**CHEMISTRY – 1998**
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1. **The final product of the reaction HC = CH + 2HCI →will be :**
   (1) $CH_2CI\text{-}CH_2CI$ (2) $CH_2=CHCI$
   (3) $CH_3CHCI_2$ (4) CHCI=CHC

2. **Which of the following is amphoteric :**
   (1) $GeO_2$ (2) $CO_2$
   (3) $PbO_2$ (4) All same

3. **$CH_3COOC_5H_{11}$ is obtained by :**
   (1) $C_5H_{11}OH + CH_3COOH$
   (2) $C_5H_{11}CH_2OH = HCOOH$
   (3) $C_2H_5OH = C_5H_{11}OH$
   (4) $(CH_3)_3 –C\text{-}COOH = C_5H_{11}OH$

4. **5 amp. current is passes through a dry cell for 2 hours. The value of produced electric current will be :**
   (1) $36 \times 10^8$ C (2) $3.6 \times 10^8$ C
   (3) $36 \times 10^4$ C (4) $3.6 \times 10^4$ C

5. **Which of the following statement is false for tranis-1, 2-dichloro ethane :**
   (1) chlorine atoms are nearer to each other
   (2) total nos of bonds are six
   (3) free rotation of C=C is possible
   (4) none of these

6. **Orthouitropnenol is a A;**
   (1) Lewis base (2) Lewis acid
   (3) 1 and 2 (4) nither 1 nor 2

7. **Which of the following shows cistrans isomerism :**
   (1) $CH_3\text{-}C\text{-}Br=C\text{-}C1_2$
   (2) $CH_3\text{-}CH=Ch_2$
   (3) $C1\text{-}CH=CH\text{-}CH_3$
   (4) $(CH_3)_2\text{-}C=CH\text{-}C1$

**8. Glycine works in a reaction as :**
(1) Acid (2) Base (3) both 1 and 2 (4) none of these

**9. The true statement for 2-chlrobutane and 3- chlrobutane is :**
(1) First is more reactive than second
(2) Second is more reactive than first
(3) Chlorine atom in both are of different type
(4) One name is wrong, both are same

**10. The magnetic moment of an ion having 4 unpaired electrons is :**
(1) 3.9 B.M. (2) 2.8 B.M. (3) 1.7 B.M. (4) 4.9 B.M.

**11. O-F bond in $OF_2$ compound is formed by the overlapping of following orbitals :**
(1) $sp^2$-2p (2) $sp^3$-2p (3) $sp^3$-2s (4) sp-2p

**12. The structure of $[Cu(NH_3)_4]^{2+}$ is :**
(1) square planner (2) angular (3) linear (4) tetrahedral

**13. The no. of structural isomers of heptane is :**
(1) equal to pentane (2) less than hexane
(3) more than pentane (4) less than pentane

**14. Which of the following hydroxide is soluble in $NH_4OH$ :**
(1) $Sb(OH)_3$ (2) $Bi(OH)_3$ (3) $Fe(OH)_3$ (4) none of above

**15. Which of the following differs from others :**
(1) Pd (2) CO (3) Ni (4) Rb

**16. The structure of phorone is :**
(1) $(CH_3)_2C(OH)C1_3$
(2) $(CH_3)_2C=CHCOCH=C(CH_3)_2$
(3) $(CH_3)_2C=CHCOCH_3$
(4) none of above

**17. Which of the following is strongest electrolyte :**
(1) $C_{12}H_{12}O_{11}$
(2) $H_2O$
(3) $CH_3COOH$
(4) HI

**18. Which of the following statement is true :**
(1) $O_2^{2-}$ is diamagnetic
(2) $O_2^{+}$ is paramagnetic
(3) No is diamagnetic
(4) $He_2^{+}$ is less stable than $He_2$

**19. For which of the following elements the quantum nos are 3, 2, 0, + ½ :**
(1) K (2) CO (3) Ne (4) C1

**20. The coordination nos. of $Na^+$ and $C1^-$ in NaCI are respectively :**

(1) 6, 6 (2) 4, 6 (3) 6, 8 (4) 8, 8

**21. In comparision of Cu and Ag :**

(1) Cu is easily oxidized in comparision with Ag.
(2) Ag is easily oxidized in comparision with Cu
(3) Both oxidizes simultaneously
(4) Do not oxidizes

**22. Molarity of 200 ml. of 18.25 N NaOH will be :**

(1) 32.5 M (2) 91.25 M (3) 2.28 M (4) 22.8 M

**23. In Haber's process if temperature is increased :**

(1) Reaction stops
(2) There is no effect
(3) Yield of $NH_3$ decreases
(4) Yield of $NH_3$ increases

**24. Empirical formula of alkane, alkene and alkyne is :**

(1) equal to cyclopean
(2) equal to each other
(3) all are different
(4) none of these

**25. $CF2C1_2$ is used as :**

(1) Anaesthic (2) Polymer (3) Refrigerant (4) Antipyretic

**26. The weight of carbon atom is :**

(1) $1.9 \times 10^{-23}$ (2) 12 gm (3) 6 gm (4) 6.02 gm. X $10^{23}$ gm.

**27. The pH of $10^{-8}$ M HCI is :**

(1) less than 7 (2) less than 6 (3) 8 (4) 7

**28. Which of the following statement is true :**

(1) $C_6H_6$ does not show resonance
(2) $CO_2$does not show resonance
(3) Both do not show resonance
(4) $CO_2$and $C_6H_6$ show resonating structures

**29. In which of the following compound >C=0 group is not present :**

(1) Alkane (2) Aldehyde (3) Acids (4) Ketone

**30. The mole fraction of acetone in a solution of 2.8 mole acetone and 8.2 mole of $CHC1_3$ will be :**

(1) 0.540 (2) 0.241 (3) 0.254 (4) 0.524

**31. Which of the following element has high ionization potential :**

(1) Ne (2) Be (3) Li (4) O

**32. Which of the following has highest boiling point :**

(1) HI (2) HC1 (3) HF (4) HBr

**33. The dry ice is :**

(1) Solid $H_2O$ (2) Solid $CO_2$ (3) Solid & Dry $H_2O$ (4) none of above

**34. For the reaction $2A \underset{\rightarrow}{\leftarrow} C + D$ the value of equilibrium constant is $1 \times 10^{-3}$ . If [C] = $1.2 \times {}^{10-3}$ M, [D] = $3.8 \times 10^{-6}$ M the value of [A] will be :**

(1) $5.2 \times 10^{-6}$ M (2) $3.6 \times 10^{-9}$ M

(3) $2.1 \times 10^{-3}$ M (4) $4.8 \times 10^{-12}$ M

**35. Which of the following does not obey the octet rule :**

(1) $PCI_3$ (2) $SF_6$ (3) $SO_2$ (4) $OF_2$

**36. Mustard gas is found from :**

(1) $C_2H_4$ & $H_2SO_4$ (2) $C_2H_4$ & $H_2S$

(3) $C_2H_4$ & $S_2C1_2$ (4) $C_2H_4$ & $CH_3SH$

**37. The most reactive metal is :**

(1) Li (2) Au (3) F (4) Pt

**38. Which of the following has highest melting point :**

(1) $C_4H_{10}$ (2) $C_3H_8$ (3) $C_2H_6$ (4) $CH_4$

**39. Which of the following is not a metal :**

(1) Au (2) Hg (3) Ag (4) none of these

**40. In which of the following there is strong bond :**

(1) C=C (2) C-C (3) C≡C (4) all same

**41. The shape and size of 2p, 3p, 4p and 5p orbital are :**

(1) only equal in d block
(2) equal in s block and different in p block
(3) different
(4) equal

**42. Malachite is a ore of :**

(1) Cu (2) Au (3) Ag (4) Mg

**43. If the ionization constant of $CH_3COOH$ is $1.8 \times 10^5$, the degree of ionization of 0.01 M $CH_3COOh$ will be :**

(1) $1.8 \times 10^{-7}$ (2) 1.8 (3) $4.2 \times 10^{-2}$ (4) $42.4 \times 10^{-5}$

**44. If the price of Nac1 sugar are 2 and 14 rupees per kg. then the price of 1 mole NaC1 and 1 mole sugar will be :**

(1) 7 Rs. (2) different (3) equal (4) 28 Rs.

**45. In which of the following there are minimum nos. of molecule :**

(1) 2 gm. $H_2$ (2) 8 gm. $O_2$ (3) 16 gm. $CO_2$ (4) 4 gm. $N_2$

**46. In which of the following central atom uses $sp^2$ hybrid orbitals :**

(1) $SbH_3$ (2) $NH_3$ (3) $PH_3$ (4) $^+CH_3$

**47. Which of the following is paramagnetic :**
(1) C (2) $CN^-$ (3) $O_2^-$ (4) $NO^+$

**48. Present atomic weight scale depends upon :**
(1) C1-35.5 (2) O-16 (3) C-12 (4) H-1

**49. $C_3H_8$ on combustion gives $CO_2$ and $H_2O$. The required volume of $O_2$ will be :**
(1) 5 times of $C_3H_8$ (2) three times (3) 2 times (4) 2.5 times

**50. The oxidation state of B in $KBF_4$ is :**
(1) -3 (2) +2 (3) +3 (4) +4

**51. The electronic configuration of strong electronegative element is :**
(1) $ns^2np^6$ (2) $ns^2np^4$ (3) $ns^2np^3$ (4) $ns^2np^5$

**52. The IUPAC name of $CO_2O_3$ is :**
(1) Cobalt (III) oxide (2) Cobalt (II) oxide
(3) Cobaltans oxide (4) Cobalt oxide

**53. The most light weight inert gas is :**
(1) Ar (2) Ne (3) He (4) Kr

**54. Which of the following element forms cation easily :**
(1) Sr (2) Ne (3) Li (4) Mg

**55. Which of the following is the strongest ionic compound :**
(1) LiC1 (2) HC1 (3) CsC1 (4) $CH_3C1$

**56. Which of the following does not forms $\pi$ bond :**
(1) s-s (2) p-d (3) p-p (4) d-d

**57. CO is isoelectronic of :**
(1) $N_2^+$ (2) $O_2^+$ (3) $CN^-$ (4) $O_2^-$

**58. All s-orbitals have :**
(1) $n \neq 0, \iota \neq 0$ (2) $\iota = 0$ (3) $n = 0$ (4) $n = 0, \iota = 0$

**59. The dipole moment of BF3 is zero. Which of the following 6 bond orbitals are used by B :**
(1) $sp^2$ (2) sp (3) $sp^3$ (4) none of these

**60. Which of the following have acidic hydrogen :**
(1) $C_2H_4$ (2) $C_2H_2$ (3) $C_2H_6$ (4) None of these

**61. In which of the following molecule C-C bond is largest :**
(1) Benzene (2) Ethene (3) Ethane (4) Ethyne

**62. The set of four quantum number of $e^0$ of 4-d will be :**
(1) 3, 2, 0 + ½ (2) 4, 2, 0, + ½
(3) 4, 1, 0, + ½ (4) 4, 3, 0, + ½

**63. The molecule which has linear structure is :**

(1) $NO_2$ (2) $SO_2$ (3) $CO_2$ (4) $OCl_2$

**64. Which of the following have not tetrahedral geometry :**

(1) $NH_4^+$ (2) $BF^-_4$ (3) $SiF_4$ (4) $SF_4$

**1 2**

**65. N=C-C-CH2 in this compound bond**

**H**

**Between C(1) and C(2) is formed by hybrid orbitals of :**

(1) sp & $sp^2$ (2) sp & $sp^3$ (3) sp & sp (4) $sp^2$-$sp^2$

**66. The dipole moment of $CCl_4$ is zero, because of :**

(1) equal electron affinity of C, and Cl
(2) equal size of C and Cl
(3) regular size of C and Cl
(4) planar structure

**67. The number of moles of $H_2$ at 500 cm.3 volume, 700 mm. pressure and $300^0$ K temperature will be:**

(1) $0.203x10^{-2}$ moles
(2) $20.x10^{-3}$ moles
(3) $20.3x10^{-2}$ moles
(4) $2.03 \times 10^{-7}$ moles

**68.Which of the following has electronic configuration as $4f^{1-14}5s^25p^65d^16s^2$ :**

(1) Representative elements
(2) Transition elements
(3) Lanthanides
(4) Actinides

**69. The wave number of hydrogen atom in Lymen series is 82, 200 $cm.^{-1}$. The electron goes from :**

(1) III orbit to II (2) II orbit to I (3) IV orbit to III (4) none of these

**70. Teflen is a polymer of :**

(1) PVC (2) Tetrafluro ethane (3) Tetra fluro ethane (4) $C_2H_4$

**71. In which of the following s character is maximum :**

(1) $C_6H_6$ (2) $H_2H_6$ (3) $C_2H_4$ (4) $C_2H_2$

**72. Benzene hexachloride is found by :**

(1) Addition (2) Elimination (3) Substitution reaction (4) All these

**73. Alkane is found by :**

(1) Reaction by alky l halide
(2) Wurtz reaction
(3) Grignard reagent
(4) All these

**74. The first inert gas compound invented was :**
(1) $KrF_6$ (2) $XeF_6$ (3) $XeF_2$ (4) $XePtF_6$

**75. There are unpaired electrons in nitrogen according to :**
(1) Hund's rule
(2) Aufabu's principal
(3) Paulis principal
(4) none of these

**76. Which of the following is smallest in size :**
(1) $Na^+$ (2) $F^-$ (3) $N^-_3$ (4) $O^{-2}$

**77. The wave character of electron was invented by :**
(1) Schrödinger (2) Henisber (3) Niel Bohr (4) Davisson & Germer

**78. The electronic configuration of Chromium will be :**
(1) [Ar] $3d^5\ 4s^3$ (2) [Ar]$3d^4\ 4s^2$ (3) [Ar] $3d^5\ 4\ s^1$ (4) [Ar] $3d^5\ 4s^0$

**79. In which of the following nos. of primary carbon atoms are maximum :**
(1) is pentane (2) iso-octane (3) neopentane (4) all of these

**80. $Na_2\ S_2O_3$ is used in photography because :**
(1) It is a compound of sulphur
(2) It reacts with Ag Br to form sodium silver thisulphate
(3) It is an antichlor reagent
(4) none of these

**81. Borax is found in :**
(1) Punjab (2) Rajasthan (3) Utterpradesh (4) Delhi

**82. Which of the following is not true for $O_3$ :**
(1) it converts into colourless liquid when condensed
(2) it converts into violet black solid when it condensed
(3) it is blue gas
(4) it is a allotrople of oxygen

**83. $H_2O$ and $D_2O$ both have :**
(1) common chemical properties
(2) different physical and chemical properties
(3) common physical but different chemical properties
(4) common physical properties

**84. Which of the following is not a conjugate base :**
(1) $CH^-_3$ (2) $OH^-$ (3) $CO_2^-$ (4) none of these

**85. Plaster of paris is a compound of the following element :**
(1) K (2) Ca (3) Mg (4) Na

**86. Benzene $\rightarrow$ Toluene is formed by :**
(1) Anti-mark rule

(2) F.C.R.
(3) Wurtz reaction
(4) Markownikoff's rule

**87. The frequency of wave of 4000 Å wave. Length will be :**
(1) 7.5 x $0^2s^{-1}$ (2) 75 x $10^{10}s^{-1}$ (3) 7.5 x $10^{14}$ (4) 0.75 x $10^2s^{-1}$

**88. The oxidation no. of C in $CO_2$ is :**
(1) +1 (2) +2 (3) +4 (4) 0

**89. $H_2O_2$ is :**
(1) strong oxidizing agent and weak reducing agent
(2) neigther oxidizing agent nor reducing agent
(3) only reducing agent
(4) only oxidizing agent

**90. Which element have maximum oxidation states :**
(1) Sc (2) Zn (3) B (4) Mn

**91. Carborundum is :**
(1) SiB (2) SiC (3) $SiO_2$ (4) $CO_2$

**92. Stainless steel is :**
(1) Fe, Ni, CO, C (2) Fe, Mg, Ni, C
(3) Fe, Cr, Ni, C (4) Fe, Mn, Cr, Ni

**93. fluorine is formed by electrolysis of the fused mixture of K and HF because :**
(1) It is most reactive (2) It is a gas
(3) It is strong oxidizing agent (4) It is ($F_2$) toxic

**94. Which of the following Lewis acid is strongest :**
(1) $BI_3$ (2) $BCI_3$ (3) $BF_3$(4) $BBr_3$

**95. The colour of the solution of alkali metal in liquid ammonia appears to blue due to :**
(1) Ammonical metal ion and electron
(2) Ammonical electron
(3) Ammonical metal ion
(4) Metal ion

**96. The solubility product of calcium oxalate is 2.5 x 10-3 mole2/liter-2 . The required minimum concentration of calcium ion to precipitate it will be :**
(1) >$5x10^{-2}$ (2) $5x10^{-2}$ (3) <$5x10^{-2}$ (4) none of these

**97. Aqueous solution of ferric chloride is :**
(1) Very week Basic (2) Acidic (3) Neutral (4) Basic

**98. Which one is electrolyzed in the metallurgy of aluminium :**
(1) Cryolite and Alumina
(2) Alumina
(3) Cryolite

(4) Bauxite

**99. Which of the following gives rod colour precipitate with sodium cupritartaarate :**
(1) $CH_3COOH$ (2) $CH_3COCH$ (3) $CH_3COC_2H_5$ (4) $CH_3CHO$

**100. Which of the following are present in picric acid :**
(1) $–NO_2$ group
(2) –OH and $–NO_2$ group
(3) $–NO_2$ and –COOH groups
(4) –OH group

**ANSWER SHEET**

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