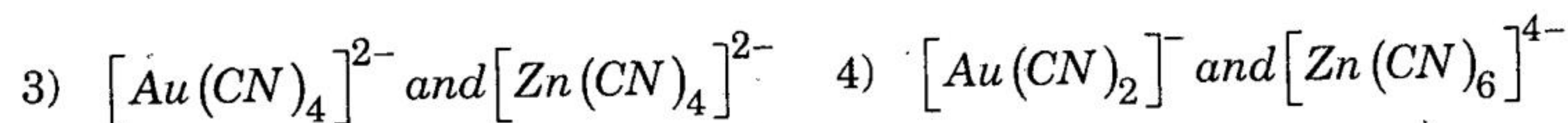


CHEMISTRY

$$Au + CN^- + H_2O \xrightarrow{O_2} [X]$$

$$1) \quad [Au(CN)_2]^- \text{ and } [Zn(CN)_4]^{2-} \quad 2) \quad [Au(CN)_4]^{3-} \text{ and } [Zn(CN)_4]^{2-}$$


1) 5 2) 50
3) 100 4) 10

- 1) has molecules of variable molecular masses like polymers.
- 2) has carbon atoms arranged in large plates of rings of strongly bound carbon atoms with weak interplate bonds.
- 3) is a non-crystalline substance.
- 4) is an allotropic form of carbon.

1) antimalarial 2) antipyretic
3) analgesic 4) both 2 and 3

1) 2 g of water

2) 2 g of sulphur dioxide

3) 2 g of carbon dioxide

4) 2 g of carbon monoxide.

SR - 33

Turn Over

66. Which one of the following shows functional isomerism ?

- | | |
|---------------|---------------|
| 1) CH_2Cl_2 | 2) C_2H_5OH |
| 3) C_3H_6 | 4) C_2H_4 |

67. In the ionic equation – $BiO_3^- + 6H^+ + Xe^- \longrightarrow Bi^{3+} + 3H_2O$,
the values of X is –

- | | |
|------|------|
| 1) 3 | 2) 4 |
| 3) 2 | 4) 6 |

68. Molarity of a given orthophosphoric acid solution is 3M. It's normality is –

- | | |
|----------|--------|
| 1) 1 N | 2) 3 N |
| 3) 0.3 N | 4) 9 N |

69. Acidified sodium fusion extract on addition of ferric chloride solution gives blood red colouration which confirms the presence of –

- | | |
|------------|-------------|
| 1) S | 2) N |
| 3) N and S | 4) S and Cl |

70. A body of mass 10 mg is moving with a velocity of 100 ms^{-1} . The wavelength of de-Broglie wave associated with it would be –

(Note : $h = 6.63 \times 10^{-34} \text{ Js}$)

- | | |
|-------------------------------------|-------------------------------------|
| 1) $6.63 \times 10^{-37} \text{ m}$ | 2) $6.63 \times 10^{-31} \text{ m}$ |
| 3) $6.63 \times 10^{-34} \text{ m}$ | 4) $6.63 \times 10^{-35} \text{ m}$ |

(Space for Rough Work)

71. Mg^{2+} is isoelectronic with

- | | |
|--------------|--------------|
| 1) Ca^{2+} | 2) Na^+ |
| 3) Zn^{2+} | 4) Cu^{2+} |

72. Gram molecular volume of oxygen at STP is –

- | | |
|------------------------|------------------------|
| 1) 11200 cm^3 | 2) 22400 cm^3 |
| 3) 5600 cm^3 | 4) 3200 cm^3 |

73. Presence of halogen in organic compounds can be detected using –

- | | |
|---------------------|------------------|
| 1) Beilstein's test | 2) Kjeldahl test |
| 3) Duma's test | 4) Leibig's test |

74. The electronic configuration of Cr^{3+} is

- | | |
|--------------------|--------------------|
| 1) $[Ar]3d^5 4s^1$ | 2) $[Ar]3d^2 4s^1$ |
| 3) $[Ar]3d^3 4s^0$ | 4) $[Ar]3d^4 4s^2$ |

75. The mass of a metal, with equivalent mass 31.75, which would combine with 8 g of oxygen is

- | | |
|----------|----------|
| 1) 31.75 | 2) 3.175 |
| 3) 8 | 4) 1 |

(Space for Rough Work)

76. Benzene reacts with chlorine in sunlight to give a final product –
- 1) C_6H_5Cl
 - 2) C_6Cl_6
 - 3) $C_6H_6Cl_6$
 - 4) CCl_4
77. In the periodic table metals usually used as catalysts belong to
- 1) s - block
 - 2) p - block
 - 3) d - block
 - 4) f - block
78. Dalton's law of partial pressures is applicable to which one of the following systems ?
- 1) $CO + H_2$
 - 2) $H_2 + Cl_2$
 - 3) $NO + O_2$
 - 4) $NH_3 + HCl$
79. The general formula of a cycloalkane is
- 1) C_nH_{2n+2}
 - 2) C_nH_{2n-2}
 - 3) C_nH_{2n}
 - 4) C_nH_n
80. In acetylene molecule, between the carbon atoms there are –
- 1) three sigma bonds
 - 2) two sigma and one pi bonds
 - 3) one sigma and two pi bonds
 - 4) three pi bonds

(Space for Rough Work)

81. Denatured alcohol is
- 1) Rectified spirit
 - 2) Undistilled ethanol
 - 3) Rectified spirit + methanol + naphtha
 - 4) Ethanol + methanol
82. During the formation of a chemical bond
- 1) energy decreases
 - 2) energy increases
 - 3) energy of the system does not change
 - 4) electron-electron repulsion becomes more than the nucleus-electron attraction
83. One mole of oxygen at 273 k and one mole of sulphur dioxide at 546 k are taken in two separate containers, then,
- 1) kinetic energy of $O_2 >$ kinetic energy of SO_2 .
 - 2) kinetic energy of $O_2 <$ kinetic energy of SO_2 .
 - 3) kinetic energy of both are equal.
 - 4) None of these
84. +I effect is shown by
- | | |
|------------|------------|
| 1) $-NO_2$ | 2) $-Cl$ |
| 3) $-Br$ | 4) $-CH_3$ |
85. Formation of coloured solution is possible when metal ion in the compound contains
- | | |
|---------------------------|-----------------------|
| 1) paired electrons | 2) unpaired electrons |
| 3) lone pair of electrons | 4) none of these |

(Space for Rough Work)

86. Which of the following is an intensive property ?

- | | |
|----------------|--------------------|
| 1) temperature | 2) surface tension |
| 3) viscosity | 4) all of these |

87. Hofmann's bromamide reaction is to convert

- | | |
|--------------------|--------------------|
| 1) amine to amide | 2) amide to amine |
| 3) alcohol to acid | 4) acid to alcohol |

88. IUPAC name of $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ is

- | | |
|----------------------------------|---------------------------------------|
| 1) sodium cobaltinitrite | 2) sodium hexanitrito cobaltate (III) |
| 3) sodium hexanitro cobalt (III) | 4) sodium hexanitrito cobaltate (II) |

89. Thermodynamic standard conditions of temperature and pressure are

- | | |
|--------------------------------|-------------------------------------|
| 1) 0°C and 1 atm | 2) 273 k and 101.3 k Pa |
| 3) 298 k and 1 atm | 4) 0°C and 101.3 k Pa |

90. How many chiral carbon atoms are present in 2, 3, 4 - trichloropentane ?

- | | |
|------|------|
| 1) 3 | 2) 2 |
| 3) 1 | 4) 4 |

(Space for Rough Work)

91. The number of unidentate ligands in the complex ion is called
- 1) EAN
 - 2) Coordination number
 - 3) primary valency
 - 4) oxidation number
92. $2SO_{2(g)} + O_{2(g)} \xrightarrow{V_2O_5}$ is an example for
- 1) irreversible reaction
 - 2) heterogenous catalysis
 - 3) homogenous catalysis
 - 4) neutralisation reaction
93. The amino acid which is not optically active is
- 1) glycine
 - 2) alanine
 - 3) serine
 - 4) lactic acid
94. For a stable molecule the value of bond order must be
- 1) negative
 - 2) positive
 - 3) zero
 - 4) there is no relationship between stability and bond order.
95. Which one of the following is a second order reaction ?
- 1) $CH_3COOCH_3 + NaOH \longrightarrow CH_3COONa + H_2O$
 - 2) $H_2 + Cl_2 \xrightarrow{\text{sunlight}} 2HCl$
 - 3) $NH_4NO_3 \longrightarrow N_2 + 3H_2O$
 - 4) $H_2 + Br_2 \longrightarrow 2HBr$

(Space for Rough Work)

96. According to Bayer's strain theory which is highly stable ?

- | | |
|-----------------|-----------------|
| 1) cyclohexane | 2) cycloheptane |
| 3) cyclopentane | 4) cyclobutane |

97. The number of antibonding electron pairs in O_2^{2-} molecular ion on the basis of molecular orbital theory is

[Note - Atomic number of O is 18]

- | | |
|------|------|
| 1) 2 | 2) 3 |
| 3) 4 | 4) 5 |

98. Hydroxyl ion concentration of 1M HCl is

- | | |
|--|---|
| 1) $1 \times 10^{-14} \text{ mol dm}^{-3}$ | 2) $1 \times 10^{-1} \text{ mol dm}^{-3}$ |
| 3) $1 \times 10^{-13} \text{ mol dm}^{-3}$ | 4) $1 \times 10^1 \text{ mol dm}^{-3}$ |

99. Geometrical isomerism is shown by

- | | |
|---|-------------------|
| 1) $-C-C-$ | 2) $-C \equiv C-$ |
| 3) $\begin{array}{c} \diagup \quad \diagdown \\ C = C \\ \diagdown \quad \diagup \end{array}$ | 4) None of these |

100. The oxidation state of iron in $K_4[Fe(CN)_6]$ is

- | | |
|------|------|
| 1) 2 | 2) 3 |
| 3) 4 | 4) 1 |

(Space for Rough Work)

101. In which of the following process, a maximum increase in entropy is observed ?

- | | |
|---------------------------------|--------------------------|
| 1) dissolution of salt in water | 2) condensation of water |
| 3) sublimation of naphthalene | 4) melting of ice |

102. Decomposition of benzene diozonium chloride by using Cu_2Cl_2/HCl to form chlorobenzene is

- | | |
|--------------------------|-----------------------|
| 1) Cannizarro's reaction | 2) Kolbe's reaction |
| 3) Sandmeyer's reaction | 4) Raschig's reaction |

103. Which complex can not ionise in solution ?

- | | |
|-----------------------|-----------------------|
| 1) $[Pt(NH_3)_6]Cl_4$ | 2) $K_2[Pt(F_6)]$ |
| 3) $K_4[Fe(CN)_6]$ | 4) $[CoCl_3(NH_3)_3]$ |

104. Considering the reaction $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} + 393.5 \text{ kJ}$ the signs of ΔH , ΔS and ΔG respectively are

- | | |
|--------------|--------------|
| 1) $-, +, -$ | 2) $-, -, -$ |
| 3) $-, +, +$ | 4) $+, -, -$ |

105. The product formed when hydroxylamine condenses with a carbonyl compound is called

- | | |
|--------------|--------------|
| 1) hydrazone | 2) hydrazine |
| 3) oxime | 4) hydrazide |

(Space for Rough Work)

106. Which of the following forms a colourless solution in aqueous medium?

- | | |
|--------------|--------------|
| 1) Ti^{3+} | 2) Sc^{3+} |
| 3) V^{3+} | 4) Cr^{3+} |

107. When a sulphur sol is evaporated sulphur is obtained. On mixing with water sulphur sol is not formed. The sol is

- | | |
|----------------|----------------|
| 1) hydrophilic | 2) hydrophobic |
| 3) reversible | 4) lyophilic |

108. An alkyl halide reacts with alcoholic ammonia in a sealed tube, the product formed will be

- | | |
|---------------------|-------------------------------|
| 1) a primary amine | 2) a secondary amine |
| 3) a tertiary amine | 4) a mixture of all the three |

109. When conc. H_2SO_4 is heated with P_2O_5 , the acid is converted into

- 1) sulphur
- 2) sulphur dioxide
- 3) sulphur trioxide
- 4) a mixture of sulphur dioxide and sulphur trioxide

110. Entropy of the universe is

- | | |
|----------------------------|----------------------------|
| 1) continuously increasing | 2) continuously decreasing |
| 3) zero | 4) constant |

(Space for Rough Work)

111. Which of the following salts on being dissolved in water gives $\text{pH} > 7$ at 25°C ?

- | | |
|---------------------------|---------------------------|
| 1) NH_4CN | 2) NH_4Cl |
| 3) KNO_3 | 4) KCN |

112. The reagent used in Clemmenson's reduction is

- | | |
|--|----------------------------------|
| 1) alc. KOH | 2) aq. KOH |
| 3) $\text{Zn} - \text{Hg} / \text{con. HCl}$ | 4) Conc. H_2SO_4 |

113. When KBr is dissolved in water, K^+ ions are

- | | |
|---------------|-------------|
| 1) oxidised | 2) reduced |
| 3) hydrolysed | 4) hydrated |

114. The noble gas mixture is cooled in a coconut bulb at 173 K . The gases that are not adsorbed are

- | | |
|--------------------------------|--------------------------------|
| 1) He and Ne | 2) Ar and Kr |
| 3) He and Xe | 4) Ne and Xe |

115. The volume of 10N and 4N HCl required to make 1 litre of 7N HCl are

- | |
|---|
| 1) 0.75 litre of 10N HCl and 0.25 litre of 4N HCl |
| 2) 0.80 litre of 10N HCl and 0.20 litre of 4N HCl |
| 3) 0.60 litre of 10N HCl and 0.40 litre of 4N HCl |
| 4) 0.50 litre of 10N HCl and 0.50 litre of 4N HCl |

(Space for Rough Work)

116. A metal present in insulin is

- | | |
|-----------|--------------|
| 1) copper | 2) iron |
| 3) zinc | 4) aluminium |

117. Carbon forms two oxides which have different compositions. The equivalent mass of which remains constant ?

- | | |
|------------------------------|---------------------------|
| 1) carbon | 2) oxygen |
| 3) neither carbon nor oxygen | 4) both carbon and oxygen |

118. Maximum number of molecules of CH_3I that can react with a molecule of CH_3NH_2 are

- | | |
|------|------|
| 1) 1 | 2) 2 |
| 3) 4 | 4) 3 |

119. Ellingham diagram represents a graph of

- | | |
|----------------------|------------------------|
| 1) ΔG Vs T | 2) ΔG^0 Vs T |
| 3) ΔS Vs P | 4) ΔG Vs P |

120. Identify the ore not containing iron

- | | |
|------------------|---------------|
| 1) chalcopirites | 2) carnallite |
| 3) siderite | 4) limonite |

(Space for Rough Work)