

CHEMISTRY – 1998
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- The final product of the reaction $\text{HC}=\text{CH} + 2\text{HCl} \rightarrow$ will be :**
(1) $\text{CH}_2\text{Cl}-\text{CH}_2\text{Cl}$ (2) $\text{CH}_2=\text{CHCl}$
(3) CH_3CHCl_2 (4) $\text{CHCl}=\text{CHC}$
- Which of the following is amphoteric :**
(1) GeO_2 (2) CO_2
(3) PbO_2 (4) All same
- $\text{CH}_3\text{COOC}_5\text{H}_{11}$ is obtained by :**
(1) $\text{C}_5\text{H}_{11}\text{OH} + \text{CH}_3\text{COOH}$
(2) $\text{C}_5\text{H}_{11}\text{CH}_2\text{OH} = \text{HCOOH}$
(3) $\text{C}_2\text{H}_5\text{OH} = \text{C}_5\text{H}_{11}\text{OH}$
(4) $(\text{CH}_3)_3-\text{C}-\text{COOH} = \text{C}_5\text{H}_{11}\text{OH}$
- 5 amp. current is passes through a dry cell for 2 hours. The value of produced electric current will be :**
(1) $36 \times 10^8 \text{ C}$ (2) $3.6 \times 10^8 \text{ C}$
(3) $36 \times 10^4 \text{ C}$ (4) $3.6 \times 10^4 \text{ C}$
- Which of the following statement is false for trans-1, 2-dichloro ethane :**
(1) chlorine atoms are nearer to each other
(2) total nos of bonds are six
(3) free rotation of $\text{C}=\text{C}$ is possible
(4) none of these
- Orthoutropnenol is a A;**
(1) Lewis base (2) Lewis acid
(3) 1 and 2 (4) nither 1 nor 2
- Which of the following shows cistrans isomerism :**
(1) $\text{CH}_3-\text{C}-\text{Br}=\text{C}-\text{Cl}_2$
(2) $\text{CH}_3-\text{CH}=\text{CH}_2$
(3) $\text{C}_1-\text{CH}=\text{CH}-\text{CH}_3$
(4) $(\text{CH}_3)_2-\text{C}=\text{CH}-\text{C}_1$

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-chlorobutane and 3-chlorobutane 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 $[\text{Cu}(\text{NH}_3)_4]^{2+}$ is :**
(1) square planar (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) $\text{Sb}(\text{OH})_3$ (2) $\text{Bi}(\text{OH})_3$ (3) $\text{Fe}(\text{OH})_3$ (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) $(\text{CH}_3)_2\text{C}(\text{OH})\text{C}_1\text{C}_3$
(2) $(\text{CH}_3)_2\text{C}=\text{CHCOCH}=\text{C}(\text{CH}_3)_2$
(3) $(\text{CH}_3)_2\text{C}=\text{CHCOCH}_3$
(4) none of above
17. **Which of the following is strongest electrolyte :**
(1) $\text{C}_{12}\text{H}_{12}\text{O}_{11}$
(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, + $\frac{1}{2}$:**
(1) K (2) CO (3) Ne (4) Cl
20. **The coordination nos. of Na^+ and Cl^- in NaCl are respectively :**

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

21. In comparison of Cu and Ag :

- (1) Cu is easily oxidized in comparison with Ag.
(2) Ag is easily oxidized in comparison 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 cyclohexane
(2) equal to each other
(3) all are different
(4) none of these

25. CF_2Cl_2 is used as :

- (1) Anaesthetic (2) Polymer (3) Refrigerant (4) Antipyretic

26. The weight of carbon atom is :

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

27. The pH of 10^{-8} M HCl 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 $>\text{C}=\text{O}$ 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 CHCl_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) HCl (3) HF (4) HBr

33. The dry ice is :
 (1) Solid H₂O (2) Solid CO₂ (3) Solid & Dry H₂O (4) none of above
34. For the reaction $2A \rightleftharpoons C + D$ the value of equilibrium constant is 1×10^{-3} . If $[C] = 1.2 \times 10^{-3} \text{ M}$, $[D] = 3.8 \times 10^{-6} \text{ M}$ the value of $[A]$ will be :
 (1) $5.2 \times 10^{-6} \text{ M}$ (2) $3.6 \times 10^{-9} \text{ M}$
 (3) $2.1 \times 10^{-3} \text{ M}$ (4) $4.8 \times 10^{-12} \text{ M}$
35. Which of the following does not obey the octet rule :
 (1) PCl₃ (2) SF₆ (3) SO₂ (4) OF₂
36. Mustard gas is found from :
 (1) C₂H₄ & H₂SO₄ (2) C₂H₄ & H₂S
 (3) C₂H₄ & S₂C1₂ (4) C₂H₄ & CH₃SH
37. The most reactive metal is :
 (1) Li (2) Au (3) F (4) Pt
38. Which of the following has highest melting point :
 (1) C₄H₁₀ (2) C₃H₈ (3) C₂H₆ (4) CH₄
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 CH₃COOH is 1.8×10^{-5} , the degree of ionization of 0.01 M CH₃COOH will be :
 (1) 1.8×10^{-7} (2) 1.8 (3) 4.2×10^{-2} (4) 42.4×10^{-5}
44. If the price of NaCl sugar are 2 and 14 rupees per kg. then the price of 1 mole NaCl 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. H₂ (2) 8 gm. O₂ (3) 16 gm. CO₂ (4) 4 gm. N₂
46. In which of the following central atom uses sp² hybrid orbitals :
 (1) SbH₃ (2) NH₃ (3) PH₃ (4) ⁺CH₃

47. Which of the following is paramagnetic :
 (1) C (2) CN^- (3) O_2^- (4) NO^+
48. Present atomic weight scale depends upon :
 (1) C-12 (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) LiCl (2) HCl (3) CsCl (4) CH_3Cl
56. Which of the following does not forms π 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) $n \neq 0, l \neq 0$ (2) $l = 0$ (3) $n = 0$ (4) $n = 0, l = 0$
59. The dipole moment of BF_3 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^- of 4-d will be :
 (1) 3, 2, 0, $+\frac{1}{2}$ (2) 4, 2, 0, $+\frac{1}{2}$
 (3) 4, 1, 0, $+\frac{1}{2}$ (4) 4, 3, 0, $+\frac{1}{2}$

63. The molecule which has linear structure is :

- (1) NO₂ (2) SO₂ (3) CO₂ (4) OCl₂

64. Which of the following have not tetrahedral geometry :

- (1) NH₄⁺ (2) BF₄⁻ (3) SiF₄ (4) SF₄

65. $\overset{1}{\text{N}}=\overset{2}{\text{C}}-\overset{\text{H}}{\text{C}}-\text{CH}_2$ in this compound bond



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

- (1) sp & sp² (2) sp & sp³ (3) sp & sp (4) sp²-sp²

66. The dipole moment of CCl₄ 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 H₂ at 500 cm.³ volume, 700 mm. pressure and 300⁰ K temperature will be:

- (1) 0.203x10⁻² moles
(2) 20.x10⁻³ moles
(3) 20.3x10⁻² moles
(4) 2.03 x 10⁻⁷ moles

68. Which of the following has electronic configuration as 4f¹⁻¹⁴5s²5p⁶5d¹6s² :

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

69. The wave number of hydrogen atom in Lyman 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. Teflon is a polymer of :

- (1) PVC (2) Tetrafluro ethane (3) Tetra fluro ethane (4) C₂H₄

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

- (1) C₆H₆ (2) H₂H₆ (3) C₂H₄ (4) C₂H₂

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) Aufbau's principal
(3) Pauli's principal
(4) none of these

76. Which of the following is smallest in size :

- (1) Na^+ (2) F^- (3) N_3^- (4) O_2^{2-}

77. The wave character of electron was invented by :

- (1) Schrödinger (2) Heisenberg (3) Niels Bohr (4) Davisson & Germer

78. The electronic configuration of Chromium will be :

- (1) $[\text{Ar}] 3d^5 4s^3$ (2) $[\text{Ar}] 3d^4 4s^2$ (3) $[\text{Ar}] 3d^5 4s^1$ (4) $[\text{Ar}] 3d^5 4s^0$

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. $\text{Na}_2\text{S}_2\text{O}_3$ is used in photography because :

- (1) It is a compound of sulphur
(2) It reacts with Ag Br to form sodium silver thiosulphate
(3) It is an antichlor reagent
(4) none of these

81. Borax is found in :

- (1) Punjab (2) Rajasthan (3) Uttarpradesh (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 an allotrope 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_3^{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-Markovnikov rule

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

87. The frequency of wave of 4000 \AA wave. Length will be :

- (1) $7.5 \times 10^2 \text{ s}^{-1}$
- (2) $75 \times 10^{10} \text{ s}^{-1}$
- (3) 7.5×10^{14}
- (4) $0.75 \times 10^2 \text{ s}^{-1}$

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) neither 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) BCl_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 $2.5 \times 10^{-3} \text{ mole}^2/\text{liter}^{-2}$. The required minimum concentration of calcium ion to precipitate it will be :

- (1) $>5 \times 10^{-2}$
- (2) 5×10^{-2}
- (3) $<5 \times 10^{-2}$
- (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

