

26. An unknown volume of 40% (w/w) NaOH solution of specific gravity 1.6 is diluted until the specific gravity of the solution becomes 1.1. The strength of the resulting solution is
- 12.8% (w/v)
  - 10.67% (w/v)
  - 11.6% (w/w)
  - 9.7% (w/w)
27. If a definite volume of '20 vol' H<sub>2</sub>O<sub>2</sub> solution is diluted such that the volume of diluted solution becomes double than that of original volume, then
- the volume strength of diluted solution becomes '40 vol'
  - the molarity of solution becomes half of its initial molarity
  - the molality of solution becomes half of its initial molality
  - the maximum amount of O<sub>2</sub> gas obtainable from the solution remains the same.
28. A volume of 100 ml of M – NaCl solution, 100 ml of 2 M – MgCl<sub>2</sub> solution and 300 ml of 4 M – Mg(NO<sub>3</sub>)<sub>2</sub> solution is mixed together and the mixture is diluted to 2 l. Which of the following is the correct final concentration of ions?
- Na<sup>+</sup> = 0.05 M
  - Mg<sup>2+</sup> = 0.7 M
  - Cl<sup>-</sup> = 0.2 M
  - NO<sub>3</sub><sup>-</sup> = 1.2 M
29. If the ratio of mole fractions of solute and solvent is unity, then the mass per cent of solute is (Molar masses of solute and solvent are X and Y, respectively.)
- 50%
  - $\frac{X}{X+Y} \times 100\%$
  - $\frac{X}{Y} \times$  mass per cent of solvent
  - $\frac{Y}{X} \times$  mass per cent of solvent
30. A quantity of 720 g water is added in 230 g ethanol at a certain temperature to get 1 l of solution. Which of the following is/are correct regarding the solution formed?
- The density of solution is 950 kg/m<sup>3</sup>.
  - The mole fraction of ethanol is 0.11.
  - The molarity of solution is 5 M.
  - The molality of solution is 6.94 M.

## Section C (Comprehensions)

### Comprehension I

The first concept of atomic weight was given by Dalton. He defined that the absolute mass of an atom cannot be determined but we may compare the masses of atoms of different elements, perfectly, by knowing the chemical formula and percentage composition, by mass, of the compound formed by the elements concerned. The chemical or molecular formula can be determined with the help of Avogadro's hypothesis that is, under the similar conditions of pressure and temperature, equal volume