

61. The correct order in which the first ionisation potential increases is
- 1) Na, K, Be
 - 2) K, Na, Be
 - 3) K, Be, Na
 - 4) Be, Na, K
62. 10 cm^3 of 0.1 N monobasic acid requires 15 cm^3 of sodium hydroxide solution whose normality is
- 1) 1.5 N
 - 2) 0.15 N
 - 3) 0.066 N
 - 4) 0.66 N
63. The IUPAC name for tertiary butyl iodide is
- 1) 4-Iodobutane
 - 2) 2-Iodobutane
 - 3) 1-Iodo, 3-methyl propane
 - 4) 2-Iodo 2-methyl propane
64. When sulphur dioxide is passed in an acidified $K_2Cr_2O_7$ solution, the oxidation state of sulphur is changed from
- 1) $+4$ to 0
 - 2) $+4$ to $+2$
 - 3) $+4$ to $+6$
 - 4) $+6$ to $+4$
65. Mass of 0.1 mole of Methane is
- 1) 1 g
 - 2) 16 g
 - 3) 1.6 g
 - 4) 0.1 g

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66. Methoxy methane and ethanol are
- 1) Position isomers
 - 2) Chain isomers
 - 3) Functional isomers
 - 4) Optical isomers
67. When the azimuthal quantum number has the value of 2, the number of orbitals possible are
- 1) 7
 - 2) 5
 - 3) 3
 - 4) 0
68. For the reaction $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$ the volume of carbon monoxide required to reduce one mole of ferric oxide is
- 1) 22.4 dm^3
 - 2) 44.8 dm^3
 - 3) 67.2 dm^3
 - 4) 11.2 dm^3
69. The monomers of Buna-S rubber are
- 1) vinyl chloride and sulphur
 - 2) butadiene
 - 3) styrene and butadiene
 - 4) isoprene and butadiene
70. An element with atomic number 21 is a
- 1) halogen
 - 2) representative element
 - 3) transition element
 - 4) alkali metal

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71. The maximum number of hydrogen bonds that a molecule of water can have is
1) 1
2) 2
3) 3
4) 4
72. A gas deviates from ideal behaviour at a high pressure because its molecules
1) attract one another
2) show the Tyndall effect
3) have kinetic energy
4) are bound by covalent bonds
73. The reagent used to convert an alkyne to alkene is
1) Zn / HCl
2) Sn / HCl
3) $Zn-Hg / HCl$
4) Pd / H_2
74. When compared to ΔG^0 for the formation of Al_2O_3 , the ΔG^0 for the formation of Cr_2O_3 is
1) higher
2) lower
3) same
4) unpredictable
75. In order to increase the volume of a gas by 10%, the pressure of the gas should be
1) increased by 10 %
2) increased by 1 %
3) decreased by 10 %
4) decreased by 1 %

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76. Catalytic dehydrogenation of a primary alcohol gives a
- 1) secondary alcohol
 - 2) aldehyde
 - 3) ketone
 - 4) ester
77. Excess of PCl_5 reacts with conc. H_2SO_4 giving
- 1) chlorosulphonic acid
 - 2) thionyl chloride
 - 3) sulphuryl chloride
 - 4) sulphurous acid
78. If one mole of ammonia and one mole of hydrogen chloride are mixed in a closed container to form ammonium chloride gas, then
- 1) $\Delta H > \Delta u$
 - 2) $\Delta H = \Delta u$
 - 3) $\Delta H < \Delta u$
 - 4) there is no relationship
79. The compound on dehydrogenation gives a ketone. The original compound is
- 1) primary alcohol
 - 2) secondary alcohol
 - 3) tertiary alcohol
 - 4) carboxylic acid
80. Which is the most easily liquifiable rare gas ?
- 1) Xe
 - 2) Kr
 - 3) Ar
 - 4) Ne

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81. Mesomeric effect involves delocalisation of
- 1) π electrons
 - 2) sigma electrons
 - 3) protons
 - 4) none of these
82. Which of the following has the maximum number of unpaired 'd' electrons ?
- 1) Zn^{2+}
 - 2) Fe^{2+}
 - 3) Ni^{3+}
 - 4) Cu^+
83. One mole of which of the following has the highest entropy?
- 1) liquid nitrogen
 - 2) hydrogen gas
 - 3) mercury
 - 4) diamond
84. Which of the following species does not exert a resonance effect ?
- 1) $C_6H_5NH_2$
 - 2) $C_6H_5NH_3^+$
 - 3) C_6H_5OH
 - 4) C_6H_5Cl
85. A complex compound in which the oxidation number of a metal is zero is
- 1) $K_4[Fe(CN)_6]$
 - 2) $K_3[Fe(CN)_6]$
 - 3) $[Ni(CO)_4]$
 - 4) $[Pt(NH_3)_4]Cl_2$

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91. The number of nodal planes present in σ^*s antibonding orbitals is
- 1) 1
 - 2) 2
 - 3) 0
 - 4) 3
92. Which of the following electrolytic solutions has the least specific conductance ?
- 1) 0.02 N
 - 2) 0.2 N
 - 3) 2 N
 - 4) 0.002 N
93. The overlapping of orbitals in benzene is of the type
- 1) $sp - sp$
 - 2) $p - p$
 - 3) $sp^2 - sp^2$
 - 4) $sp^3 - sp^3$
94. The calculated bond order of superoxide ion (O_2^-) is
- 1) 2.5
 - 2) 2
 - 3) 1.5
 - 4) 1
95. Which of the following can be measured by the Ostwald-Walker dynamic method ?
- 1) Relative lowering of vapour pressure
 - 2) Lowering of vapour pressure
 - 3) Vapour pressure of the solvent
 - 4) all of these

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96. *n*-propyl bromide on treating with alcoholic *KOH* produces
- 1) propane
 - 2) propene
 - 3) propyne
 - 4) propanol
97. Mercury is a liquid metal because
- 1) it has a completely filled *s*-orbital
 - 2) it has a small atomic size
 - 3) it has a completely filled *d*-orbital that prevents *d-d* overlapping of orbitals
 - 4) it has a completely filled *d*-orbital that causes *d-d* overlapping
98. A compound is formed by elements *A* and *B*. This crystallises in the cubic structure where the *A* atoms are at the corners of the cube and *B* atoms are at the body centres. The simplest formula of the compound is
- 1) AB
 - 2) A_6B
 - 3) A_8B_4
 - 4) AB_6
99. Anisole can be prepared by the action of methyl iodide on sodium phenate. The reaction is called
- 1) Wurtz's reaction
 - 2) Williamson's reaction
 - 3) Fittig's reaction
 - 4) Etard's reaction
100. Malleability and ductility of metals can be accounted due to
- 1) the presence of electrostatic force
 - 2) the crystalline structure in metal
 - 3) the capacity of layers of metal ions to slide over the other
 - 4) the interaction of electrons with metal ions in the lattice

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101. An ionic compound is expected to have tetrahedral structure if $\frac{r_+}{r_-}$ lies in the range of

- 1) 0.414 to 0.732
- 2) 0.225 to 0.414
- 3) 0.155 to 0.225
- 4) 0.732 to 1

102. Among the following, which is least acidic ?

- 1) phenol
- 2) O-cresol
- 3) p-nitrophenol
- 4) p-chlorophenol

103. A ligand can also be regarded as

- 1) Lewis acid
- 2) Bronsted base
- 3) Lewis base
- 4) Bronsted acid

104. The colour of sky is due to

- 1) transmission of light
- 2) wavelength of scattered light
- 3) absorption of light by atmospheric gases
- 4) All of these

105. Which of the following organic compounds answers to both iodoform test and Fehling's test?

- 1) ethanol
- 2) methanal
- 3) ethanal
- 4) propanone

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106. Helium is used in balloons in place of hydrogen because it is

- 1) incombustible
- 2) lighter than hydrogen
- 3) radioactive
- 4) more abundant than hydrogen

107. The basic principle of Cottrell's precipitator is

- 1) Le-chatelier's principle
- 2) peptisation
- 3) neutralisation of charge on colloidal particles
- 4) scattering of light

108. When carbon monoxide is passed over solid caustic soda heated to 200°C , it forms

- 1) Na_2CO_3
- 2) NaHCO_3
- 3) HCOONa
- 4) CH_3COONa

109. $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3 + \text{heat}$. What is the effect of the increase of temperature on the equilibrium of the reaction?

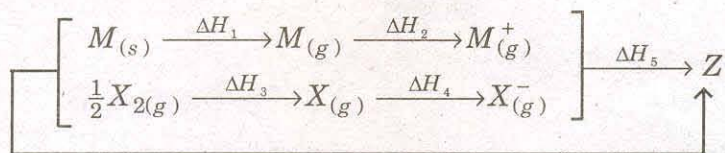
- 1) equilibrium is shifted to the left
- 2) equilibrium is shifted to the right
- 3) equilibrium is unaltered
- 4) reaction rate does not change

110. Hydrogen gas is not liberated when the following metal is added to dil. HCl

- 1) Ag
- 2) Zn
- 3) Mg
- 4) Sn

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111. Consider the Born-Haber cycle for the formation of an ionic compound given below and identify the compound (Z) formed.



- | | |
|-------------|-------------------|
| 1) M^+X^- | 2) $M^-X_{(s)}^-$ |
| 3) MX | 4) $M^+X_{(g)}^-$ |

112. In the brown ring test, the brown colour of the ring is due to

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|---------------------------------|----------------------------|
| 1) ferrous nitrate | 2) ferric nitrate |
| 3) a mixture of NO and NO_2 | 4) nitrosoferrous sulphate |

113. Amines behave as

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|-----------------|---------------------|
| 1) Lewis acids | 2) Lewis base |
| 3) aprotic acid | 4) neutral compound |

114. Dalda is prepared from oils by

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|---------------|-----------------|
| 1) oxidation | 2) reduction |
| 3) hydrolysis | 4) distillation |

115. The chemical name of anisole is

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|------------------|--------------------|
| 1) Ethanoic acid | 2) Methoxy benzene |
| 3) Propanone | 4) Acetone |

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116. The number of disulphide linkages present in insulin are

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

117. 80 g of oxygen contains as many atoms as in

- 1) 80 g of hydrogen
- 2) 1 g of hydrogen
- 3) 10 g of hydrogen
- 4) 5 g of hydrogen

118. Which metal has a greater tendency to form metal oxide ?

- 1) *Cr*
- 2) *Fe*
- 3) *Al*
- 4) *Ca*

119. Identify the reaction that does not take place in a blast furnace.

- 1) $CaCO_3 \longrightarrow CaO + CO_2$
- 2) $CaO + SiO_2 \longrightarrow CaSiO_3$
- 3) $2Fe_2O_3 + 3C \longrightarrow 4Fe + 3CO_2$
- 4) $CO_2 + C \longrightarrow 2CO$

120. Waxes are esters of

- 1) glycerol
- 2) long chain alcohols
- 3) glycerol and fatty acid
- 4) long chain alcohols and long chain fatty acids

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