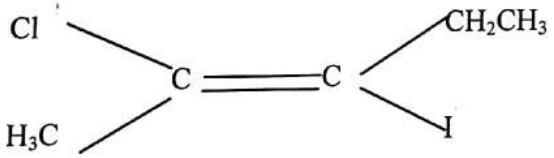
1. Silicon has a strong tendency to form polymers like silicones. The chain length of silicon polymer can be controlled by adding:
   (A) $MeSiCl_3$
   (B) Me_2SiCl_2
   (C) Me_3SiCl
   (D) Me_4Si

2. Boric acid is polymeric due to:
   (A) Its acidic nature → presence
   (B) The pressure of hydrogen bond
   (C) Its monobasic nature
   (D) Its geometry

3. Which of the following is the most stable carbonium ion?
   (A) $^+CH_3$
   (B) R^+CH2
   (C) $R_2{}^+CH$
   (D) $R_3{}^+C$

4. IUPAC name of the compound



   (A) trans – 2- chloro – 3 – iodopentene – 2
   (B) Cis – 2 – chloro – 3- iodopentene – 2
   (C) z – 3 – methyl – 3 – ethyl – pentene – 1
   (D) Cis – 3 – iodo – 4- cholo – 3 – pentene

5. When hybridization state of carbon atom changes from sp^3 to sp^2 and finally to sp, the angle between the hybridized orbital's:
   (A) Decreases gradually
   (B) Decreases considerably
   (C) Is not affected
   (D) Increases progressively

6. Heterolysis of CH3 CH2 CH3 results in the formation of:
   (A) CH_3 and C_2H_5
   (B) $:CH_3$ and C_2H_5
   (C) CH_3 and $:C_2H_5$
   (D) None of these

7. Iodoform test is not given by:
   (A) Ethanol
   (B) Benzophenone
   (C) Ethonal
   (D) Acetophenone

8. Which of the following is the correct order dipole moment of dichlorobenzene?
   (A) o > m > p
   (B) o> p > m
   (C) m > o > p
   (D) m > p > o

9. Huckel's rule states that a monocyclic conjugated compound will be aromatic if it contains:
   (A) (4n +2 π) electrons
   (B) (4 π + 2n) electrons
   (C) 4 π electrons
   (D) None of these

10. Lead tetraethyl is used as:
   (A) Fire extinguisher
   (B) Pain killer
   (C) Petroleum additive
   (D) Mosquito repellent

11. Which one of the following form the cathode with respect to iron anode in an electrolyte cell:
   (A) Mg
   (B) Al
   (C) Cu
   (D) Zn

12. The quantity of electricity needed to deposit 127.08 gr of copper is:
   (A) 1 Faraday
   (B) 4 Coulombs
   (C) 2 Faraday
   (D) 1 Ampere

13. The rate of constant of a reaction is 10.8×10^{-5} mol $dm^{-3}s^{-1}$. The order of the reaction is:
   (A) Zero
   (B) 1
   (C) 2
   (D) 3

14. The rate of chemical reaction:
   (A) Increases as the reaction proceeds
   (B) Decreases as the reaction proceeds
   (C) Both (A) and (B)
   (D) None of these

15. Among solids, the highest melting point is exhibited by:
   (A) Covalent solids
   (B) Ionic solids
   (C) Pseudo solids
   (D) Molecular solids

16. The value of k for which the points (0, 0), (2, 0), (0, 1), and (0, k) lies on a circle is:
   (A) 1, 2
   (B) -1, 2
   (C) 0, 2
   (D) 0, 1

17. The imaginary part of $\log (1 + \sqrt[4]{3})$ is:
   (A) π/3
   (B) log2
   (C) π/2
   (D) 0

18. Solution of the differential equation (1+ x) dy + (1 + y)dx =0 is equal to:
   (A) $(1 +x)^2 (1 + y) =C$
   (B) $(1 +x)^2 (1 + y)^2 =C$
   (C) $(1 +x)(1 + y) =C$
   (D) $(1 +x) (1 + y)^2 =C$

19. A program that converts data into some system other than the external one is known as:
   (A) Encoder
   (B) Simulation
   (C) Emulator
   (D) Coding

20. The first generation of computers available was based on the bit microprocessors:
   (A) 4
   (B) 8
   (C) 16
   (D) 64

21. The complete picture of data stored in database is known as:
   (A) Record
   (B) Schema
   (C) System flow chart'
   (D) DBMS

22. Which is a unit of representing the number of bits of discrete
   (A) Baud
   (B) Byte
   (C) Bit
   (D) All of the above

23. A language which is closed to that used within the computer is:
(A) High level language
(B) Assembly language
(C) Low level language
(D) None of these

24. The brain of any computer system is:
(A) ALU
(B) Memory
(C) CPU
(D) Control unit

25. The binary system uses powers of:
(A) 2
(B) 10
(C) 8
(D) 16

26. The energy of a photon is given by $\Delta E/atom = 3.03\times10^{-19}\ Jatom^{-1}$, then the wavelength of (λ) the photon is:
(A) 65.5 nm
(B) 656 nm
(C) 0.656 nm
(D) 6.56 nm

27. The spectrum of He is expected to be similar to that of
(A) H
(B) Na
(C) He^+
(D) Li^+

28. The orbital angular momentum for an electron revolving in an orbital is given by $\sqrt{l\,(l+1).\,h/2\pi}$. The momentum for s-electron will be given by:
(A) $+\frac{1}{2}.\frac{h}{2\pi}$
(B) Zero
(C) $\frac{h}{2\pi}$
(D) $\sqrt{2}.\frac{h}{2\pi}$

29. If the principal quantum number of an atom is 3, then the angular quantum number is:
(A) 0
(B) 2
(C) 1
(D) All of these

30. Among the following groupings which represents the iso-electronic species?
(A) NO^+, C_2^{2-}, O_2^-, CO
(B) N_2, C_2^{2-}, CO, NO
(C) CO, NO^+, CN^-, C_2^{2-}
(D) NO, CN^-, N_2, O_2^-

31. Which of the following elements outer most orbits last electron has magnetic quantum number zero?
(A) Na
(B) O
(C) Cl
(D) N

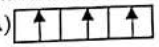
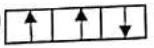
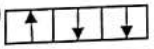
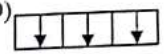
32. In hydrogen atom, energy of first excited state is -3.4ev. Find out K.E of the same orbit of hydrogen atom.
(A) +3.4ev
(B) +6.8ev
(C) -13.6ev
(D) 13.6ev

33. The electronic configuration of Ag atom is:
(A) [Kr] $3d^{10}\ 4S^1$
(B) [Xe] $f^{14}\ 5d^{10}\ 6S^1$
(C) [Kr] $4d^{10}\ 5S^1$
(D) [Kr] $4d^9\ 4S^1$

34. Zeeman effect explains splitting of lines in:
(A) Magnetic field
(B) Electric field
(C) Both of these
(D) None of these

35. Which of the following have maximum number of unpaired electrons?
(A) Fe^{3+}
(B) Fe^{2+}
(C) Co^{2+}
(D) Co^{3+}

36. The de-Broglie wavelength associated with a ball of mass 1kg having kinetic energy 0.5 J is:
(A) 6.6×10^{-34} m
(B) 12.30×10^{-34} m
(C) 10.38×10^{-21} m
(D) $6.6\times10^{-34}\ A^\circ$

37. Which of the following electronic configuration have zero spin multiplicity?
(A) 
(B) 
(C) 
(D) 

38. If No represents the Avogadro number, then which of the following represent correct value of one atomic mass unit (amu):
(A) No $\times 10^3$ kg
(B) No g
(C) No^{-1}g
(D) 1/16 Mass of oxygen-16 atom

39. The element of atomic number 29 belongs to:
(A) s-block
(B) p-block
(C) d-block
(D) f-block

40. The correct order of ionization energies is?
(A) Zn<Cd<Hg
(B) Hg<Cd<Zn
(C) Ar>Ne>He
(D) Cs<Rb<Na

41. Which of the following order is wrong:
(A) $NH_3 < PH_3 < ASH_3$ - Acidic
(B) Li<Be<B<C-IE_1
(C) Al_2O_3< Mgo<Na_2O<K_2O-Basic
(D) Li^+<Na^+<K^+<Cs^+-Ionic radius

42. Highest electron affinity is shown by:
(A) O^-
(B) F^-
(C) Cl_2
(D) F_2

43. Radius of Ga is less than Al because of:
(A) Lanthanide contradiction
(B) Greater screening effect
(C) Inert pair effect
(D) None of these

44. The electro negativity of the following elements increases in the order:
(A) C, N, Si, P
(B) N, Si, C, P
(C) Si, P, C, N
(D) P, Si, N, C

45. Ionic radii of
(A) $Ti^{4+} < Mn^{7+}$
(B) $^{35}Cl^- < ^{37}Cl^-$
(C) $K^+ > Cl^-$
(D) $P^{3+} > P^{5+}$

46. In piperidine  , the hybrid state assumed by N is:
(A) sp
(B) sp^2
(C) sp^3
(D) dsp^2

47. Number of bonds in SO_2 are:
(A) Two δ and two π
(B) Two δ and one π
(C) Two δ two δ & one lone pair
(D) None of these

48. Which of the following compounds has the smallest bond angle in its molecule?
(A) SO_2
(B) OH_2
(C) H_2S
(D) NH_3

49. In which of the following pairs the two species are not iso structural?
(A) CO_3^{-2} and NO_3^-
(B) PCl_4^+ and $SiCl_4$
(C) PF_5 and BrF_5
(D) AlF_6^{3-}

50. The number of anti bonding electron pair O_2^{2-} molecular ion on the basis of molecular orbital theory:
(A) 2
(B) 3
(C) 4
(D) 5

51. Use of hot air balloons in sports and meteorological operation is an application of:
(A) Boyle's Law
(B) Charle's Law
(C) Kelvin's Law
(D) Ideal gas equation

52. If volume of a gas in a vessel is reduced to half, how many moles of gas remained in the vessel?
(A) Just double
(B) Just half
(C) Same
(D) More than double

53. The volume occupied by 7 gm of nitrogen at 27°C and 750.9 mm Hg pressure is:
(A) 8.24 litres
(B) 6.14 litres
(C) 6.24 litres
(D) 5.24 litres

54. If the four tubes of a car are filled to the same pressure with N_2, O_2, H_2 and Ne separately, then which one will be filled for first:
(A) N_2
(B) O_2
(C) H_2
(D) None of these

55. Enthalpy of carbon, hydrogen and C_2H_5OH on combustion at 25 °C are -94.0, -68.4, and -327.0 kcal per mole, then find the formation of enthalpy of ethyl alcohol:
(A) -66. 2 kcal
(B) -68.4 kcal
(C) -60.2 kcal
(D) -65.2 kcal

56. For the reaction $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$
(A) $\Delta H > \Delta E$
(B) $\Delta H < \Delta E$
(C) $\Delta H = \Delta E$
(D) None of these

57. The bond energy of an O-H bond is 109 k.cal.mole^{-1}, when a mole of water is formed
(A) 218 k.cal is formed
(B) 109 k.cal is released
(C) 218 k.cal is observed
(D) 109 k.cal is observed

58. Which of the following statement is true?
(A) ΔG may be lesser or greater or equal to ΔH
(B) ΔG is always proportional to ΔH
(C) Both (A) and (B)
(D) None of these

59. Mechanical work is specially important in system that contain
(A) Solid-liquid
(B) Liquid-liquid
(C) Solid-solid
(D) Gases

60. The heat of combustion of a substance is:
(A) Always positive
(B) Always negative
(C) Unpredictable
(D) None of these

61. The variation of heat of reaction with temperature is given by:
(A) Von't Hoff equation
(B) Nernst equation
(C) Clausins- Clapeyron equation
(D) Kirchoff's equation

62. Which of the following is a closed system?
(A) Jet engine
(B) Tea placed in a steel kettle
(C) Pressure cooker
(D) Rocket engine during propulsion

63. The intensive property among these quantities is:
(A) Mass
(B) Volume
(C) Mass/Volume
(D) Enthalpy

64. $C_2H_5\text{-}O\text{-}C_2H_5$ is
(A) Lewis acid
(B) Arrhenius acid
(C) Lewis base
(D) None of these

65. In which of the following the forward reaction is favoured by use of high pressure?
(A) $H_2 + I_2 \rightleftharpoons 2HI$
(B) $N_2 + O_2 \rightleftharpoons 2NO$
(C) $2NH_3 \rightleftharpoons N_2 + 3H_2$
(D) $2SO_2 + O_2 \rightleftharpoons 2SO_3$

66. The solubility product of AgCl is 4.0×10^{-10} at 298 K. The solubility of AgCl in 0.04 M $CaCl_2$ will be:
(A) 2.0×10^{-5}M
(B) 1.0×10^{-4}M
(C) 5.0×10^{-9}M
(D) 2.2×10^{-4}M

67. Which solution will be strongly acidic?
(A) When $p^H = 0.0$
(B) When $p^{OH} = 4.5$
(C) When $p^{OH} = 14$
(D) Both (A) and (B)

68. The p^H of solution is 5.0. To this solution sufficient acid is added to decrease the p^H to 2.0. The increase in hydrogen ion concentration is:
(A) 100 times
(B) 1000 times
(C) 2.5 times
(D) 10 times

69. Which of the following reactions will not take place?
(A) $Fe + H_2SO_4 \longrightarrow FeSO_4 + H_2$
(B) $2KBr + I_2 \longrightarrow 2KI + Br_2$
(C) $Cu + 2AgNO_3 \longrightarrow Cu(NO_3)_2 + 2Ag$
(D) $CuO + H_2 \longrightarrow Cu + H_2O$

70. A transition metal ion having metal in its highest oxidation state behaves as:
(A) Oxidising agent
(B) Reducing agent
(C) Dehydrating agent
(D) Bleaching agent

71. If a salt bridge is removed between the two half cells, the voltage:
(A) Drops to zero
(B) Does not change
(C) Increase gradually
(D) Increase rapidly

72. The compound that can work both oxidizing and reducing agent is:
(A) $KMnO_4$
(B) H_2O_2
(C) BaO_2
(D) $K_2Cr_2O_7$

73. $CO_{(s)} + Cu^{2+}{}_{(aq)} \longrightarrow CO^{2+}{}_{(aq)} + Cu_{(s)}$. The reaction is:
(A) Oxidation reaction
(B) Reduction reaction
(C) Redox reaction
(D) None of these

74. Oxidation number of sulphen in S^{-2} is:
(A) -2
(B) 0
(C) -6
(D) +6

75. Among the following identify the species with an atom in +6 oxidation state:
(A) MnO_4^-
(B) $Cr(CN)_6^{3-}$
(C) NiF_6^{2-}
(D) CrO_2Cl_2

76. When $KMnO_4$ acts as an oxidizing agent and ultimately forms MnO_4^{-2}, MnO_2, Mn_2O_3, and Mn^{+2}, then the number of electrons transferred in each case respectively is:
(A) 4, 3, 1, 5
(B) 1, 5, 3, 7
(C) 1, 3, 4, 5
(D) 3, 5, 7, 1

77. The charge on CO in $[CO(CN)_4]^{2-}$ is:
(A) -6
(B) -3
(C) +3
(D) +6

78. Number of moles of $K_2Cr_2O_7$ reduced by one mole of Sn^{2+}
(A) 1/3
(B) -3
(C) 1/6
(D) 6

79. In which of the following compounds the oxidation number of carbon is not zero?
(A) HCHO
(B) CH_3COOH
(C) $C_{12}H_{22}O_{11}$
(D) CH_3CHO

80. In the balanced chemical reaction $IO_3^- + aI^- + bH^+ \longrightarrow cI_2O + dI_2$, a, b, c, and d respectively corresponds to:
(A) 5, 6, 3, 3
(B) 5, 3, 6, 3
(C) 3, 5, 3, 6
(D) 5, 6, 5, 5

81. Arrange the following in the order of their decreasing electrode potentials: Mg, K, Ba, and Ca
(A) K, Ca, Mg, Ba
(B) Ba, Ca, K, Mg
(C) K, Mg, Ca, Ba
(D) Mg, Ca, Ba, K

82. Br^- is converted into Br_2 by using:
(A) Cl_2
(B) Conc-HCl
(C) HBr
(D) H_2S

83. Oxidation number of 'N' in NH_3 (Hydrozoic acid) is:
(A) -1/3
(B) +3
(C) 0
(D) -3

84. The standard electrode potentials of four elements A, B, C, and D are -3.05, -1.66, 0.04, and +0.80. The highest chemical reactivity will be exhibited by:
(A) D
(B) A
(C) B
(D) C

85. The oxidation state of osmium (Os) in OsO_4 is:
(A) +7
(B) +6
(C) +4
(D) +8

86. Which of the following on thermal decomposition yields a basic as well acidic oxide?
(A) $NaNO_3$
(B) $KClO_3$
(C) $CaCO_3$
(D) NH_4NO_3

87. The bleaching action of bleaching powder is due to the formation of:
(A) O_2
(B) OCl^-
(C) Cl_2
(D) Cl^-

88. Philospher's wool on heating with BaO at 1100°C produce:
(A) $BaZnO_2$
(B) $BaO_2 + Zn$
(C) $Ba + ZnO_2$
(D) $BaCdO_3$

89. Choose the compound which does not possess a peroxide group:
(A) Na_2O_2
(B) CrO_5
(C) Fe_2O_3
(D) BaO_2

90. Which one of the following is least soluble in water?
(A) BaF_2
(B) MgF_2
(C) CaF_2
(D) SrF_2

91. Fusion mixture is:
(A) $Na_2CO_3 + K_2CO_3$
(B) $Na_2CO_3 + BaCO_3$
(C) $NaHCO_3 + Na_2CO_3$
(D) None of these

92. Lithophone is:
(A) $ZnSO_4 + PbS$
(B) $BaSO_4 + ZnS$
(C) PbO_2
(D) $ZnSO_4$

93. Alkaline earth's metals are denser than alkali metals, because metallic bonding in alkaline earth's metal is:
(A) Stronger
(B) Weaker
(C) Volatile
(D) Not present

94. Among KO_2, AlO_2^-, BaO_2, and NO_2^+, unpaired electron is:
(A) NO_2^+ and BaO_2
(B) KO_2 and AlO_2^-
(C) KO_2 only
(D) BaO_2 only

95. Which of the following has exceptionally high melting point?
(A) MgO
(B) NaOH
(C) NaCl
(D) KCl

96. Carborundum is:
(A) $Al_2(SO_4)_3$
(B) $Al_2O_3.2H_2O$
(C) $AlCl_3$
(D) SiC

97. The type of hybridization of boron in diborone is:
(A) sp
(B) sp^2
(C) sp^3
(D) sp^3d^2

98. The element which is exclusively applied as semiconductor is:
(A) Au
(B) Ge
(C) sp^3
(D) se

99. Chromyl chloride is prepared after heating a mixture of sodium chloride and potassium dichromate ($K_2Cr_2O_7$) in the presence of-
(A) Conc. HCl
(B) Conc. H_2SO_4
(C) Dilute HNO_3
(D) Dilute H_2SO_4

100. Glass reacts with HF to produce:

(A) SiF_4

(B) H_2SiF_6

(C) H_2SiO_3

(D) Na_3AlF_6