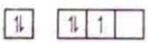
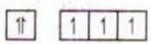
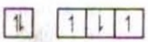
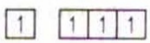
51. The pH value of 1×10^{-4} M NaOH solution is
(a) 4 (b) 10
(c) 6 (d) between 6-7

52. The C—H bond distance is the longest in
(a) C_2H_2 (b) C_2H_4
(c) $C_2H_4Br_2$ (d) C_6H_6

53. Which represents the correct order of first ionisation potential of third period elements ?
(a) Na > Mg > Al > Si
(b) Na < Mg < Al < Si
(c) Na < Si < Al < Mg
(d) Na < Al < Mg < Si

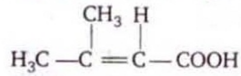
54. By which of the following processes, pure nitrogen gas is prepared ?
(a) $(NH_4)_2Cr_2O_7 \xrightarrow{\Delta}$
(b) $NH_4Cl + NaNO_2 \xrightarrow{\Delta}$
(c) $NH_3 + NaNO_2 \xrightarrow{\Delta}$
(d) $N_2O + Cu \xrightarrow{\Delta}$

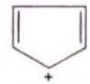
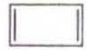
55. In the following reaction,
$$C_2H_5OH + CH_3COOH \xrightarrow[-H_2O]{\text{Conc. } H_2SO_4} CH_3COOC_2H_5$$
C_2H_5OH acts as
(a) electrophile
(b) nucleophile
(c) dehydrating agent
(d) All of the above

56. Which of the following orbital diagram violates Pauli's exclusion principle ?
(a)  (b) 
(c)  (d) 

57. The geometry of sulphate ion is
(a) square planar
(b) tetrahedral
(c) square pyramidal
(d) octahedral

58. The difference between heat capacity at constant pressure and heat capacity at constant volume for the combustion of carbon monoxide at 27°C will be
(a) − 124.71 kJ (b) − 1.247 J
(c) − 1.247 kJ (d) − 124.71 J

59. IUPAC name of the given compound is

(a) 2-methylbut-2-enoic acid
(b) 3-methylbut-2-enoic acid
(c) 3-methylbut-3-enoic acid
(d) 2-methylbut-3-enoic acid

60. Which of the following is an aromatic compound ?
(a)  (b) 
(c)  (d) 

61. Thermodynamically, most stable form of phosphorus is
(a) red (b) black
(c) white (d) yellow

62. The substance with the highest calorific value is
(a) milk (b) rice
(c) ghee (d) egg

63. Gamma rays are
(a) high energy electrons
(b) low energy electrons
(c) high energy electro-magnetic waves
(d) high energy positrons

64. What volume of CO_2 will be liberated at NTP if 12 g of carbon is burnt in excess of oxygen ?
(a) 11.2 L (b) 22.4 L
(c) 2.24 L (d) 1.12 L

65. Which of the following is man-made element ?
(a) Ra (b) U
(c) Np (d) C

66. Four different colloids have the following Gold number. Which one has its most effective action ?
(a) 10 (b) 30
(c) 20 (d) 40

67. The number of unpaired electrons in ferrous ion is
(a) 3 (b) 2
(c) 4 (d) 5

68. Ascorbic acid is the chemical name of
(a) vitamin B_6 (b) vitamin A
(c) vitamin C (d) vitamin D

69. Which amine of the following will not answer carbylamine reaction ?
(a) Ethyl amine (b) Methyl amine
(c) Dimethyl amine (d) Phenyl amine

70. For a reaction, the dimensions of rate constant are same as that of rate, hence order of reaction is
(a) 0 (b) 1
(c) 2 (d) 3

71. The concentration (in mol/L) of the solution having osmotic pressure 0.0821 atm at 300 K will be
(a) 0.33 (b) 0.066
(c) 0.3×10^{-2} (d) 3

72. Given, $Pb^{2+} / Pb = -0.126$ V; $Zn^{2+}/Zn = -0.763$ V Find the emf of the following cell $Zn|Zn^{2+}$ (0.1 M) || Pb^{2+} (1M)| Pb.
(a) − 0.637 (b) + 0.637
(c) > 0.637 (d) + 0.889

73. Which is the most abundant metal in the earth's crust ?
(a) Fe (b) Al
(c) Ca (d) Na

74. A hydrocarbon has carbon and hydrogen. Its molecular weight is 28. Its possible formula would be
(a) C_3H_6 (b) C_2H_4
(c) CH_4 (d) C_4H_8

75. Which is an example of thermosetting polymer ?
(a) Polythene (b) PVC
(c) Neoprene (d) Bakelite

76. The first Noble Prize in chemistry was given to
(a) J.H. van't Hoff (b) Cannizaro
(c) Mendeleef (d) Moseley

77. Strongest reducing agent is
(a) K (b) Mg
(c) Al (d) Ba

78. The base found only in the nucleotides of RNA, is
(a) adenine (b) uracil
(c) guanine (d) cytosine

79. Which of the following compounds does not give a precipitate with excess of NaOH ?
(a) $ZnSO_4$ (b) $FeSO_4$
(c) $AgNO_3$ (d) $HgCl_2$

80. Among the following, the correct statement is
(a) aniline is a weaker base than ammonia
(b) in water, solubility of $CH_3OH > C_2H_5OH > C_6H_5OH$
(c) b.p. of alkylhalide is greater than its corresponding alkane
(d) All of the given statements are correct

81. Three products are obtained by the ozonolysis of penta-1, 3-diene. Out of these if two products are formaldehyde and acetaldehyde, the name of the third one is
(a) formaldehyde (b) ethanal
(c) glyoxal (d) propanaldehyde

82. $CH_2=CH-CH_2-CH=CH_2$ represents a/an
(a) conjugated system
(b) cumulative system
(c) isolated system
(d) All of the above

83. In the presence of a catalyst, activation energy of a reaction is lowered by 2 kcal at 27°C. Hence, rate will be
(a) 20 times (b) 28 times
(c) 14 times (d) remain the same

84. The number of metamers of the compound with molecular formula $C_5H_{10}O$ is
(a) 1 (b) 3
(c) 8 (d) 6

85. The compound, with which ethanal does not react, is
(a) HCl (b) Cl_2
(c) PCl_5 (d) aq $NaHSO_3$

86. The incorrect order with respect to the acidic strength is
(a) formic acid > acetic acid > propionic acid
(b) cyclohexanol < phenol < benzoic acid
(c) benzamide < aniline < cyclohexylamine
(d) $FCH_2COOH > ClCH_2COOH > BrCH_2COOH$

87. $X \xrightarrow{\text{Fehling solution}} Cu_2O$
$X \xrightarrow{SOCl_2/\text{pyridine}} RCOCl$
Here, the compound X can be
(a) acetic acid (b) formaldehyde
(c) formic acid (d) propionic acid

88. HCl molecule contains
(a) ionic bond
(b) covalent bond
(c) hydrogen bond
(d) coordinate bond

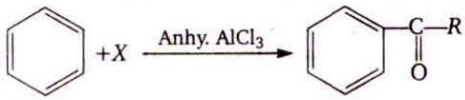
89. Transition metals show paramagnetic behaviour. This is because of their
(a) high lattice energy
(b) variable oxidation state
(c) characteristic configuration
(d) unpaired electrons

90. Which reaction is not affected by change in pressure ?
(a) $H_2 + I_2 \rightleftharpoons 2HI$
(b) $2C + O_2 \rightleftharpoons 2CO$
(c) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
(d) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$

91. If the solubility of calcium fluoride in pure water is x mol/L, its solubility product is
(a) $\sqrt{2}\,x$ (b) $2x^2$
(c) $4x^3$ (d) x^2

92. The molarity of a solution containing 5.0 g of NaOH in 250 mL solution is
(a) 0.1 (b) 0.5
(c) 1.0 (d) 2.0

93. The following reaction is called Friedel-Craft's reaction.



In this reaction 'X' is
(a) $R-\overset{\overset{O}{\|}}{C}-Cl$ (b) $R-\overset{\overset{O}{\|}}{C}-R$
(c) $R-\overset{\overset{O}{\|}}{C}-H$ (d) $R-O-R$

94. Picric acid is
(a) 2, 4, 6-tribromophenol
(b) 2, 4, 6-trinitrotoluene
(c) 2, 4, 6-trinitrophenol
(d) None of the above

95. Gravity separation process is used for the concentration of
(a) calamine (b) haematite
(c) chalcopyrite (d) bauxite

96. Ammonium ion is
(a) a conjugate acid
(b) a conjugate base
(c) neither an acid nor a base
(d) both an acid and a base

97. The equivalent weight of $MnSO_4$ is half of its molecular weight when it is converted to
(a) Mn_2O_3 (b) MnO_2
(c) MnO_4^- (d) MnO_4^{2-}

98. The reaction by which benzaldehyde is converted in benzyl alcohol, is
(a) Fittig reaction (b) Cannizaro reaction
(c) Wurtz reaction (d) aldol condensation

99. By the ideal gas law, the pressure of 0.60 mole NH_3 gas in a 3.00 L vessel at 25° C is
(a) 48.9 atm (b) 4.89 atm
(c) 0.489 atm (d) 489 atm

100. Brown ring in the test of nitrate ion is obtained due to the formation of
(a) $[Fe(H_2O)_5NO]SO_4$
(b) $[Fe(SO_4)_2NO]H_2O$
(c) $Fe_2(SO_4)_3 \cdot NO$
(d) None of the above

Answer Key

51. b	52. c	53. d	54. b	55. b	56. b	57. b	58. c	59. b	60. a
61. b	62. c	63. c	64. b	65. c	66. a	67. c	68. c	69. c	70. a
71. c	72. c	73. b	74. b	75. d	76. a	77. a	78. b	79. a	80. d
81. c	82. c	83. b	84. b	85. a	86. c	87. c	88. b	89. d	90. a
91. c	92. b	93. a	94. c	95. b	96. a	97. b	98. b	99. b	100. a