

CHEMISTRY 1

- Gamma rays are
 - high energy electrons
 - low energy electrons
 - high energy electro-magnetic waves
 - high energy positrons
- Which is the most abundant metal in the earth's crust?
 - Fe
 - Al
 - Ca
 - Na
- Which one does not give a precipitate with excess of NaOH?
 - ZnSO₄
 - FeSO₄
 - AgNO₃
 - HgCl₂
- What volume of CO₂ will be liberated at NTP of 12 gm of carbon is burnt in excess of oxygen?
 - 11.2 litres
 - 22.4 litres
 - 2.24 litres
 - 1.12 litres
- Which base is found only in nucleotides of RNA?
 - Adenine
 - Uracil
 - Guanine
 - Cytosine
- Ascorbic acid is the chemical name of
 - Vitamin B₆
 - Vitamin A
 - Vitamin C
 - Vitamin D
- A hydrocarbon has carbon and hydrogen. Its molecular weight is 28. Its possible formula would be
 - C₃H₆
 - C₂H₄
 - CH₄
 - C₄H₈
- The first Noble Prize in chemistry was given to
 - Faraday
 - Cnrizzaro
 - Mendeleevs
 - Moseley
- Four different colloids have the following gold number. Which one has its most effective action?
 - 10
 - 30
 - 20
 - 40
- Which is an example of thermosetting polymer?
 - Polythene
 - PVC
 - Neoprene
 - Bakelite
- The number of unpaired electrons in ferrous ion is
 - 3
 - 2
 - 4
 - 5
- Strongest reducing agent is

- A. K B. Mg C. Al D. Ba
13. Which of the following is man-made element?
A. Ra B. U C. Np D. C – 4
14. Which of the following statements is/are correct?
A. Boiling point of alkylhalide is greater than its corresponding alkane
B. In water, solubility of $\text{CH}_3\text{OH} > \text{C}_2\text{H}_5\text{OH} > \text{C}_6\text{H}_5\text{OH}$
C. Aniline is a weaker base than NH_3
D. All of the above
15. Which amine of the following will not answer Carbylamine reaction?
A. Ethylamine B. Methylamine C. Dimethylamine D. Phenylamine
16. Tollen's reagent can be used to detect
A. $(\text{CH}_3)_2 - \text{CHOH}$ B. $\text{CH}_3 - \text{CO} \cdot \text{CH}_3$ C. $\text{CH}_3\text{CH}_2\text{CHO}$ D. CH_3OCH_3
17. Glycerol on heating with Potassium bisulphate yields
A. Acetone B. Glyceraldehyde C. Acrolein D. Propanol
18. Salicylic acid on heating with sodalime gives
A. Benzene B. Calcium salicylate C. Benzoic acid D. Phenol
19. Which one of the following will not give iodoform test?
A. Ethanol B. Ethanal C. 2-propanone D. None of these
20. The rusting of iron is catalysed by
A. Fe B. O_2 C. Zn D. H^+
21. 100 ml of a liquid A was mixed with 25 ml of a liquid B to give non-ideal solution of A-B mixture. The volume of this mixture will be
A. 75 ml B. 125 ml exact
C. fluctuating between 75 ml and 125 ml D. close to 125 ml but not to exceed 125 ml
22. IUPAC name of a compound having the formula $(\text{CH}_3)_3\text{C} - \text{CH} = \text{CH}_2$ is
A. 3, 3 - dimethyl - 1 - butene B. 1, 1 - dimethyl - 3 - butene
C. 1,1, 1 - dimethyl - 2 - propene D. 3, 3, 3 - dimethyl - 1 - 1 propene
23. Which of the following compounds will be optically active?

- A. $(\text{OH})_2 - \text{CHOH}$ B. $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
C. $\text{CH}_3 - \text{CHCl.COOH}$ D. $(\text{CH}_3)_3.\text{C.Cl}$
24. The major components of brass are
A. Zn and Sn B. Cu and Zn C. Fe and Ni D. Zn and Fe
25. Lunar caustic is
A. Silver Chloride B. Silver Nitrate C. Sodium Hydroxide D. Potassium Nitrate
26. When hot iron is exposed in hot water vapour, the compound formed is
A. FeO B. Fe_2O_4 C. Fe_3O_4 D. $\text{Fe}_2(\text{OH})_2$
27. Which of the following halide is not oxidised by MnO_2 ?
A. F⁻ B. Cl⁻ C. Br⁻ D. I⁻
28. The outermost electronic configuration of the most electronegative element is
A. ns^2np^3 B. ns^2np^4 C. ns^2np^5 D. ns^2np^6
29. Shape of CO_2 is
A. tetrahedral B. trigonal C. bent D. linear
30. The catalyst used in the manufacture of H_2SO_4 by contact process is
A. Al_2O_3 B. Cr_2O_3 C. V_2O_5 D. MnO_2
31. The composition of the common glass is
A. $\text{Na}_2\text{O}.\text{CaO}.6\text{SiO}_2$ B. $\text{Na}_2\text{O}.\text{Al}_2\text{O}_3.2\text{SiO}_2$
C. $\text{CaO}.\text{Al}_2\text{O}_3.2\text{SiO}_2$ D. $\text{Na}_2\text{O}.\text{CaO}.\text{Al}_2\text{O}_3.6\text{SiO}_2$
32. In a borax bead test, the brown colour is due to
A. Chromium B. Cobalt C. Manganese D. Iron
33. Which of the following is not a fertiliser?
A. Urea B. Superphosphate of lime
C. Benzene Hexachloride D. Potassium
34. Which one of the following belongs to representative group of elements in the Periodic Table?
A. Lanthanum B. Argon C. Chromium D. Aluminium
35. Which one of the following is not an isotope of Hydrogen?
A. Tritium B. Deuterium C. Ortho-hydrogen D. None of the above

36. In the reaction $I_2 + 2S_2O_3^{2-} = 2I^- + S_4O_6^{2-}$, equivalent weight of iodine will be equal to
- A. its molecular weight
B. 1/2 of its molecular weight
C. 1/4 the molecular weight
D. twice the molecular weight
37. Which of the following is the most powerful oxidising agent?
- A. F_2
B. Cl_2
C. Br_2
D. I_2
38. From the following values of dissociating constants of four acids, which value represents the strongest acid?
- A. 2×10^{-2}
B. 0.02×10^{-1}
C. 3×10^{-3}
D. 2.0×10^4
39. In which of the following cases, does the reaction go the farthest for completion?
- A. $K = 10^3$
B. $K = 10^{-2}$
C. $K = 10$
D. $K = 1$
40. The reaction which proceeds in the forward direction is
- A. $Fe_2O_3 + 6HCl \rightarrow 2FeCl_3 + 3H_2O$
B. $NH_3 + H_2O + NaCl \rightarrow NH_4Cl + NaOH$
C. $SnCl_4 + Hg_2Cl_2 \rightarrow SnCl_2 + 2HgCl_2$
D. $2CuI + I_2 + 4K^+ \rightarrow 2Cu^{2+} + 4KI$
41. The substance capable of being drawn into fine wire is called
- A. malleable
B. tensile
C. ductile
D. mild
42. The idea that most of the mass of an atom is concentrated in a very small core, i.e., nucleus is given by
- A. Amedo Avogadro
B. Rutherford
C. Bohr
D. Henery Mosley
43. Which of the following does contain a co-ordinate covalent bond?
- A. $N_2H_5^+$
B. $BaCl_2$
C. HCl
D. H_2O
44. Which of the following contains both covalent and ionic bonds?
- A. CCl_4
B. $CaCl_2$
C. NH_4Cl
D. H_2O
45. Keeping in view the periodic law and the periodic table, suggest which of the following elements should have the maximum electronegative character?
- A. Oxygen
B. Nitrogen
C. Fluorine
D. Astatine
46. The electronic configuration of element atomic number 37 is
- A. $(2, 8) 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^1$
B. $(2, 8) 3s^2 3p^6 3d^{10} 4s^2 5s^6 4p^5$
C. $(2, 8) 3s^2 3p^6 4s^2 3d^9 5s^1 4p^5$
D. none of these

47. The pH of 0.1 M solution of a weak acid is 3. What is the value of ionisation constant for the acid?

- A. 0.1 B. 10^{-3} C. 10^{-5} D. 10^{-7}

48. Pure Aniline is a

- A. brown coloured liquid B. colourless liquid C. brown coloured solid D. colourless solid

49. Sulphide ores are generally concentrated by

- A. roasting B. froth floatation C. reducing by carbon D. tempering

50. One mole of CO_2 contains

- A. 6.02×10^{23} atoms of C B. 6.02×10^{23} atoms of O
C. 18.1×10^{23} molecules of CO_2 D. 3 gm atom of CO_2

51. The Avogadro Number or a mole represents

- A. 6.02×10^{23} ions B. 6.02×10^{23} atoms
C. 6.02×10^{23} molecules D. 6.02×10^{23} entities

52. What is the weight of one molecule of a monoatomic element X whose atomic weight is 36?

- A. 6.0×10^{-23} gm B. 6.02×10^{23} gm C. 36×10^{23} gm D. 36×10^{-23} gm

53. When α -particles are set through a thin metal foil, most of them go straight through the foil because

- A. α -particles are much heavier than electrons B. α -particles are positively charged
C. α -particles move with high velocity D. α -particles move with low velocity

54. The reaction, which proceeds in the forward direction, is

- A. $\text{Fe}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{FeCl}_3 + 3\text{H}_2\text{O}$ B. $\text{NH}_3 + \text{H}_2\text{O} + \text{NaCl} \rightarrow \text{NH}_4\text{Cl} + \text{NaOH}$
C. $\text{SnCl}_4 + \text{Hg}_2\text{Cl}_2 \rightarrow \text{SnCl}_2 + 2\text{HgCl}_2$ D. $2\text{CuI} + \text{I}_2 + 4\text{K} \rightarrow 2\text{Cu}^+ + 4\text{KI}$

55. The first order constant for the decomposition of N_2O_5 is $6.2 \times 10^{-4} \text{ sec}^{-1}$. The half-life period for this decomposition in second is

- A. 1117.7 B. 111.7 C. 223.4 D. 160.9

56. When the same amount of zinc is treated separately with excess of H_2SO_4 and excess of NaOH , the ratio of volumes of H_2 evolved is

- A. 1 : 1 B. 1 : 2 C. 2 : 1 D. 9 : 4

57. Calcium does not combine directly with
A. oxygen B. nitrogen C. hydrogen D. carbon
58. Carbon differs from other elements of its sub-group due to
A. availability of d-orbitals for bonding B. its limitation to a co-ordination number four
C. its tendency to catenate D. its unique ability to form multiple bonds
59. Iodine reacts with cold dil. NaOH to give
A. $\text{NaI} + \text{H}_2\text{O} + \text{O}_2$ B. $\text{NaI} + \text{NaIO} + \text{O}_2$ C. $\text{NaI} + \text{NaIO} + \text{H}_2\text{O}$ D. $\text{NaI} + \text{NaIO}_3 + \text{H}_2\text{O}$
60. The number of isomers for the atomic compound of the formula $\text{C}_7\text{H}_8\text{O}$ is
A. 2 B. 3 C. 4 D. 5
61. An element with atomic number 20 is
A. an alkali metal B. an alkaline earth metal C. a halogen D. a noble gas
62. When supercooled water suddenly freezes, the free energy of the system
A. increases B. decreases C. remains same D. becomes zero
63. The density of neon is highest at
A. STP B. 0°C , 2 atm C. 273°C , 1 atm D. 273°C , 2 atm
64. Cadmium in a nuclear reactor acts as
A. nuclear fuel B. neutron absorber
C. a moderator D. neutron liberator to start the chain
65. The end product of 4π series
A. ${}_{82}\text{Pb}^{203}$ B. ${}_{92}\text{Pb}^{207}$ C. ${}_{82}\text{Pb}^{208}$ D. ${}_{82}\text{Bi}^{204}$
66. Haemoglobin is a co-ordination compound in which the central metal atom is
A. iron B. cobalt C. sodium D. manganese
67. The element californium belongs to the family of
A. actinide series B. alkaline earth family C. lanthanide series D. alkali metal family
68. The coloured discharge tube for advertisements contain
A. argon B. xenon C. helium D. neon

69. Which of the following is the strongest base?
A. PH_3 B. AsH_3 C. NH_3 D. SbH_3
70. Canizzaro reaction is not given by
A. Triethylacetaldehyde B. Acetaldehyde C. Benzaldehyde D. Formaldehyde
71. Which of the following statements is not true for alcohols?
A. Lower alcohols have fiery pungent and strong smell
B. As molecular mass increases, boiling point also increases
C. Lower alcohols are water insoluble and their solubility increases with molecular weight
D. Lower alcohols are water insoluble and their solubility decreases with molecular weight
72. Formaldehyde when heated with $\text{CH}_3\text{CH}_2\text{CH}_2\text{MgBr}$ gives
A. Primary alcohol B. Secondary alcohol C. Tertiary alcohol D. Acetone
73. A compound of molecular formula $\text{C}_3\text{H}_8\text{O}$ on oxidation gives a compound of formula $\text{C}_3\text{H}_6\text{O}_2$. The original compound is
A. Primary alcohol B. Secondary alcohol C. Aldehyde D. Tertiary alcohol
74. The increasing order of size of F^- , Cl^- , Br^- , I^- is
A. $\text{I}^- < \text{Br}^- < \text{Cl}^- < \text{F}^-$ B. $\text{I}^- < \text{Cl}^- < \text{Br}^- < \text{F}^-$
C. $\text{F}^- < \text{Cl}^- < \text{Br}^- < \text{I}^-$ D. $\text{Br}^- < \text{Cl}^- < \text{F}^- < \text{I}^-$
75. Which of the following series contains only nucleophiles?
A. NH_3 , H_2O , AlCl_3 B. NH_3 , ROH , H_2O C. H_2O , H_3O^+ , SO_3 D. None of these
76. The formula of acetonitrile is
A. CH_3COCH B. CH_3CN C. $\text{CH}_3\text{CH}_2\text{CN}$ D. CH_3CONH_2
77. The IUPAC name of CH_3CONH_2 is
A. Propionaldehyde B. Acetamide C. Ethanamide D. Ethylamine
78. The rate of reaction increases with temperature because
A. threshold energy increases B. kinetic energy of molecules increases
C. effective collision increases D. none of the above
79. If the graph of concentration of A versus time for completion of reaction is a straight

line, then the order of the reaction is

- A. zero B. second C. first D. third

80. The decomposition of hydrogen peroxide $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ is

- A. zero order reaction B. first order reaction C. second order reaction D. third order reaction

81. The half-life period of a first order process is 1.6 min^{-1} . It will be 90% complete in

- A. 0.8 min B. 3.2 min C. 5.3 min D. 1.6 min

82. Which of the following is an electrophile?

- A. AlCl_3 B. CN^- C. NH_3 D. CH_3OH

83. Molarity of a solution is the number of

- A. moles of solute per litre of solution
B. moles of solute per 100 gm of the solution
C. gram molecular weight of solute dissolved per litre of the solution
D. gram equivalents of solute dissolved per litre of solution

84. The hybridisation in PF_3 is

- A. sp^3 B. sp^2 C. dsp^3 D. d^2sp^3

85. Which of the following is present in DNA?

- A. Deoxyribose B. Starch C. Riboflavin D. None of these

86. Propyne when treated with H_2SO_4 in presence of HgSO_4 gives

- A. Acetone B. Propionaldehyde C. Acetaldehyde D. Propanoic acid

87. The general formula for alkyne is

- A. $\text{C}_n\text{H}_{2n+2}$ B. C_nH_{2n} C. $\text{C}_n\text{H}_{2n-2}$ D. C_nH_n

88. Mesotartaric acid is optically inactive due to the presence of

- A. molecular symmetry B. molecular asymmetry
C. external compensation D. two asymmetric carbon atoms

89. Which of the following electronic configuration in the outermost shell is characteristic of alkali metals?

- A. $(n-1)s^2p^6ns^2s^1$ B. $(n-1)s^2p^6d^{10}ns^1$ C. $(n-1)s^2p^6ns^1$ D. $ns^2p^6d^1$

90. Lead chloride is soluble in

- A. cold water B. hot water C. HCl D. acetic acid
91. When a copper wire is placed in a solution of silver nitrate, the solution acquires blue colour. This is due to the formation of
- A. a soluble complex of copper with AgNO_3 B. Cu^+ ions
C. Cu^{2+} ions D. Cu^{2+} by reduction of Cu
92. The pyrites are heated with hydrochloric acid. The solution so obtained will give blood red colour with
- A. $\text{K}_4\text{Fe}(\text{CN})_6$ B. KCN C. $\text{K}_3\text{Fe}(\text{CN})_6$ D. KSCN
93. The ignition mixture in aluminothermite process contains a mixture of
- A. magnesium powder and BaO_2 B. magnesium powder, aluminium powder and BaO_2
C. magnesium and aluminium powders D. magnesium and aluminium oxides
94. One of the most important uses of quick lime is
- A. as a purgative B. drying gases and alcohols
C. in bleaching silk D. dyeing cotton
95. In preparing Cl_2 from HCl, MnO_2 acts as a/an
- A. dehydrating agent B. reducing agent C. catalytic agent D. oxidising agent
96. Seaweed is an important source of
- A. chlorine B. iodine C. fluorine D. bromine
97. Nitrates of all metals are
- A. unstable B. stable C. coloured D. soluble
98. Ostwald's method is used for manufacture of
- A. HNO_3 B. NO_2 C. NO D. P_2O_5
99. Magnesium reacts with acids producing hydrogen and corresponding magnesium salts. In such reactions, magnesium undergoes
- A. oxidation B. reduction
C. neither oxidation nor reduction D. simple dissolution

100. An acidic buffer solution can be prepared by mixing solution of

A. ammonium chloride and HCl

B. H_2SO_4 and Na_2SO_4

C. acetic acid and sulphuric acid

D. ammonium acetate and acetic acid

Solutions:

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| C | B | A | C | A | A | B | A | A | D |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| C | A | B | D | C | D | C | D | D | D |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| D | A | C | B | B | C | A | C | D | C |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| A | D | C | D | C | B | A | A | A | D |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| C | B | A | C | C | D | C | B | A | A |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| D | A | A | A | A | A | D | B | C | D |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| B | B | B | B | C | A | A | D | C | B |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| C | A | C | C | B | B | C | C | A | B |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| C | A | A | A | A | A | C | A | C | D |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| C | D | B | B | D | B | D | A | A | D |