CUET-PG CHEMISTRY
YEAR-2025

PART-B CHEMISTRY

1.

$$\xrightarrow[\substack{\text{(iii) CH}_3\text{I,} \\ \text{(iv) Na-Hg, EtOH}}]{\substack{\text{(i) Na-EtOH} \\ \text{(ii) CH}_3\text{I, moist Ag}_2\text{O, }\Delta}} P$$

The final product (P) is

(a)

(b)

(c)

(d)

2. Consider the following statements with respect to citral

(A) Geranial and Neral are geometrical isomers of citral

(B) It forms geranic acid on heating with potassium hydrogen sulphate

(C) It gives 6-methylhept-5-en-2-one on treating with potassium carbonate

(D) On oxidation with silver oxide it yields Laevulic acid

Choose the *correct* answer from the options given below:

(a) (A), (B) and (D) only   (b) (C) and (D) only

(c) (A) and (C) only   (d) (C) only

3. Which *correct* sequence of reactions are applied to achieve the following transformation?

Benzoyl Chloride $\xrightarrow{\text{H}_2\text{,Pd-BaSO}_4}$ (A) $\xrightarrow[\text{CH}_3\text{CHO}]{\text{dil.NaOH}}$ Cinnamaldehyde

(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

4.

Above 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

5. $Me \!-\!\!\equiv\!\!-\! Me \xrightarrow{H_2 \text{ (1 mole), Ni}} (A) \xrightarrow{PhCO_3H, H_3O^+} (B) \xrightarrow{HIO_4} (C) \xrightarrow{\text{(i) EtMgBr, Et}_2O \text{ (ii) } H_3O^+} (D)$

The final product (D) in the above conversion is
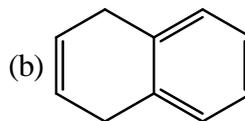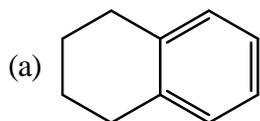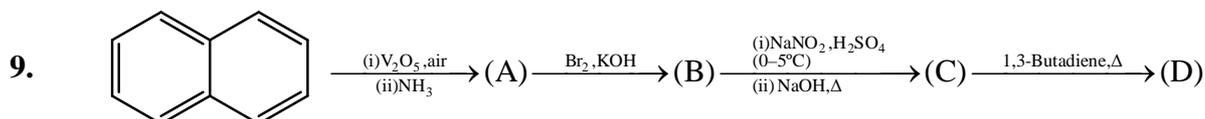
(a) Acetone　　　　(b) 2-Butanol　　　　(c) 1-Butanol　　　　(d) 2-Pentanol

6. The major product (P) in the following transformation is
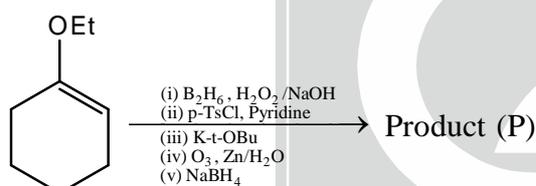
(a) Hexane-1,6-diol

(b) 1,6-Dihydroxyhexan-2-one

(c) Hexane-1,2,6-triol

(d) 2-Ethoxyhexane-1,6-diol

7. 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

8. Which of the following is true for the stereochemical relationship of the given structures (A-D)?
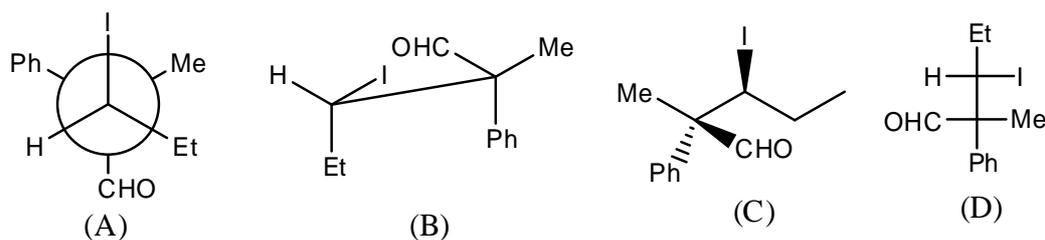
(a) (A) and (C) are homomers

(b) (B) and (C) are enantiomers

(c) (B) and (D) are homomers

(d) (A) and (D) are diastereomers

9.

$$\text{Naphthalene} \xrightarrow[\text{(ii)}NH_3]{\text{(i)}V_2O_5,\text{air}} (A) \xrightarrow{Br_2,KOH} (B) \xrightarrow[\text{(ii) NaOH},\Delta]{\substack{\text{(i)}NaNO_2,H_2SO_4\\(0-5°C)}} (C) \xrightarrow{\text{1,3-Butadiene},\Delta} (D)$$

(a)

(b)

(c)

(d)
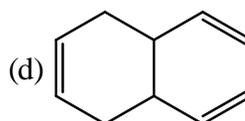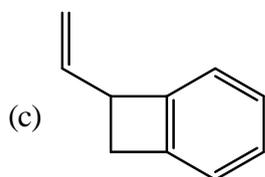
10. Which of the following amino compound (s) CANNOT be prepared by Gabriel phthalimide synthesis?

(A) n-Butylamine   (B) Alanine   (C) Aniline   (D) t-Butylamine

Choose the *correct* answer from the options given below:

(a) (B) and (D) only

(b) (C) and (D) only

(c) (A) and (B) only

(d) (B), (C) and (D) only

11. Match **List-I** with **List-II**

List-I	**List-II**
(Reaction name)	**(Reactant)**
(A) Friedlander's synthesis	(I) o-Aminobenzaldehyde
(B) Doebner-Miller's synthesis	(II) β-Phenylethylamide
(C) Hantzsch's synthesis	(III) Aniline
(D) Bischler-Napieralski's synthesis	(IV) β-Ketoester

Choose the *correct* answer from the options given below:

(a) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(b) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(c) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

(d) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

12. The following transformation is carried out by

$$C_2H_2 \xrightarrow{\text{(i)}} \underset{\substack{\text{Aromatic}\\\text{compound}}}{(A)} \xrightarrow{\text{(ii)}} \underset{C_7H_6O}{(B)} \xrightarrow{\text{(iii)}} \text{Isoquinoline}$$
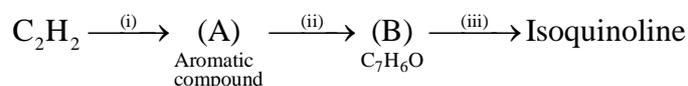
(a) (i) Cyclic polymerization, (ii) Gatterman-Koch's reaction, (iii) Bischler-Napierlski's reaction

(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

13. Consider the following statements with respect to Benzil-Benzilic acid rearrangement and Cannizarro's reaction

(A) Both are base catalyzed reactions

(B) Both reactions involve shifting of an anion in their mechanism

(C) Both reactions can occur inter-molecularly and intramolecularly

(D) Both involve simultaneous redox reactions

Choose the *correct* answer from the options given below:

(a) (A) and (B) only
(b) (A), (B) and (D) only
(c) (A) and (D) only
(d) (B), (C) and (D) only

14. 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

15. Which of the following compounds exhibits two ^{1}H-NMR signals and three ^{13}C-NMR signals?

(a) 1,2,3,5-tetramethylbenzene
(b) 1,4-diethylbenzene
(c) 1,2,4,5-tetramethylbenzene
(d) 1,2-diethylbenzene

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

(a) ——≡——H

(b) ——≡——

(c) N≡——

(d) H$_2$N——
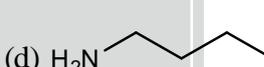
17. Which of the following set of peaks (m/z) appears in the mass spectrum of 2-pentanone?

(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

18. Arrange the following compounds in decreasing order of their rates of hydrolysis with water.

(A) Acetamide   (B) Acetyl chloride   (C) Ethyl acetate   (D) Acetic anhydride

Choose the *correct* answer from the options given below:

(a) (A), (C), (D), (B)
(b) (A), (C), (B), (D)
(c) (B), (D), (C), (A)
(d) (B), (D), (A), (C)

19. Arrange the following set of carbocations in order of decreasing stability.
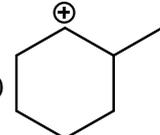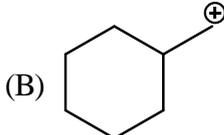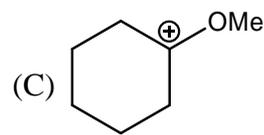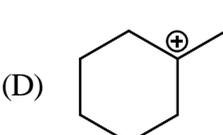
Choose the *correct* answer from the options given below:

(a) (C), (A), (B), (D)
(b) (D), (A), (C), (B)
(c) (B), (A), (D), (C)
(d) (C), (D), (A), (B)

20. The most stable conformation of the following is

(a)

(b)

(c)

(d)

21.
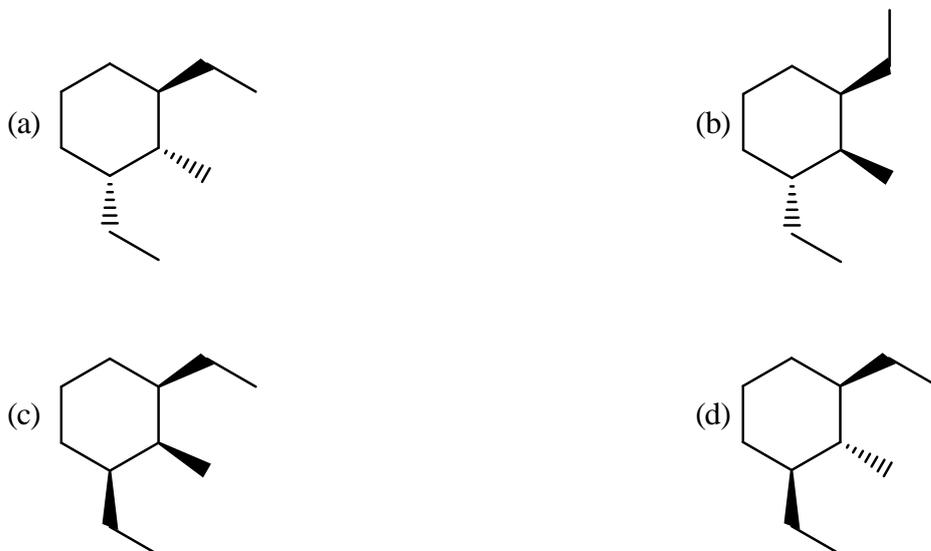
$$\underset{\text{O}}{\Bigr\rVert} \text{P} \xrightarrow[\text{(ii) Ni, EtOH/Reflux}]{\text{(i) HCl, EtSH}} \text{(Major)}$$

P is :

(a) Diethyldimethyl mercaptol

(b) Propane

(c) 2-Methylbutan-2-ol

(d) Propan-2-thiol

22. Which of the following is the most stable conformation of (+)-3,4-dibromo-3,4 dihydroxy hexane?

(a)

(b)

(c)

(d)
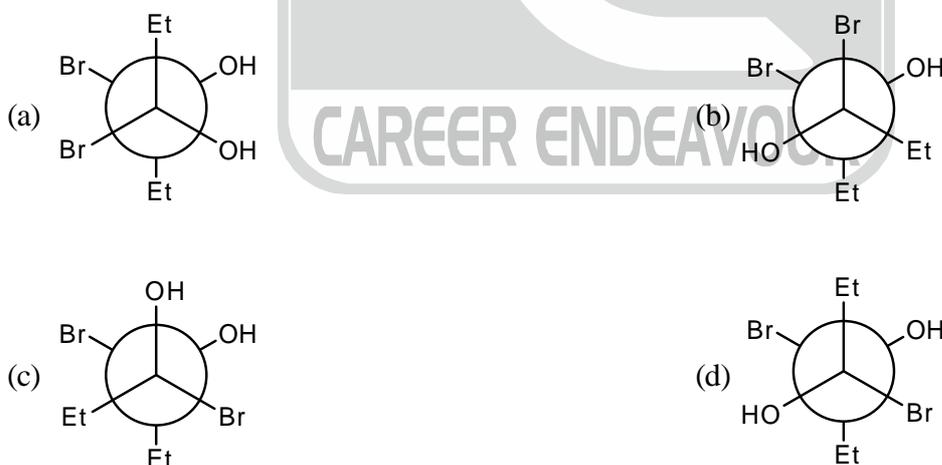
23. Identify A, B and C in the following reaction.

 $\xrightarrow[\text{(ii) H}_2\text{O}_2]{\text{(i) 2O}_3}$ A + B + C
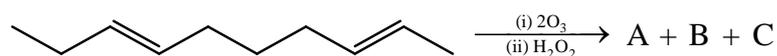
(a) A = Propanoic Acid, B = Glutaraldehyde and C = Acetaldehyde

(b) A = Propanaldehyde, B = Glutaraldehyde and C = Acetaldehyde

(c) A = Propanoic Acid, B = Glutaric acid and C = Acetic acid

(d) A = Propanoic Acid, B = Glutaric acid and C = Acetaldehyde

24. Which of the following are aromatic?

A   B   C   D
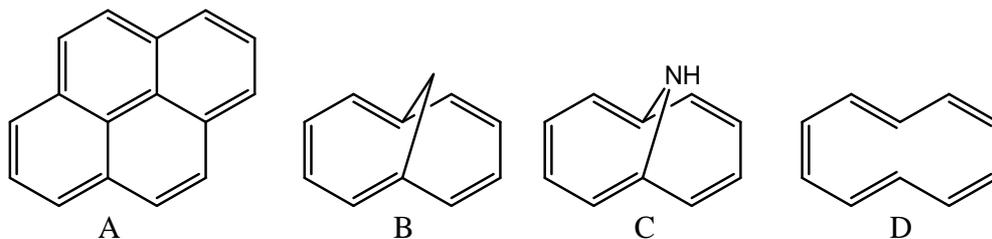
(a) A, B and D   (b) B and C   (c) B, C and D   (d) A, B and C

25. The major product (A) is

$$\xrightarrow[\Delta]{CHCl_3/NaOH, PTC} \text{Major Product}$$
(A)

(a)   (b)

(c)   (d)
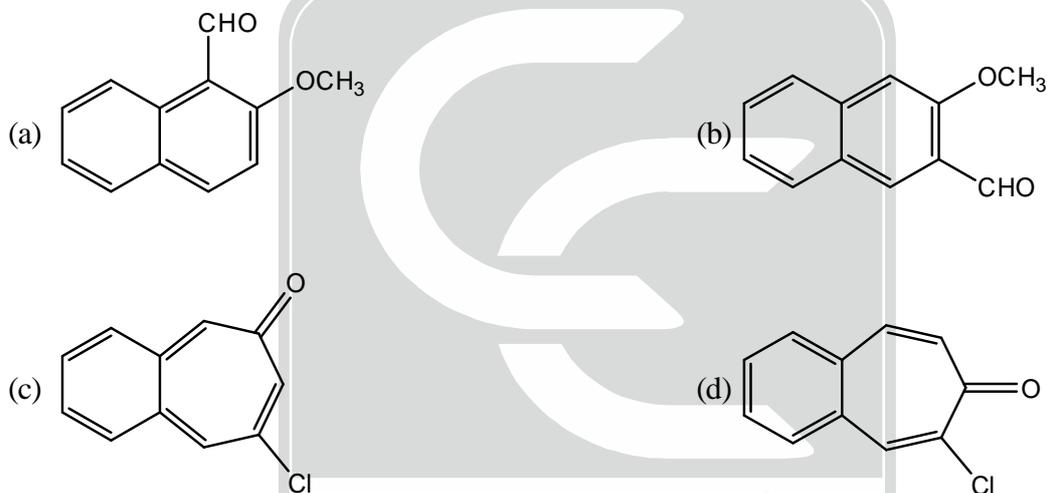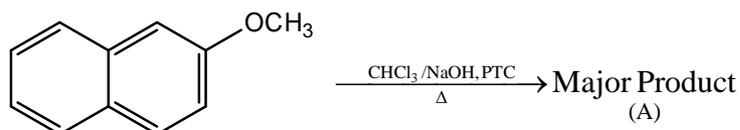
26. Match the name of the law given in **List-I** with the relation/formula given in **List-II**

List - I	List - II
Law Name	**Relation**
(A) Boyle's Law	(I) V/T = Constant
(B) Charles Law	(II) $\dfrac{r_1}{r_2} = \sqrt{\dfrac{M_2}{M_1}}$
(C) Avagadro's Law	(III) PV = Constant
(D) Graham's Law of Diffusion	(IV) $V \propto n$

Choose the *correct* answer from the options given below:

(a) (A)-(IV), (B)-(I), (C)-(II), (D)-(III)   (b) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(c) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)   (d) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

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

(A) It is directly proportional to the velocity difference between the two adjacent layers.

(B) It is inversely proportional to the area of contact between the two adjacent layers.

(C) It is inversely proportional to the distance between the two adjacent layers.

Choose the *correct* answer from the options given below:

(a) (A), (B) and (C) only

(b) (B) and (C) only

(c) (A) and (C) only

(d) (A) only

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

$$H_3PO_4 + H_2O \rightleftharpoons H_3O^+ + H_2PO_4^-; k_{a_1}$$

$$H_2PO_4^- + H_2O \rightleftharpoons H_3O^+ + HPO_4^{2-}; k_{a_2}$$

$$HPO_4^{2-} + H_2O \rightleftharpoons H_3O^+ + PO_4^{3-}; k_{a_3}$$

(a) $k_{a_1} = k_{a_2} = k_{a_3}$

(b) $k_{a_1} > k_{a_2} > k_{a_3}$

(c) $k_{a_1} < k_{a_2} < k_{a_3}$

(d) $k_{a_1} > k_{a_3} > k_{a_2}$

29. 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 volume 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) $P_{adia} > P_{iso}$

30. 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) Br_2(liquid)

(d) O_2(g)

31. 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 JK^{-1}

(b) 43.22 JK^{-1}

(c) 33.22 JK^{-1}

(d) 38.22 JK^{-1}

32. 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 $W = k^{N_A}$)

(a) 5.76 JK^{-1} mol^{-1}

(b) 7.76 JK^{-1} mol^{-1}

(c) 9.76 JK^{-1} mol^{-1}

(d) 11.76 JK^{-1} mol^{-1}

33. 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

34. 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:

(A) $\Delta G = \Delta A$ (B) $\Delta(pV) = 0$ (C) $\Delta G > \Delta A$ (D) $\Delta(nRT) = 0$

Choose the *correct* answer from the options given below:

(a) (A) and (B) only

(b) (B), (C) and (D) only

(c) (C) and (D) only

(d) (A), (B) and (D) only

35. In the Vibrational Raman Spectra the value of transition energy for the first overtone $(\Delta\varepsilon_{overtone})$ is:

(a) $\varpi_e(1 - 2\chi_e)\,cm^{-1}$

(b) $2\varpi_e(1 - 3\chi_e)\,cm^{-1}$

(c) $3\varpi_e(1 - 4\chi_e)\,cm^{-1}$

(d) $4\varpi_e(1 - 5\chi_e)\,cm^{-1}$

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

Given: 'I' 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) $\dfrac{IA^2 c}{Q/F}$ (b) $\dfrac{Ic^2 A}{Q/F}$ (c) $\dfrac{Ic^2 A}{F/Q}$ (d) $\dfrac{IAc}{Q/F}$

37. 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 reversible in nature.

38. 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

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

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

40. Consider the concentration cell

Pt | H$_2$ (1 bar) | HCl (a$_1$) $\vdots$ HCl (a$_2$) | H$_2$ (1 bar) | Pt

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

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

41. 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

42. 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) $F = 4 - P$

43. 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 $= \dfrac{1}{v_{max}}$; Slope $= \dfrac{K_M}{v_{max}}$ (b) Intercept $= \dfrac{2}{v_{max}}$; Slope $= \dfrac{2K_M}{v_{max}}$

(c) Intercept $= \dfrac{1}{2v_{max}}$; Slope $= \dfrac{K_M}{v_{max}}$ (d) Intercept $=$ zero; Slope $= \dfrac{K_M}{v_{max}}$

44. 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.

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

(A) Asymmetric affect disappears

(B) Electrophoretic affect disappears

(C) The ion moves so rapidly that it loses its ionic atmosphere

(D) The weak electrolyte is completely ionised at all dilutions

Choose the *correct* answer from the options given below:

(a) (A), (B) and (D) only   (b) (A) and (C) only

(c) (A), (B), (C) and (D)   (d) (B), (C) and (D) only

46. 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 -2.55×10^4 k. The activation energy in J/mol is

(a) 2.12×10^5 (b) 4.88×10^5

(c) 21.2×10^4 (d) 0.212×10^4

47. Which of the following reactions correctly represents a Daniell Cell?

(a) $Zn(aq) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(aq)$

(b) $ZnSO_4(s) + Cu(aq) \rightarrow CuSO_4(aq) + Zn(aq)$

(c) $Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$

(d) $ZnSO_4(aq) + Cu(s) \rightarrow CuSO_4(aq) + Zn(s)$

48. 10g of a nonvolatile solute, when dissolved in 100g of benzene raises its boiling point by 1°C. The molecular mass of the solute in g/mol is (K_b for benzene $= 2.53$K kg mol^{-1})?

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

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. Arrange the following spectral range in order of their increasing wavelength.

    (A) Radio   (B) Visible   (C) Infrared   (D) Ultraviolet

    Choose the *correct* answer from the options given below:

    (a) (A), (B), (C), (D)   (b) (D), (B), (C), (A)

    (c) (B), (A), (D), (C)   (d) (C), (B), (A), (D)

51. 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

52. Match the molecule/ion (**List-I**) with their number of bond pair(BP) and lone pair (LP) (**List-II**)

List - I	List - II
Molecule / ion	**BP / LP on central metal atom**
(A) SO_2	(I) BP = 4 and LP = 2
(B) ClF_3	(II) BP = 5 and LP = 1
(C) BrF_5	(III) BP = 2 and LP = 1
(D) XeF_4	(IV) BP = 3 and LP = 2

    Choose the *correct* answer from the options given below:

    (a) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)   (b) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)

    (c) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)   (d) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)

53. 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

54. Minamata disease is caused by _____ poisoning.

    (a) Pb   (b) Cd   (c) As   (d) Hg

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

    (A) LiF   (B) LiBr   (C) LiCl   (D) LiI

    Choose the *correct* answer from the options given below:

    (a) (A), (B), (C), (D)   (b) (A), (C), (B), (D)

    (c) (B), (A), (D), (C)   (d) (C), (B), (D), (A)

56. The number of radial nodes present in 4f orbital is

    (a) 0   (b) 1   (c) 2   (d) 3

57. From the following atoms, which will show the lowest first ionization energy(IE_1)?

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

58. The electronegativity of the Silicon (Si) atom using Allred-Rochow scale of electronegativity is

Given: The covalent radius for Si atom = 1.175 Angstrom.

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

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

(a) Tetrahedral   (b) Square planar

(c) Trigonal pyramidal   (d) Bent

60. Arrange the following in increasing order of bond order:

(A) He_2^+ (B) O_2^- (C) HF   (D) NO^+

Choose the *correct* answer from the options given below:

(a) (A), (B), (C), (D)   (b) (C), (D), (A), (B)

(c) (B), (A), (D), (C)   (d) (A), (C), (B), (D)

61. 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

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

(A) The metallic radii of the Cu and Au differs only by 12.5%

(B) Cu and Au have the same crystal structure

(C) The chemical properties of both the metals are similar

(D) The number of valence electrons is different in both

Choose the *correct* answer from the options given below:

(a) (A), (B) and (D) only   (b) (A), (B) and (C) only

(c) (A), (B), (C) and (D)   (d) (B), (C) and (D) only

63. 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) CO_2 (c) C   (d) O_2

64. Match the metals (**List-I**) with their ores (**List-II**)

List - I	List - II
Metals	**Ores**
(A) Mercury (Hg)	(I) Pyrolusite
(B) Lead (Pb)	(II) Calamine
(C) Manganese (Mn)	(III) Cinnabar
(D) Zinc (Zn)	(IV) Galena

Choose the *correct* answer from the options given below:

(a) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)   (b) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(c) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)   (d) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

65. 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

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

(a) Li_3N (b) NaN_3 (c) Ca_3N (d) $Pb(N_3)_2$

67. Match the Xenon compounds (**List-I**) with structures (**List-II**)

List - I	List - II
Xenon Compounds	**Structures**
(A) XeF_4	(I) Trigonal bipyramidal
(B) XeO_3	(II) Tetrahedral
(C) XeO_2F_2	(III) Pyramidal
(D) XeO_4	(IV) Square Planar

Choose the *correct* answer from the options given below:

(a) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)   (b) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(c) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)   (d) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)

68. The magnitude of CFSE depends on:

(A) The nature of the ligand

(B) The charge on the metal ion

(C) Position of the metal ion in transition series

(D) Geometry of the complex

Choose the *correct* answer from the options given below:

(a) (A), (B) and (C) only   (b) (B) and (C) only

(c) (A), (B), (C) and (D)   (d) (A) and (D) only

69. The CFSE for the d^8 octahedral ion is:

(a) $-0.4\Delta_0$ (b) $-0.6\Delta_0$ (c) $1.2\Delta_0$ (d) $-1.2\Delta_0$

70. The IUPAC name of the coordination compound is:

$[Rh(CO)_2I_2]^-$

(a) dicarbonyldiiodidorhodate (I)   (b) dicarbonyldiiodiderhodate (I)

(c) carbonylbisiodidorhodium (I)   (d) carbonyldiiodiderhodium (I)

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

(A) NH_3 (B) $C_2O_4^{2-}$ (C) OH^- (D) CN^-

Choose the *correct* answer from the options given below:

(a) (A), (B), (C), (D)   (b) (A), (C), (B), (D)

(c) (B), (A), (D), (C)   (d) (C), (B), (A), (D)

72. 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

73. Find the ground state term symbol for Pr^{3+}. (Pr = 59).

(a) $^3H_4$ (b) $^3H_6$ (c) $^3H_5$ (d) $^2F_{5/2}$

74. The biomedical applications of polyphosphazene polymers are:

(A) As structural materials for the construction of heart valves and blood vessels

(B) They are used in drug delivery systems

(C) Biodegradable support for *in vivo* bone regeneration

Choose the *correct* answer from the options given below:

(a) (A) and (B) only   (b) (B) and (C) only

(c) (A), (B) and (C)   (d) (A) and (C) only

75. Match the following organometallic compounds (**List-I**) with their Characteristics (**List-II**)

List - I	List - II
Organometallic Compounds	**Characteristics**
(A) $Fe(C_5H_5)_2$	(I) dsp^2 hybridization
(B) $K^+[PtCl_3(C_2H_4)]^-$	(II) Tetramer structure
(C) $Mg(CH_3)_2$	(III) Fluxionality
(D) $(CH_3)_2AlF_4$	(IV) Polymeric in nature

Choose the *correct* answer from the options given below:

(a) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)   (b) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(c) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)   (d) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)