

(CHEMISTRY)**SECTION-A**

51. The number of electrons present in 9.5 g of F^- ion is (Given: atomic mass of F is 19 u)
- (1) $4.5 N_A$ (2) $0.3 N_A$
 (3) $5 N_A$ (4) $3.25 N_A$
52. The species undergoing oxidation in the following reaction is:
- $$3SO_3^{2-} + Cr_2O_7^{2-} + 8H^+ \rightarrow 3SO_4^{2-} + 2Cr^{3+} + 4H_2O$$
- (1) H_2O (2) SO_3^{2-}
 (3) $Cr_2O_7^{2-}$ (4) H^+
53. Which of the following liquid mixture behaves as an ideal solution?
- (1) n-hexane and n-heptane
 (2) acetone and chloroform
 (3) water and methanol
 (4) aniline and phenol
54. Which of the following is an intensive property?
- (1) Enthalpy
 (2) Heat capacity
 (3) Pressure
 (4) Mass
55. If the solubility of $Mg_3(PO_4)_2$ is s mol L^{-1} , then its solubility product is:
- (1) $6s^2$ (2) s^5
 (3) $36s^5$ (4) $108s^5$
56. The number of Faraday required to convert 0.1 mol of MnO_4^- into Mn^{2+} is:
- (1) 0.5 F (2) 0.1 F
 (3) 0.25 F (4) 0.6 F
57. The volume of water required to prepare 0.1 M HCl solution, from 0.5 M of 500 mL HCl solution is:
- (1) 2000 mL
 (2) 1000 mL
 (3) 1500 mL
 (4) 2500 mL
58. The **correct** electron releasing tendency of given metals is:
- (1) $Cu > Zn > Ag$
 (2) $Ag > Cu > Zn$
 (3) $Cu > Ag > Zn$
 (4) $Zn > Cu > Ag$
59. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: When a solution is separated from the pure solvent by a semipermeable membrane (SPM), the solvent molecules pass through SPM from pure solvent side to the solution side.
Reason R: Net diffusion of solvent occurs from a region of high concentration to a region of low concentration solution during osmosis.
 In the light of the above statements, choose the **correct** answer from the options given below:
- (1) Both A and R are true and R is the correct explanation of A.
 (2) Both A and R are true but R is NOT the correct explanation of A.
 (3) A is true but R is false.
 (4) A is false but R is true.
60. Standard molar enthalpy of formation is **not** zero for:
- (1) $O_2(g)$ (2) $Br_2(l)$
 (3) $C(\text{graphite})$ (4) $CO_2(g)$
61. Which of the following mixture **cannot** act as a buffer?
- (1) $CH_3COOH + CH_3COONa$
 (2) $NH_4OH + NH_4Cl$
 (3) $H_2SO_4 + (NH_4)_2SO_4$
 (4) $HCOOH + HCOOK$
62. The product obtained at anode and cathode respectively, by the electrolysis of dilute H_2SO_4 are:
- (1) O_2 and H_2 (2) O_2 and SO_2
 (3) H_2 and SO_3 (4) H_2 and O_2
63. The amount of H_2O formed by the reaction of 10 g of $H_2(g)$ with 64 g of $O_2(g)$ is:
- (1) 2 mol (2) 2.5 mol
 (3) 1.5 mol (4) 4 mol
64. Given below are two statements:
Statement I: The standard electrode potential of hydrogen electrode is 0.00 volts.
Statement II: The standard electrode potential is measured at 298 K.
 In the light of the above statements, choose the most appropriate answer from the options given below:
- (1) Both Statement I and Statement II are correct.
 (2) Statement I is correct but Statement II is incorrect.
 (3) Statement I is incorrect but Statement II is correct.
 (4) Both Statement I and Statement II are incorrect.