

**CHEMISTRY**

51. Bulletproof helmets are made from
A) Lexan B) Saran C) Glyptal D) Thiokol
52. Which metal is refined by Mond Process ?
A) Titanium B) Copper C) Nickel D) Zinc
53. Isopropyl methyl ether when treated with cold hydrogen iodide gives
A) isopropyl iodide and methyl iodide B) isopropyl alcohol and methyl iodide
C) isopropyl alcohol and methyl alcohol D) isopropyl iodide and methyl alcohol
54. In face centred cubic unit cell, what is the volume occupied ?
A) $\frac{4}{3}\pi r^3$ B) $\frac{8}{3}\pi r^3$ C) $\frac{16}{3}\pi r^3$ D) $\frac{64r^3}{3\sqrt{3}}$
55. Glucose on oxidation with bromine water yields gluconic acid. This reaction confirms presence of
A) six carbon atoms linked in straight chain
B) secondary alcoholic group in glucose
C) aldehyde group in glucose
D) primary alcoholic group in glucose
56. Which among the following solids is a nonpolar solid ?
A) Hydrogen chloride B) Sulphur dioxide
C) Water D) Carbon dioxide
57. Identify the metal that forms colourless compounds.
A) Iron (Z = 26) B) Chromium (Z = 24)
C) Vanadium (Z = 23) D) Scandium (Z = 21)
58. What is the highest oxidation state exhibited by group 17 elements ?
A) + 1 B) + 3 C) + 5 D) + 7
59. Mathematical equation of first law of thermodynamics for isochoric process is
A) $\Delta U = q_v$ B) $-\Delta U = q_v$ C) $q = -W$ D) $\Delta U = W$
60. Name the catalyst used in commercial method of preparation of phenol.
A) Silica B) Calcium phosphate
C) Anhydrous aluminium chloride D) Cobalt naphthenate
61. Which halide of magnesium has highest ionic character ?
A) Chloride B) Bromide C) Iodide D) Fluoride
62. The reaction takes place in two steps as
i) $\text{NO}_2\text{Cl}_{(g)} \xrightarrow{K_1} \text{NO}_2_{(g)} + \text{Cl}_{(g)}$
ii) $\text{NO}_2\text{Cl}_{(g)} + \text{Cl}_{(g)} \xrightarrow{K_2} \text{NO}_2_{(g)} + \text{Cl}_2_{(g)}$
Identify the reaction intermediate
A) $\text{NO}_2\text{Cl}_{(g)}$ B) $\text{NO}_2_{(g)}$ C) $\text{Cl}_2_{(g)}$ D) $\text{Cl}_{(g)}$

SPACE FOR ROUGH WORK



63. Which of the following aminoacids is basic in nature ?
A) Valine B) Tyrosine C) Arginine D) Leucine
64. The relation between solubility of a gas in liquid at constant temperature and external pressure is stated by which law ?
A) Raoult's law B) van't Hoff Boyle's law
C) van't Hoff Charles' law D) Henry's law
65. Which among the following phenolic compounds is most acidic in nature ?
A) p-aminophenol B) phenol
C) m-nitrophenol D) p-nitrophenol
66. The rate constant and half life of a first order reaction are related to each other as
A) $t_{1/2} = \frac{0.693}{K}$ B) $t_{1/2} = 0.693 K$ C) $K = 0.693 t_{1/2}$ D) $K t_{1/2} = \frac{1}{0.693}$
67. What is the combining ratio of glycerol and fatty acids when they combine to form triglyceride ?
A) 3 : 4 B) 3 : 2 C) 1 : 3 D) 1 : 2
68. The molecular formula of Wilkinson catalyst, used in hydrogenation of alkenes is
A) $\text{Co}(\text{CO})_8$ B) $(\text{Ph}_3\text{P})_3 \text{RhCl}$
C) $[\text{Pt}(\text{NH}_3)_2 \text{Cl}_2]$ D) $\text{K}[\text{Ag}(\text{CN})_2]$
69. The criterion for a spontaneous process is
A) $\Delta G > 0$ B) $\Delta G < 0$ C) $\Delta G = 0$ D) $\Delta S_{\text{total}} < 0$
70. Brown ring test is used for detection of which radical ?
A) Ferrous B) Nitrite C) Nitrate D) Ferric
71. In the cell represented by $\text{Pb}_{(s)} | \text{Pb}^{2+}_{(1M)} || \text{Ag}^{+}_{(1M)} | \text{Ag}_{(s)}$, the reducing agent is
A) Pb B) Pb^{2+} C) Ag D) Ag^{+}
72. Which metal crystallises in a simple cubic structure ?
A) Polonium B) Copper C) Nickel D) Iron
73. The amine 'A' when treated with nitrous acid gives yellow oily substance. The amine A is
A) triethylamine B) trimethylamine
C) aniline D) methylphenylamine
74. The element that does **NOT** form acidic oxide is
A) Carbon B) Phosphorus C) Chlorine D) Barium
75. While assigning R, S configuration the correct order of priority of groups attached to chiral carbon atom is
A) $\text{CONH}_2 > \text{COCH}_3 > \text{CH}_2\text{OH} > \text{CHO}$
B) $\text{CONH}_2 > \text{COCH}_3 > \text{CHO} > \text{CH}_2\text{OH}$
C) $\text{COCH}_3 > \text{CONH}_2 > \text{CHO} > \text{CH}_2\text{OH}$
D) $\text{CHO} > \text{CH}_2\text{OH} > \text{COCH}_3 > \text{CONH}_2$



76. The reagent used in Wolff-Kishner reduction is
A) $\text{NH}_2 - \text{NH}_2$ and KOH in ethylene glycol
B) $\text{Zn} - \text{Hg}/\text{conc. HCl}$
C) NaBH_4
D) $\text{Na} - \text{Hg}/\text{H}_2\text{O}$
77. Which of the following is a neutral complex ?
A) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
B) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
C) $[\text{Ni}(\text{NH}_3)_6]\text{Cl}_2$
D) $\text{K}_4[\text{Fe}(\text{CN})_6]$
78. Identify the compound amongst the following of which 0.1 M aqueous solution has highest boiling point.
A) Glucose
B) Sodium chloride
C) Calcium chloride
D) Ferric chloride
79. What is the reagent used in Etard reaction ?
A) Chromyl chloride
B) Ethanoyl chloride
C) SnCl_2 and HCl
D) Cadmium chloride
80. The most abundant noble gas in atmosphere is
A) Neon
B) Argon
C) Xenon
D) Krypton
81. How is sodium chromate converted into sodium dichromate in the manufacture of potassium dichromate from chromite ore ?
A) By the action of concentrated sulphuric acid
B) By roasting with soda ash
C) By the action of sodium hydroxide
D) By the action of lime stone
82. In dry cell, what acts as negative electrode ?
A) Zinc
B) Graphite
C) Ammonium chloride
D) Manganese dioxide
83. Select the compound which on treatment with nitrous acid liberates nitrogen.
A) Nitroethane
B) Triethylamine
C) Diethylamine
D) Ethylamine
84. 5.0 g of sodium hydroxide (molar mass 40 g mol^{-1}) is dissolved in little quantity of water and the solution is diluted up to 100 ml. What is the molarity of the resulting solution ?
A) 0.1 mol dm^{-3}
B) 1.0 mol dm^{-3}
C) $0.125 \text{ mol dm}^{-3}$
D) 1.25 mol dm^{-3}
85. Which of the following compounds when treated with dibenzyl cadmium yields benzyl methyl ketone ?
A) Acetone
B) Acetaldehyde
C) Acetic acid
D) Acetyl chloride
86. Name the reagent that is used in leaching of gold
A) Carbon
B) Sodium cyanide
C) Carbon monoxide
D) Iodine
87. Which of the following is an analgesic ?
A) Ofloxacin
B) Penicillin
C) Aminoglycosides
D) Paracetamol



88. The compound which is **NOT** formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in presence of dry ether is
A) Butane B) Octane C) Hexane D) Ethane
89. What is the general molecular formula of the products obtained on heating lanthanoids (Ln) with sulphur ?
A) LnS B) LnS_3 C) Ln_3S_2 D) Ln_2S_3
90. Butylated hydroxy anisole is
A) an anti oxidant B) cleansing agent
C) disinfectant D) an antihistamine
91. Identify an extensive property amongst the following
A) Viscosity B) Heat capacity C) Density D) Surface tension
92. Which of the following carboxylic acids is a tricarboxylic acid ?
A) Oxalic acid B) Citric acid C) Succinic acid D) Adipic acid
93. Average rate of reaction $2 \text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2 \text{SO}_3(\text{g})$ is written as
A) $\frac{\Delta[\text{SO}_2]}{\Delta t}$ B) $-\frac{\Delta[\text{O}_2]}{\Delta t}$ C) $\frac{1}{2} \frac{\Delta[\text{SO}_2]}{\Delta t}$ D) $\frac{\Delta[\text{SO}_3]}{\Delta t}$
94. What is the amount of work done when 0.5 mole of methane, $\text{CH}_4(\text{g})$, is subjected to combustion at 300 K ? (given, $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)
A) - 2494 J B) - 4988 J C) + 4988 J D) + 2494 J
95. Primary nitroalkanes are obtained in good yield by oxidising aldoximes with the help of
A) trifluoroperoxyacetic acid B) acidified potassium permanganate
C) concentrated nitric acid D) potassium dichromate and dilute sulphuric acid
96. If 'n' represents total number of asymmetric carbon atoms in a compound, the possible number of optical isomers of the compound is
A) 2n B) n^2 C) 2^n D) $2n + 2$
97. The equation that represents van't Hoff general solution equation is
A) $\pi = \frac{n}{V} RT$ B) $\pi = nRT$ C) $\pi = \frac{V}{n} RT$ D) $\pi = nVRT$
98. Which is the most stable allotrope of sulphur ?
A) Octahedral sulphur B) Monoclinic sulphur
C) Plastic sulphur D) Colloidal sulphur
99. Correct statement for thermoplastic polymer is
A) It does not become soft on heating under pressure
B) It can not be remoulded
C) It is either linear or branched chain polymer
D) It is cross-linked polymer
100. How many Faradays of electricity are required to deposit 10 g of calcium from molten calcium chloride using inert electrodes ? (molar mass of calcium = 40 g mol^{-1})
A) 0.5 F B) 1 F C) 0.25 F D) 2 F