

PG-TRB - CHEMISTRY

Time: 95 Minutes

TEST No.1 (19CHCUT01)

Marks : 77

UNIT I – Periodic Properties

1. Which one of the following more paramagnetic
 a. nitrogen b. chlorine c. hydrogen d. oxygen
2. Which among the following more were has a bond order 2.5?
 a. O^{2-} b. O_2^{2-} c. O_2^{2-} d. O_2
3. The element with the highest first ionization energy in
 a. Boran b. carbon c. nitrogen d. oxygen
4. In the plot of ionization energy versus atomic number, the elements found to occur of the peaks are
 a. halogens b. alkali metals c. rare gases d. transition elements
5. The highest group number in the usual long form of the periodic table a. 8
 b.18 c. 16 d. 32
6. Which of the following has the largest size?
 a. Al^+ b. Al^{+2} c. Al^{3+} d. Al
7. Which of the following in correct order of repulsive interactions?
 a. $lp=lp - bp > bp-bp$ b. $bp-bp > lp > lp-bp$ c. $lp-bp > lp-lp-lb > bp-bp$
 d. The relation depends on the nature of the molecule can ion
8. The number of antibonding electron pairs in O_2^{2-} ion, on the basis of No theory is
 a.3 b.2 c. 4 d.5
9. N- O bond length is $NO^+, > No$ and No^- species is in the order
 a. $No^+ < No < No^-$ b. $No^+ > No > No^-$
 c. $No^+ < No^- < No$ d. $No^+ > No^- > No$
10. The hydrogen bond is the strongest in
 a. $O - H-----S$ b. $S- H ---- O$ c. $F-H----- F$ d. $F-H----H$
11. The basis of periodic of law presented by Mendleef was
 a. atomic volume b. atomic mass c. valency d. atomic number
12. 3rd period of the periodic table contains
 a. 18 elements b.8 elements c. 3 elements d. 32 elements
13. The elements of a group of the periodic table house
 a. the same number of protons b. the same varence electrons c.same electron affility
 d. the same varence electrons
14. The hybridization of carbons involved in c-c single bond in $CH \equiv C-CH = CH_2$
 a. $Sp^3 - Sp^2$ b. $Sp^3 - Sp^3$ c. $Sp - Sp^2$ d. $Sp - Sp^3$
15. Which one of the following solvents in aprotic
 a. n- butanol b. pyridine c. water d. acetic acid

16. Which of the following is mostly used as solvent for non – aqueous filtrations?
a. CCl_4 b. H_2SO_4 c. water d. glacial acetic acid
17. Which one of the following is an aprotic solvent
a. amyl alcohol b. DMSO c. Water d. ethanol
18. Intra molecular hydrogen bonding is present in
a. acetic acid b. water c. ethyl alcohol d. salicylic acid
19. Which one of the following substance in the solid state consists for atoms are molecules held together mainly by the Vander Waal's forces
a. phenol b. silicon oxide c. tetra chloro methane d. water
20. Which of the following anions has the maximum polarizability?
a. F^- b. I^- c. Cl^- d. Br^-
21. Which one of the species represented by the following formula
a. XeCl_4 b. NH_3 c. SF_4 d. BF_4^-
22. The shape of NH_3 molecule is
a. square planar b. trigonal pyramid c. tetrahedral d. none of these
23. Which of the following cations has the maximum polarising power?
a. Sr^{+2} b. Ca^{+2} c. Mg^{+2} d. Be^{+2}
24. Which is the most covalent among the following
a. NaCl b. KCl c. LiCl d. RbCl
25. SnCl_4 is a
a. co – ordinate cpd b. Electrovalent cpd
c. covalent cpd d. metallic compound
26. Which of the following can be precipitated in water
a. AgI b. AgCl c. AgBr d. AgI
27. The low solubility of barium sulphate in water can be attributed to
a. ionic bond b. high lattice energy
c. high lattice energy d. dissociation energy
28. The number of space groups are
a. 14 b. 32 c. 7 d. 230
29. The number of all crystals classified into _____ class.
a. 32 b. 14 c. 230 d. 7
30. Which of the following has a diamond – like structure?
a. LiCl b. ZnS c. CaF_2 d. NaCl

31. Bragg's equation in
a. $\lambda = 2d \sin\theta$ b. $n\lambda = 2d \sin\theta$ c. $n\lambda = \frac{1}{2} d \sin\theta$ d. $n\lambda = d \sin\theta$
32. The base colour of the solution of alkali metals in ammonia is attributed to
a. the metallic character of alkali metals
b. electron donating ability of ammonia
c. the presence of solvated electrons
d. the electric positive nature of the alkali metals
33. The order of ionization energy
a. $s < p < d < f$ b. $s > p > f > d$ c. $s > p > d > f$ d. $s < d < p < f$
34. Electron affinity is expressed in
a. KJ b. J c. KJmol^{-1} d. KJ mol
35. The values of C-Cl distance found experimentally in a saturated hydro carbon is
a. 1.34 \AA b. 1.36 \AA c. 1.98 \AA d. 1.56 \AA
36. Law of octaves was proposed by
a. J.W. Dobereiner b. D.I. Mendeleev
c. J.A.R. Newlands d. Lothar Mayer
37. The element having highest melting point belongs to
a. s – black b. f- black c. d – black d. p –black
38. The correct order for the electro negativities of N, O, F and P is
a. $F > N > P > O$ b. $F > O > N > P$
c. $N > O > F > P$ d. $F > O > P > N$
39. Which one of the following is correct order of the size?
a. $I > I^- > I^+$ b. $I > I^+ > I^-$ c. $I^+ > I^- > I$ d. $I^- > I > I^+$
40. Which has the highest second ionization potential ?
a. Nitrogen b. carbon c. Oxygen d. Fluorine
41. Which of the following, has the maximum ionization potential?
a. boron b. aluminium c. Berillium d. Mg
42. Which of the following pair will dissolve endo thermically in water.
a. LiCl b. LiF c. LiBr d. LiI
43. Which of the following is expected to dissolve exothermically?
a. KF b. KCl c. KBr d. KI
44. Atomic orbitals of carbon in methane have – hybridisation
a. SP b. SP_2 c. SP_3 d. dSP_2

45. The bond order and magnetic moment of Co in
a. 2, para b. 3, dia c. 1, para d. 0, dia
46. The bond order and magnetic moment of No is
a. 2, dia b. 3, para c. 2.5 para d. 2.5 dia
47. On moving down the group, the E.N /ionizations energy / electron Affinity of an ion
a. Increase b. decrease c. never change d. cannot predicted
48. Among the following which has the maximum ionization energy
a. Halogens b. Nobel gases c. alkali d. Alkaline earth metals
49. ____ is considered as “Father of coordination chemistry”
a. Linus Pauling b. Bohr c. Hund and Mullikan d. Alfred Werner
50. Molecular orbital theory was put forward by ____
a. Linus Pauling b. Hund and Mullikan c. Bohr d. Sedwick
51. The molecular orbitals are filled in the increasing order of the energies, starting with orbital of least energy
a. Hund's rule b. Pauli's exclusion principle
c. Octet rule d. Aufbau principle
52. In organic graphite (Boron Nitride) the hybridisation involve in 'B' in
a. SP b. SP₂ c. SP₃ d. dSP₂
53. The magnetic nature of N₂ and O₂
a. para, dia b. dia, para c. para, para d. cannot predicted
54. Among periodic property ____ property in a relative property
a. ionization energy b. electron affinity
c. electronegativity d. atomic radii
55. The bond order of the species O₂, O₂⁺, O₂⁻, O₂²⁻
a. 2, 1.5, 2.5, 1 b. 2, 1, 2.5, 1.5 c. 2, 2.5, 1, 11.5 d. 2, 2.5, 1.5, 1
56. The intra molecular hydrogen bond present in
a. o-nitro phenol b. m-nitro phenol c. p-nitro phenol d. none
57. The hybridization of NH₄⁺ is
a. SP² b. SP c. dSP² d. SP³

58. The concept of VSEPR theory introduced by
a. Hund and mullikan b. Bohr and wheeler
c. Sidwick d. nylon and Gillespie
59. The bond angle of BeCl_2 , CH_4 , BF_3 , are
a. 109.5° , 120° , 180° b. 180° , 120° , 109.5°
c. 180° , 109.5° , 120° d. 120° , 108° , 109.5°
60. The correct repulsive nature of bond is correct
a. single – single bond > single – triple > double – single
b. triple bond – double < double – single > single – single
c. triple bond – double < double – single > single – single
d. triple bond- single > double – single > single – single
61. The electronic theory of valency was proposed by
a. Hund's Bohr b. G. N. Lewis and W. Kossel
b. Wheeler, Bohr d. Pauli, Hund's
62. The hybridization involve in diamond, graphite are
a. SP , SP^2 , b. SP^3 , SP^2 c. SP^2 , SP^2 d. SP^3 , SP^3
63. The co-ordination number of CCP, BCC are
a. 8,12 b. 12,6 c. 6,12 d. 12,8
64. The total number of atoms per unit in BCC, SC, FCC
a. 1,2,3 b. 2,1,4 c. 6 d. 4
65. Mathematically the number of defect formed / cm^3
a. $n = \frac{Nw}{RT}$ b. $n = \frac{Nw}{RT}$ c. $N = \frac{Nw}{2RT}$ d. $n = \frac{Nw}{RT}$
66. Magnetic susceptibilities are measured by the ____
a. Guoy balance b. thermo balance
c. chemical balance d. electronic balance
67. The super conductor phenomenon was first introduced
a. Neil Bohr b. Hel mol tz c. Pauling d. Kamerlingh onnes
68. The nature of super conductor
a. para b. dia c. no magnetic d. cannot prdict
69. The standard substance used in guoy balance technique
a. Zn So_4 b. FeSo_4 c. CuSo_4 d. Al_2O_3

70. The metal highly toxic
a. Tl b. se c. In d. Po
71. Magnetic induction $B=$
a. $H-4\pi I$ b. $H \div 4\pi I$ c. $H+4\pi I$ d. $H+4\pi$
72. Example for piezo electricity of crystal
a. quartz, lead b. glass, Fe c. Au, pt d. Zn, pd
73. Curie law in
a. $x=CT$ b. $T=XC$ c. $X= C/T$ d. $C=X+T$
74. Curie – weiss equation
a. $x = \frac{C}{T-\theta}$ b. $x = \frac{C}{\theta-T}$ c. $x = \frac{T}{C-\theta}$ d. $x = \frac{C}{T+\theta}$
75. The permeability $P= B/H$ for p value of dia, para substance s are
a. $P >1, P <1$ b. $P >1, P >1$ c. $P <1, P >1$ d. $P >1, P <1$
76. The compound which contains both ionic and covalent nature
a. CH_4 b. H_2 c. KCN d. KCl
77. The C-C bond distance trend
a. ethene > ethane > ethyne b. ethyne > ethane > ethene
c. ethane > ethyne > ethene d. ethane > ethene > ethyne