SAMPLE HINTS AND SOLUTIONS

INSTITUTE NAME & LOGO

NEET – EXAM YEAR

Time : 45 Min	**Chem : Full Portion Paper**	**Marks : 180**

Hints and Solutions

46) Ans: **4)** This Statement 1 is false but the Statement 2 is true
Sol: Esters containing a-hydrogen on treatment with a base form a carbanion which brings about nucleophilic acyl substitution at the carbonyl group of the other molecule of the ester to form b-keto esters.

47) Ans: **2)** Both statement 1 and statement 2 are true but statement 2 is not the correct explanation of the statement 1.
Sol: In phenols, the lone pairs of electrons on the oxygen atom are delocalised over the benzene ring because of resonance and thus are not easily available for protonation. On the other hand, in alcohols, the lone pairs of electrons on oxygen atom are localized because of the absence of resonance and thus are easily available for protonation.

48) Ans: **4)** $CH \equiv CH$ and $AsCl_3$

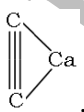
Sol: $HC \equiv CH + AsCl_3 \longrightarrow \underset{\text{2-chlorovinyl dichloroarsine (Lewsite)}}{ClHC = CH\,AsCl_2}$

49) Ans: **2)** Silicosis
Sol: Silicosis is caused by inhalation of dust containing free silica or silicon dioxide especially by workers engaged in mining, pottery, ceramic industry, sand blasting, building and construction industries.

50) Ans: **2)** -608 J
Sol: $W = -p\Delta V = -3\times(6-4)$
$W = -6\times101.32 \quad (\therefore 1\,L\,atm = 101.32\,J)$
$W = -608\,J$

51) Ans: **1)** ester.
Sol: $RCOOAg + R'I \rightarrow \underset{\text{ester}}{R\,COOR'} + Ag\,I$

52) Ans: **4)** one sigma (σ) and two pi (π) bonds.



Sol: In , two carbons are joined by $1\,\sigma$ and $2\,\pi$ bonds.

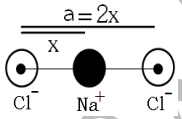
53) Ans: **1)** decreases.
Sol: The electronegativity decreases down the group.

54) Ans: **2)** propionaldehyde and Formaldehyde.

55) Ans: **2)** S – S

56) Ans: **3)** NaCl, CO_2 and NH_3
Sol: NaCl, CO_2 and NH_3

57) Ans: **2)** 2X pm
Sol: This can be given by



58) Ans: **2)** ethylene glycol.
Sol: Terylene is a polymer of ethylene glycol as well as terephthalic acid.

59) Ans: **3)** $\lambda = h/p$
Sol: $\lambda = \frac{h}{p} = \frac{h}{mv} = \frac{h}{mc}$ i.e. de-Broglie equation.

60) Ans: **1)** Newton's third law.
Sol: It is governed by the Newton's third law.

61) Ans: **2)** $0.34 - (-0.76) = 1.10\,V$
Sol: $E^o = E_{cathode} - E_{anode}$
$E^o = 0.34 - (-0.76) = 1.10$ volt

62) Ans: **4)** 5.07 atm
Sol: Here, $\pi = \frac{5\times0.0821\times1000\times423}{342\times100} = 5.07$ atm

63) Ans: **2)** 22 amu
Sol: Here, $_1H_2^3O = 16 + 2\times3 = 22$ amu

64) Ans: **1)** R – NHOH

65) Ans: **2)** to form complexes which are water soluble.
Sol: The hydrometallurgy is the process of dissolving the metal or its ore by the action of a suitable chemical reagent followed by recovery of the metal either by electrolysis or by the use of a suitable precipitating agent.

$4Au + 8KCN + 2H_2O + \underset{\text{air}}{O_2} \rightarrow 4K[Au(CN)_2] + 4KOH$

$2K[Au(CN)_2] + Zn \longrightarrow 2Au + K_2[Zn(CN)_4]$

66) Ans: **1)** NaCl
Sol: All cations are expected to act as Lewis acid as they are electron deficient in nature. However cation such as Na^+, K^+ etc. (Inert gas configuration) have a very little tendency to accept electrons. Thus, they do not act as Lewis acids in Friedel Craft's reaction.

67) Ans: **4)** PbO

68) Ans: **2)** the atomic weight.
Sol: The atomic weight;

$$\text{Equivalent weight} = \frac{\text{Atomic weight}}{\text{No. of } e^- \text{ lost or gained}}$$

Now, $Fe^{2+} \rightarrow Fe^{3+} + e^-$

$\therefore$ Equivalent weight = Atomic weight

69) Ans: **3)** Fe is oxidized to Fe^{2+} and dissolved oxygen in water is reduced to OH.
Sol: At anode : $Fe \rightarrow Fe^{2+} + 2e$

At cathode : $O_2 + 2H_2O + 4e \rightarrow 4OH^-$

The overall reaction is $2Fe + O_2 + 2H_2O \rightarrow 2Fe(OH)_2$

$Fe(OH)_2$ may be dehydrated to iron oxide FeO, or further oxidized to $Fe(OH)_3$ and then dehydrated to iron rust, Fe_2O_3.

70) Ans: **2)** IV > III > I > II

Sol: Bond length $\propto \frac{1}{\text{Bond order}}$

$$\text{Bond order} = \frac{\text{Bonding - antibonding electron}}{2}$$

The bond order is highest for C_2H_6, thus it has minimum bond strength.

71) Ans: **1)** an anaesthetic.

72) Ans: **4)** $OH^- + H^+$

Sol: Here, $H_2O \xrightarrow{\text{Photolysis}} OH^- + H^+$

73) Ans: **4)** 49

		$BaCl_2$	$\rightleftharpoons$	Ba^{2+}	+	$2Cl^-$
Sol:	Initially	1		0		0
	After dissociation	$1-\alpha$		α		2α

Total = $1 - \alpha + \alpha + 2\alpha = 1 + 2\alpha$

$$\therefore \alpha = \frac{1.98 - 1}{2} = \frac{0.98}{2} = 0.49$$

For a mole, $\alpha = 0.49$

$\therefore$ For 0.01 mole, $\alpha = \frac{0.49}{0.01} = 49$

74) Ans: **3)** ionic, covalent and co-ordinate covalent.
Sol:

$$4K^+ \left[\begin{matrix} N \equiv C \searrow & & \swarrow C \equiv N \\ N \equiv C \rightarrow Fe \leftarrow & & C \equiv N \\ N \equiv C \nearrow & & \nwarrow C \equiv N \end{matrix} \right]$$

75) Ans: **2)** A phosphate of one unit connects to a pentose of another.

76) Ans: **1)** HF > HCl > HBr > HI
Sol: HF > HCl > HBr > HI is the order of thermal stability.

77) Ans: **1)** $4KCN + Fe(CN)_2 \rightarrow K_4Fe(CN)_6$
Sol: In the reaction $4KCN + Fe(CN)_2 \rightarrow K_4Fe(CN)_6$, change in oxidation state is not occurring.

78) Ans: **1)** Spin
Sol: Spin quantum number is not related with Schrodinger equation as they always show $+1/2$, $-1/2$ value.

79) Ans: **2)** It can act both as oxidizing and reducing agent.
Sol: It acts both as a reducing agent as well as oxidizing agent.

80) Ans: **3)** $C_6H_6Cl_6$

Sol: $\underset{\text{Benzene}}{C_6H_6} + 3Cl_2 \xrightarrow{\text{U.V light}} \underset{\text{BHC}}{C_6H_6Cl_6}$

81) Ans: **4)** the same amount of ammonia is formed as is decomposed into N_2 and H_2.
Sol: At equilibrium, rate of forward reaction is same as the rate of backward reaction.

82) Ans: **4)** 8/9

Sol: n_{CH_4} = Number of moles of $CH_4 = \frac{m}{16}$

n_{H_2} = Number of moles of $H_2 = \frac{m}{2}$

The fraction partial pressure of H_2 is

$$H_2 = \frac{n_{H_2}}{n_{H_2} + n_{CH_4}} = \frac{\frac{m}{2}}{\frac{m}{2} + \frac{m}{16}} = \frac{\frac{m}{2}}{\frac{9m}{16}} = \frac{8}{9}$$

83) Ans: **3)** 10.8

Sol: Here, atomic mass $= \frac{10 \times 19 + 81 \times 11}{100}$

$$= \frac{190 + 891}{100} = \frac{1081}{100} = 10.81$$

84) Ans: **4)** Statement 1 is false but statement 2 is true.
Sol: Millon's test is a test used for proteins. When Millon's reagent is added to the aqueous solution of a protein, a white precipitate is obtained.

85) Ans: **3)**

$$2SO_2(g) + O_2(g) \xrightarrow{2NO} 2SO_3(g) + 2NO(g)$$

Sol: In $\underset{(g)}{2SO_2} + \underset{(g)}{O_2} \xrightarrow{2\,NO(g)} \underset{(g)}{2SO_3} + 2NO_{(g)}$, the reactants and catalyst are present in same phase.

86) Ans: **3)** Na_2CO_3

Sol: Aqueous solution of Na_2CO_3 is alkaline because of hydrolysis of CO_3^{--}.

87) Ans: **2)** 25^oC and 1 atm

88) Ans: **1)** Henry's law.

89) Ans: **3)** $M_2(CO_3)_3$

Sol: Since the molecular formula of chloride of a metal M is MCl_3, it is trivalent thus formula of its carbonate will be $M_2(CO_3)_3$.

90) Ans: **1)** siderophile.

Sol: