CHEMISTRY

41. In a nucleide one a.m.u. of mass dissipated into energy to bind its nulcueons is equivalent of this mass
(a) 931.5 eV (b) 931.5×10^6 MeV (c) 931.5×10^6 eV (d) 931.5 Mv

42. Which of the following is Isotope of Ge^{76}_{32}?
(a) $_{33}As^{77}$ (b) Ge^{77}_{32} (c) Se^{77}_{34} (d) Br^{80}_{35}

43. How many electrons are present in the M-shell of an atom of an element with atomic number – 24?
(a) 5 (b) 6 (c) 12 (d) 13

44. The four Quantum numbers of the valency of electron potassium are
(a) 4, 0, 1, $\frac{1}{2}$ (b) 4, 1, 0, $\frac{1}{2}$ (c) 4, 0, 0, $\frac{1}{2}$ (d) 4, 1, 1, $\frac{1}{2}$

45. What is the wave length of H_β line the Balmer series of hydrogen spectrum?
(R = Ryd bergs's constant)
(a) $\frac{36}{5R}$ (b) $\frac{5R}{36}$ (c) $\frac{3R}{16}$ (d) $\frac{16}{3R}$

46. Which of the following is the correct order of ionic radii?
(a) $Na^+ < Mg^{+2} < A\ell^{+3} < Si^{+4}$ (b) $A\ell^{+3} < Si^{+4} < Na^+ < Mg^{+2}$
(c) $Si^{+4} < A\ell^{+3} > Mg^{+2} > Na^+$ (d) $Na^+ > Mg^{+2} > A\ell^{+3} > Si^{+4}$

47. Which of the following is a correct pair?
(a) $BeCl_2$, Linear (b) NH_3, Linear (c) CO_2, Tetra hedral (d) BF_3, octa hedral

48. The correct order of Vanderwaals radius of F, Cl, and Br is
(a) $C\ell > F > Br$ *(b)* $Br > C\ell > F$ *(c)* $F > C\ell > Br$ *(d)* $Br > F > C\ell$

49. The kinetic energy of 4 moles of nitrogen at 127^0C is_____cals
(a) 4400 (b) 3200 (c) 4800 (d) 1524

50. What are the oxidation numbers of 'N' in NH_4NO_3?
(a) +3, – 5 (b) – 3, +5 (c) +3, +6 (d) – 2, +2

51. 50 g of calcium carbonate was completely burnt in air. What is the weight (in gms) of the residue?
(a) 2.8 (b) 28 (c) 4.4 (d) 44

52. Sodium hexa meta phosphate is known as
(a) cal gon (b) permutit (c) Natalite (d) Nitrolim

53. At what temperature the density of heavy water will be maximum?
(a) 0^0C (b) 11.6^0C (c) 4^0C (d) 27^0C

54. Composition of carnallite is
(a) $Na_3A\ell F_6$ (b) $KC\ell, MgC\ell_2 6H_2O$ (c) $KNO_3, MgNO_3$ (d) None

Space for rough work

55. $BC\ell_3 + H_2O \longrightarrow$ products formed are

(a) $H_3BO_3 + HC\ell$ (b) $B_2O_3 + HC\ell$ (c) $B_2H_6 + HC\ell$ (d) No Reaction

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56. Percentage of lead in lead pencil is
(a) 31 – 66 (b) 80 (c) 20 (d) 0

57. Which of the following has pyramidal shape?
(a) XeF_4 (b) XeO_3 (c) XeF_2 (d) XeF_6

58. Which of the following is an organic compound?
(a) CO (b) CO_2 (c) HCOOH (d) H_2CO_3

59. $CaC_2 \xrightarrow{H_2O} A \xrightarrow[tube]{Hot} B \xrightarrow[CH_3C\ell]{AlC\ell_3} C$. C is

(a) Toluene (b) Benzene (c) Acetylene (d) Chloro Benzene

60. Alkyl halide reaction with metallic sodium in dry ether solution is called
(a) Friedal – Craft's reaction (b) Sand mayer's reaction
(c) Wurtz reaction (d) Gabriel's reaction

61. Which one of the following is mainly responsible for depletion of ozone layer?
(a) methane (b) carbon dioxide (c) water (d) chloro fluoro carbons

62. Which one of the following is diamagnetic ion?
(a) Co^{+2} (b) Cu^{+2} (c) Mn^{+2} (d) Sc^{3+}

63. The Bond energies (in KJ $mole^{-1}$) of P-H, As-H and N-H are respectively
(a) 247, 138 and 389 (b) 247, 389 and 318 (c) 318, 389 and 247 (d) 318, 247 and 389

64. What are products formed when ammonia reacts with excess of chlorine?
(a) N_2 and NCl_3 (b) NCl_3 and HCl (c) N_2 and NH_4 Cl (d) N_2 and HCl

65. Iron sulphide is heated in air to form A, an oxide of sulphur. A is dissolved in water to give an acid. The basicity of the acid is
(a) 2 (b) 3 (c) 1 (d) zero

66. Which one of the following is a lyophillic colloidal solution?
(a) smoke (b) Gold solution (c) starch Aqueous solution (d) cloud

67. Which of the following is not correct?
(a) chlorophyll is responsible for the synthesis of carbohydrates in plants
(b) the compound formed with the addition of oxygen to haemoglobin is called oxyhaemoglobin
(c) Acetyl salicylic acid is known as asprin
(d) The metal ion present in vitamin B_{12} is Mg^{+2}

68. The pH of aqueous KCl solution is 7.0. This solution was electrolysed for few seconds using Pt electrodes. Which of the following is correct?
(a) The pH of solution decreases (b) The pH of solution increases
(c) Cl_2 is liberated at cathode (d) The pH of solution remains same

69. The heat of formations CO(g) and CO_2(g) are $\Delta H = -110$ and $\Delta H = -393$ KJ $mole^{-1}$ respectively. What is the heat of reaction (ΔH) (in Kj/mole) for the following reaction

$$CO_{(g)} + \frac{1}{2} O_{2(g)} \longrightarrow CO_{2(g)}$$

(a) – 507 (b) – 142.5 (c) -283 (d) 504

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70. What is the quantity of electricity (in coulombs) required to deposit all the silver from 250 ml of 1Mole $AgNO_3$ solution?
(a) 2412.5 (b) 24125 (c) 4825.0 (d) 48250

71. Assertion (A): Molarity of a solution decreases with an increase of temperature
Reason (R): As temperature increases volume of solution increases
(a) Both A and R are true, R is correct explanation of A
(b) Both A and R are true, R is not correct explanation of A
(c) A is true, R is false (d) A is false, R is true

72. Assertion (A): The aqueous solution of CH_3COONa is alkaline in nature
Reason (R): Acerate Iron under goes Anionic hydrolysis.
(a) Both A and R are true, R is correct explanation of A
(b) Both A and R are true, R is not correct explanation of A
(c) A is true, R is false (d) A is false, R is true

73. The rate constant of a first order reaction is 0.693 min^{-1}. What is the time (in min) required for reducing an intial concentration of 30 moles lit^{-1} to 7.5 mole lit^{-1}
(a) 4 (b) 1 (c) 2 (d) 3

74. For the following reaction $NH_{4(s)}HS \longrightarrow NH_{3(g)} + H_2S_{(g)}$ the total pressure at equilibrium is 30 atm. The value of K_p is
(a) 15 atm^2 (b) 225 atm^2 (c) 30 atm^2 (d) 45 atm^2

75. In the reaction $C_2H_5OH \xrightarrow[300^\circ C]{Cu} X$ the molecular formula of X is:
(a) C_4H_6O (b) $C_4H_{10}O$ (c) C_2H_4O (d) C_2H_6

76. In which of the following reaction the product is Ether?
(a) $C_6H_6 + CH_3COC\ell$ / Anhydrous $A\ell C\ell_3$ *(b)* $C_2H_5C\ell + aq\,KOH$
(c) $C_2H_5C(\ell) + C_2H_5ONa$ *(d)* $C_6H_6 + C_6H_5COC(\ell)$ /Anhydrous $AlCl_3$

77. Which of the following pair is functional isomers?
(a) CH_3COCH_3 , CH_3CHO (b) $C_2H_5CO_2H$, $CH_3CO_2CH_3$
(c) $C_2H_5CO_2H$, $CH_3CO_2C_2H_5$ (d) CH_3CHO, CH_3CO_2H

78. The product formed in the aldol condensation of Acetalde hyde is
(a) $CH_3CH_2CH(OH)CHO$ (b) $CH_3 - CH(OH)CH_2CHO$
(c) $CH_3CH(OH)COCH_3$ *(d)* $CH_3CH_2CH_2CHO$

79. In the following reactions x and y are respectively
$CH_3COOH + NH_3 \longrightarrow x \xrightarrow{\Delta} y + H_2O$
(a) CH_3CONH_2, CH_4 (b) CH_3COONH_4, CH_3CONH_2

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(c) CH_3CONH_2 ,CH_3COOH (d) CH_3NH_2,CH_3CONH_2

80. Which of the following is the molecular formula of tertiary amine?

(a) C_2H_7N (b) C_3H_9N (c) C_2H_5N (d) CH_3N

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