WEEKLY TEST MEDICAL PLUS -04 TEST - 02 RAJPUR
SOLUTION Date 28-07-2019

[CHEMISTRY]

46. (b) The number of electrons in an atom is equal to its atomic number *i.e.* number of protons.

47. (a) No. of protons = Atomic no. = 25 and no. of neutron = 55 – 25 = 30.

48. (a) Na^+ and Ne are isoelectronic which contain 10 electrons.

49. (a) One molecule of CO_2 have 22 electrons.

50. (c) Mass of an atom is due to nucleus (neutron + proton).

51. (c) Na^+ has 10 electron and Li^+ has 2 electron so these are different number of electron from each other.

52. (c) $P_{15} = 2, 8, 5$

53. (c) $^{16}_{8}O^{--}$ have more electrons than neutron $p = 8,\ e = 10,\ n = 8$.

54. (b) $^-CONH_2$ = 6 + 8 + 7 + 2 + 1 (from other atom to form covalent bond) = 24

55. (c) Neutron in $^{12}_{6}C = 6,$, Neutrons in $^{28}_{14}Si = 14$
Ratio = 6 : 14 = 3 : 7.

56. D

57. (c) $H^- = 1s^2$ and $He^+ = 1s^2$.

58. (a) Number of unpaired electrons in inert gas is zero because they have full filled orbitals.

59. (a) In case of N^{3-}, $p = 7$ and $c = 10$

60. C

61. (a) The central part consisting whole of the positive charge and most of the mass caused by nucleus, is extremely small in size compared to the size of the atom.

62. (c) α-particles pass through because most part of the atom is empty.

63. (b) An electron jumps from L to K shell energy is released.

64. B

65. (c) Emission spectra of different λ accounts for quantisation of energy.

66. A

67. Ratio fo atoms $C : H : Cl :: \frac{47.5}{12} : \frac{2.54}{1} : \frac{50}{35.5} :: 3.96 : 2.54 : 1.41 :: 2.8 : 1.8 : 1$

$:: 14 : 9 : 5$

Empirical formula = $C_{14}H_9Cl_5$

68 Gram molecular mass of NH_3 is 7 g.

$\therefore$ No. of molecules in 4.25 g of $NH_3 = \frac{4.25}{17}N_A = \frac{N_A}{4}$

Now, one molecule of NH_3 contans 4 atoms

$\therefore$ $\frac{N_A}{4}$ molecules contian $\frac{N_A}{4} \times 4 = N_A$ atoms

Again, 32 g of $O_2 = N_A$ molecules = $2N_A$ atoms

$\therefore$ 8 g of $O_2 = \frac{N_A}{32} \times 8 = \frac{N_A}{4}$ molecules $\frac{2N_A}{32} \times 8 = \frac{N_A}{2}$ atoms

On the other hand,

2g of $H_2 = N_A$ molecules = $2N_A$ atoms

4g of He = N_A atoms $[\because \text{gram atomic mass of He} = 4g]$

69. Moles of water produced $= \frac{0.72}{18} = 0.04$

Moles of CO_2 produced $= \frac{3.08}{44} = 0.07$

Equation for combustion of an unknown hydrocarbon, C_xH_y is

$$C_xH_y + \left(x + \frac{y}{4}\right)O_2 \rightarrow xCO_2 + \frac{y}{2}H_2O$$

$\Rightarrow$ $x = 0.07$ and $\frac{y}{2} = 0.04 \Rightarrow y = 0.08$ and $\frac{x}{y} = \frac{0.07}{0.08} = \frac{7}{8}$

$\therefore$ The empirical formula of the hydrocarbon is C_7H_8

70. Number of gram equivalents of HCl $= \frac{\text{Normality} \times V}{1000} = \frac{0.1 \times 100}{1000} = 0.01$

Number of gram equivalents of metal carbonate = number of gram equivalents of HCl

$\frac{w}{E} = 0.01 \quad \Rightarrow \quad \frac{2}{E} = 0.01 \Rightarrow E = 200$

71. Volume of 44g of N_2O = 22.4 L at STP

Volume of 1 g of N_2O occupies $\frac{22.4}{44}$L

Volume of 4.4 g of N_2O occupies $\frac{22.4}{44} \times 4.4 = 2.24$ L