range in order of their **increasing wavelength**,
- | Radio | Visible | Infrared | Ultraviolet |
|----------------|----------------|----------------|----------------|
| P | Q | R | S |
| (a) P, Q, R, S | (b) S, Q, R, P | (c) Q, P, S, R | (d) R, Q, P, S |
19. **Minamata disease** is caused by _____ **poisoning**
 (a) Pb (b) Cd (c) As (d) Hg
20. The **CFSE for the d^8 octahedral ion** is:
 (a) $-0.4 \Delta_o$ (b) $-0.6 \Delta_o$ (c) $1.2 \Delta_o$ (d) $-1.2 \Delta_o$
21. The **IUPAC name of the coordination compound is: $[\text{Rh}(\text{CO})_2\text{I}_2]^-$**
 (a) dicarbonyldiiodidorhodate(I) (b) dicarbonyldiiodiderhodate(I)
 (c) carbonylbisiodidorhodium(I) (d) carbonyldiiodidorhodium(I)
22. Which of the following is the **most stable conformation of $(\pm)$ -3,4-dibromo-3,4-**

dihydroxy hexane?



23. The **standard enthalpy of formation** for which of the element is **not zero** at **1 bar pressure** and specified temperature.

- (a) S (Monoclinic) (b) P (White) (c) Br₂(liquid) (d) O₂(g)

24. The **chemical potential of one component of a mixture** cannot change independently of the **chemical potentials of the other components**. This statement relates to:

- (a) Raoult's law (b) Gibbs-Duhem Equation
(c) Henry's law (d) Gibbs-Helmholtz Equation

25. **10 g** of a nonvolatile solute, when dissolved in **100 g** of benzene raises its boiling point by **1 °C**. The **molecular mass of the solute in g/mol** is _____

- (a) 25.3 (b) 253 (c) 250 (d) 25.0

26. What is the **degeneracy of the energy level** $\frac{14h^2}{8ma^2}$ for a particle in **three-dimensional cubic box** of edge length a ?

- (a) 2 (b) 4 (c) 6 (d) 8

27. According to the **moving boundary method**, the **transport number** of the cation (t_{A^+}) of the principle electrolyte is calculated using the formula

Given: ' l ' is the length by which the boundary has moved. The electrolyte of concentration ' c ' is kept in a long vertical tube with area of cross section ' A '.

- (a) $\frac{IA^2c}{Q/F}$ (b) $\frac{Ic^2A}{Q/F}$ (c) $\frac{Ic^2A}{F/Q}$ (d) $\frac{IAc}{Q/F}$

28. An **ideal gas** expands isothermally from an initial volume V_i and pressure P_i to a final volume V_f . If the same gas is allowed expand **adiabatically from the same initial volume and pressure to the final V_f** then

Given: P_{iso} and P_{adia} are the final pressures.

- (a) $P_{adia} = 0$ (b) $P_{iso} = 0$ (c) $P_{adia} < P_{iso}$ (d) $P_{adia} > P_{iso}$

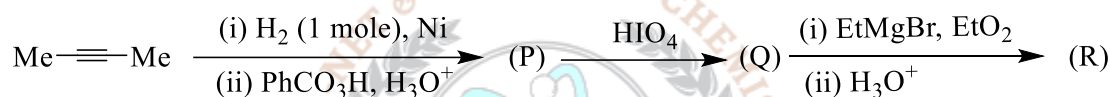
29. Which of the following is **not true** for 'Borazines'?

- (a) Borazine is more reactive than benzene
- (b) $B_3N_3H_6 + 3HCl \rightarrow B_3N_3H_9Cl_3$
- (c) Borazine reacts with water to form ammonium chloride
- (d) Borazine forms π complexes

30. For the **second and third row of transition elements**, which statement is **not true**?

- (a) The metals commonly show lower coordination number
- (b) The metals form binuclear carboxylate complexes
- (c) The halides of many elements are called cluster compounds
- (d) They form carbonyl with M-M bonds

31. The **final product (R)** in the below conversion is



- (a) Acetone
- (b) 2-Butanol
- (c) 1-Butanol
- (d) 2-Pentanol

32. Which of the following **dicarboxylic acid** does **not yield anhydride** on heating?

- (a) Glutaric acid
- (b) Maleic acid
- (c) Dimethyl succinic acid
- (d) Dimethyl malonic acid

33. The **electronegativity of the silicon (Si) atom** using **Allred-Rochow scale** of electronegativity is _____. **Given: The covalent radius for Si atom = 1.175 Å.**

- (a) 2.40
- (b) 2.50
- (c) 2.20
- (d) 2.10

34. Match the name of the law given in with the relation/formula given

	Law name	Relation
P.	Boyle's law	(i) $\frac{V}{T} = \text{Constant}$
Q.	Charles Law	(ii) $\frac{r_1}{r_2} = \sqrt{\frac{M_2}{M_1}}$
R.	Avagadro's Law	(iii) $PV = \text{Constant}$
S.	Graham's Law of Diffusion	(iv) $V \propto n$

Choose the correct answer from the options given below:

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

35. For the calculation of **activation energy** using the **Arrhenius equation**, a graph of **$\ln k$ versus $1/T$ graph** was plotted. The **slope of the straight line** was found to be **$-2.55 \times 10^4 \text{ K}$** . The **activation energy in J/mol** is

(a) 2.12×10^5 (b) 4.88×10^5 (c) 21.2×10^6 (d) 0.212×10^4

36. An alloy of Cu and Au will show complete **miscibility as per Hume-Rothery** if

P. The metallic radii of the Cu and Au differs only by 12.5 %

Q. Cu and Au have the same crystal structure

R. The chemical properties of both the metals are similar

S. The number of valence electrons is different in both

Choose the correct answer from the options given below:

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

37. Match the **xenon compounds with structures**

	xenon compounds		structures
P.	XeF_4	(i)	Trigonal bipyramidal
Q.	XeO_3	(ii)	Tetrahedral
R.	XeO_2F_2	(iii)	Pyramidal
S.	XeO_4	(iv)	Square planar

Choose the correct answer from the options given below:

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

38. The following **transformation** is carried out by



- (a) (i) Cyclic polymerization, (ii) Gatterman-Koch's reaction, (iii) Bischler-Napierlski's reaction
- (b) (i) Cycloaddition, (ii) Etard's reaction, (iii) Pomeranz-Fritsch's reaction
- (c) (i) Cyclic polymerization, (ii) Etard's reaction, (iii) Doebnar-Miller's synthesis
- (d) (i) Cyclic polymerization, (ii) Gatterman-Koch's reaction, (iii) Pomeranz-Fritsch's reaction

39. For an **ideal gas** undergoing **reversible isothermal expansion**, the function **G** and **A** are given as **$G = H - TS$** and **$A = U - TS$** , respectively. Choose the correct answer from the options given below.

$$\Delta G = \Delta A$$

$$\Delta(pV) = 0$$

$$\Delta G > \Delta A$$

$$\Delta(nRT) = 0$$

P

Q

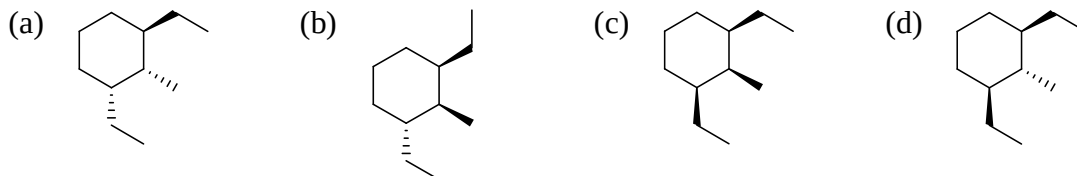
R

S

Choose the correct answer from the options given below:

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

40. The **most stable conformation** of the following is



41. Which of the following compound is **not** formed during **Kolbe's electrolysis of ethyl propionate**?

- (a) n-Butane (b) Ethane (c) Ethylene (d) n-Propane

42. **Superconductors** are a special class of materials that have zero _____ below a **critical temperature**.

- (a) electrical resistance (b) magnetic resistance (c) pressure (d) band gap

43. Which of the following statement is/are correct with regards to **tangential force** which is needed to keep the speeds of different layers of liquid constant?

P. It is directly proportional to the velocity difference between the two adjacent layers

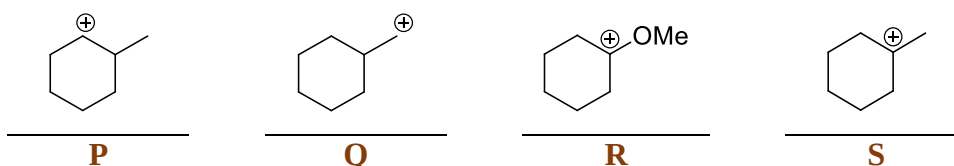
Q. It is inversely proportional to the areas of contact between the two adjacent layers

R. It is inversely proportional to the distance between the two adjacent layers

Choose the correct answer from the options given below:

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

44. Arrange the following set of **carbocations in order of decreasing stability**.



Choose the correct answer from the options given below:

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

45. From the following atoms, which will show the **lowest first ionization energy (IE₁)**?

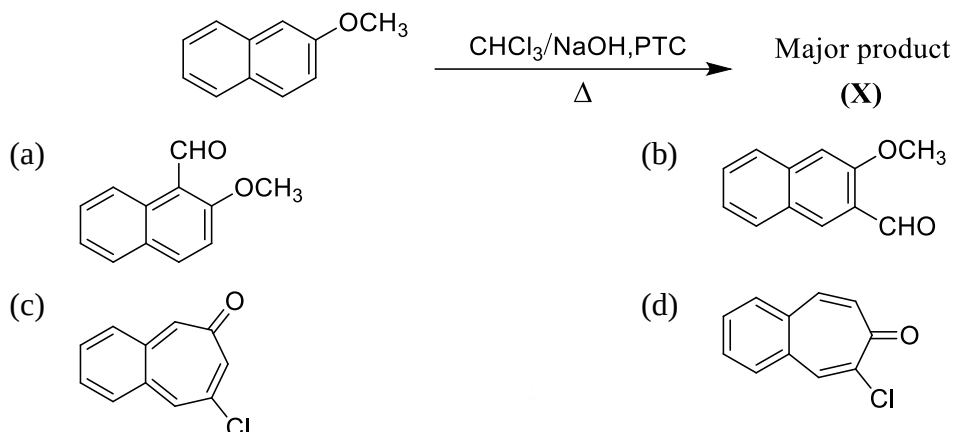
- (a) C (b) N (c) O (d) F

46. In an **Ellingham-diagram**, if the **C/CO line** lies below the **metal oxide line**, then the carbon is used to reduce the metal oxide and itself is oxidized to:

(a) CO

(b) CO₂

(c) C

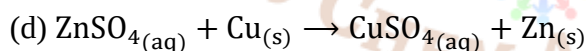
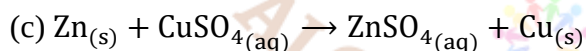
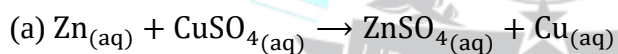
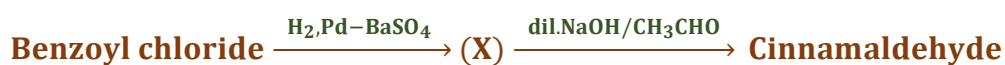
(d) O₂47. The **major product (X)** is48. Find the **ground state term symbol** for Pr^{3+} (a) $^3\text{H}_4$ (b) $^3\text{H}_6$ (c) $^3\text{H}_5$ (d) $^2\text{F}_{5/2}$ 49. The **number of atoms per unit cell in simple cubic, face-centered cubic and body-centered cubic** are:

(a) 1, 4, 2

(b) 4, 1, 2

(c) 2, 4, 1

(d) 4, 8, 2

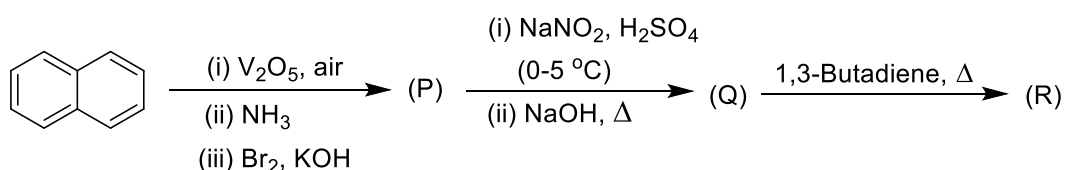
50. Which of the following reactions correctly represents a **Daniell cell**?51. Which **correct sequence of reactions** are applied to achieve the following transformation?

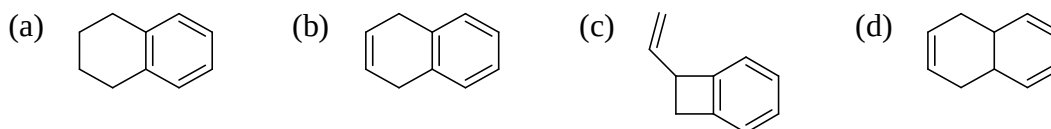
(a) Bouvaelt-Blanc's reduction followed by Kolbe's-Schmidt's reaction

(b) Rosenmund's reduction followed by Claisen-Schmidt's reaction

(c) Bouvaelt-Blanc's reduction followed by Claisen-Schmidt's reaction

(d) Rosenmund's reduction followed by Perkin's reaction

52. The **final product (R)** in the above sequential reaction is:



53. Match the molecule/ion with their **number of bond pair (BP)** and **lone pair (LP)**

	Molecule/ion	BP/LP on central metal atom
P.	SO₂	(i) BP = 4 and LP = 2
Q.	ClF₃	(ii) BP = 5 and LP = 1
R.	BrF₅	(iii) BP = 2 and LP = 1
S.	XeF₄	(iv) BP = 3 and LP = 2

Choose the correct answer from the options given below:

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

54. In very high electric field $E > 10^5$,

P. Asymmetric affect disappears

Q. Electrophoretic affect disappears

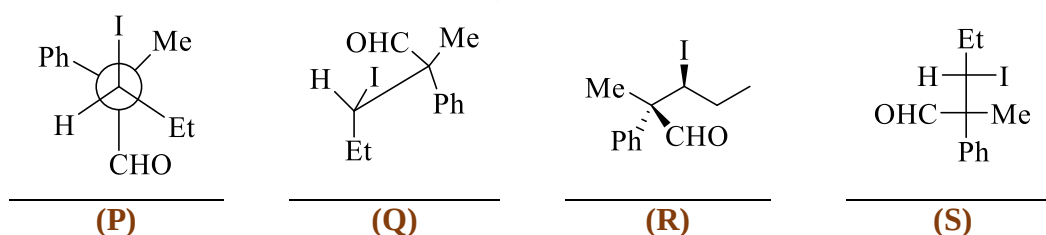
R. The ion moves so rapidly that it loses its ionic atmosphere

S. The weak electrolyte is completely ionised at all dilutions

Choose the correct answer from the options given below:

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

55. Which of the following is true for the stereochemical relationship of the given structures (P-S)?



(a) (P) and (R) are homomers

(b) (Q) and (R) are enantiomers

(c) (Q) and (S) are homomers

(d) (P) and (S) are diastereomers

56. Match the metals with their ores

	metals	List-II ores	P	Q	R	S	
P.	Hg	(i) Pyrolusite	(a)	(i)	(ii)	(iii)	(iv)
Q.	Pb	(ii) Calamine	(b)	(i)	(iii)	(ii)	(iv)

R.	Mn	(iii)	Cinnabar	(c)	(iii)	;	(ii)	;	(iv)	;	(i)
S.	Zn	(iv)	Galena	(d)	(iii)	;	(iv)	;	(i)	;	(ii)

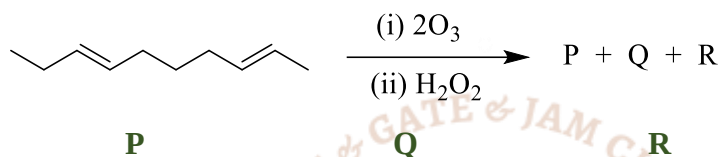
57. Arrange the following in **increasing order of bond order**:

He_2^+	O_2^-	HF	NO^+
P	Q	R	S

Choose the correct answer from the options given below:

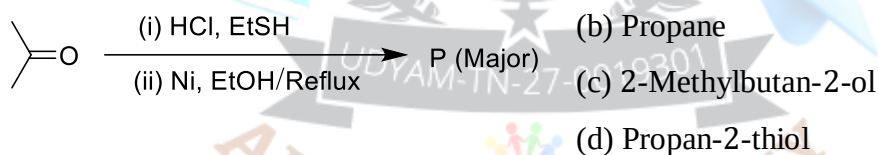
- (a) P, Q, R, S (b) R, S, P, Q (c) Q, P, S, R (d) P, R, Q, S

58. Identify **P**, **Q** and **R** in the following reaction



- (a) Propanoic Acid ; Glutaraldehyde ; Acetaldehyde
 (b) Propanaldehyde ; Glutaraldehyde ; Acetaldehyde
 (c) Propanoic Acid ; Glutaric acid ; Acetic acid
 (d) Propanoic Acid ; Glutaric acid ; Acetaldehyde

59.



- (a) Diethyldimethyl mercaptol
 (b) Propane
 (c) 2-Methylbutan-2-ol
 (d) Propan-2-thiol

60. Consider the following statements with respect to **Benzil-Benzilic acid rearrangement and Cannizzaro's reaction**.

P. Both are base catalysed reactions

Q. Both reactions involve shifting of an anion in their mechanism

R. Both reactions can occur inter-molecularly and intramolecularly

S. Both involve simultaneous redox reactions

Choose the correct answer from the options given below.

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

61. The **eigen value** for the wave function $\Psi = Ae^{ikx} + Be^{-ikx}$ of the operator d^2/dx^2 is

- (a) $-k$ (b) $-k^2$ (c) k^2 (d) k

62. Consider the following statements with respect to **citral**.

P. Geranial and Neral are geometrical isomers of citral

Q. It forms geranic acid on heating with potassium hydrogen sulphate

R. It gives 6-methylhept-5-en-2-one on treating with potassium carbonate

S. On oxidation with silver oxide it yields Laevulic acid

Choose the correct answer from the options given below.

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

63. The **pH** of a solution of 10^{-7} M HCl at 25°C is

- (a) 7 (b) 6.79 (c) 7.89 (d) 7.69

64. In **Lineweaver-Burk plot**, the plot between $1/v$ and $1/[S]_0$ yields a straight line with a y-intercept and slope value that equals to

- (a) Intercept = $\frac{1}{v_{\max}}$; Slope = $\frac{K_M}{v_{\max}}$ (b) Intercept = $\frac{2}{v_{\max}}$; Slope = $\frac{2K_M}{v_{\max}}$
 (c) Intercept = $\frac{1}{2v_{\max}}$; Slope = $\frac{K_M}{v_{\max}}$ (d) Intercept = zero; Slope = $\frac{K_M}{v_{\max}}$

65. Which of the following is used in vehicles for the **inflation of airbags**?

- (a) Li_3N (b) NaN_3 (c) Ca_3N_2 (d) $\text{Pb}(\text{N}_3)_2$

66. Match the following **organometallic compounds** with their **Characteristics**

	Organometallic compounds		Characteristics
P.	$\text{Fe}(\text{C}_5\text{H}_5)_2$	(i)	dsp^2 hybridisation
Q.	$\text{K}^+[\text{PtCl}_3(\text{C}_2\text{H}_4)]^-$	(ii)	Tetramer structure
R.	$\text{Mg}(\text{CH}_3)_2$	(iii)	Fluxionality
S.	$(\text{CH}_3)_2\text{AlF}_4$	(iv)	Polymeric in nature

Choose the correct answer from the options given below:

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

67. Which of the following amino compound(s) **CAN NOT** be prepared by **Gabriel phthalimide synthesis**?

n-Butylamine	Alanine	Aniline	t-Butylamine
P	Q	R	S

Choose the correct answer from the options given below:

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

68. Consider the **concentration cell** : $\text{Pt} | \text{H}_2(1 \text{ bar}) | \text{HCl}_{(a_1)} | \text{HCl}_{(a_2)} | \text{H}_2(1 \text{ bar}) | \text{Pt}$

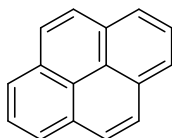
In concentration cells, the magnitude of **liquid junction potential** depends upon the **transport number of cations and anions**. For cells with $(a_{\pm 2})_{\text{HCl}} > (a_{\pm 1})_{\text{HCl}}$, then the value of E_{lj} is **negative** when:

- (a) $t_+ > t_-$ (b) $t_+ < t_-$ (c) $t_+ = 0$ (d) $t_- = 0$

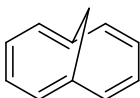
69. For **3 mol** of an ideal gas [$C_{p,m} = (5/2)R$], being heated from **300** to **600 K**, the change in **entropy at constant pressure** is

- (a) 48.22 J K^{-1} (b) 43.22 J K^{-1} (c) 33.22 J K^{-1} (d) 38.22 J K^{-1}

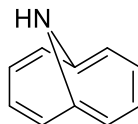
70. Which of the following are **aromatic**?



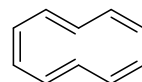
P



Q



R



S

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

71. Which of the following statement is **incorrect** about the **nature of chemisorption**?

- (a) It is endothermic in nature
(b) The extent of chemisorption first increases with temperature, then decreases
(c) Enthalpy of adsorption is in the range of 40 - 400 kJ/mol
(d) It is irreversible in nature

72. Using the **VSEPR model**, the **shape of PCl_4^+ ion** is:

- (a) Tetrahedral (b) Square planar (c) Trigonal pyramidal (d) Bent

73. The magnitude of **CFSE** depends on:

P. The nature of the ligand

Q. The charge on the metal ion

R. Position of the metal ion in transition series

S. Geometry of the complex

Choose the correct answer from the options given below:

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

74. At **0 K**, the molecule **CO** exists in two alternate arrangements (**CO** and **OC**) in the solid crystal. The **value of the entropy** is:

(where thermodynamic probability $W = k^{\text{NA}}$)

- (a) $5.76 \text{ J K}^{-1} \text{ mol}^{-1}$ (b) $7.76 \text{ J K}^{-1} \text{ mol}^{-1}$ (c) $9.76 \text{ J K}^{-1} \text{ mol}^{-1}$ (d) $11.76 \text{ J K}^{-1} \text{ mol}^{-1}$

75. Which of the following statement is true for **Lindemann mechanism** for the **unimolecular decomposition of a molecule**?

- (a) It follows second order kinetics at high pressure
(b) It follows second order kinetics at low pressure
(c) The kinetics of the reaction does not depend on the gaseous pressure
(d) It follows first order kinetics at low pressure

Answer Key

Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans
1.	c	16.	a	31.	b	46.	a	61.	b
2.	c	17.	c	32.	d	47.	d	62.	c
3.	d	18.	b	33.	b	48.	a	63.	b
4.	d	19.	d	34.	b	49.	a	64.	a
5.	a	20.	d	35.	a	50.	c	65.	b
6.	a	21.	a	36.	b	51.	b	66.	d
7.	d	22.	a	37.	a	52.	b	67.	b
8.	a	23.	a	38.	d	53.	d	68.	a
9.	b	24.	b	39.	d	54.	b	69.	b
10.	b	25.	b	40.	d	55.	d	70.	d
11.	b	26.	c	41.	d	56.	d	71.	a
12.	c	27.	d	42.	a	57.	d	72.	a
13.	b	28.	c	43.	c	58.	c	73.	c
14.	c	29.	c	44.	d	59.	b	74.	a
15.	a	30.	a	45.	a	60.	b	75.	b

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