# CHEMISTRY

21. Irrespective of the source, pure sample of water always yields 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of
    (1) Conservation of mass
    (2) Constant composition
    (3) Multiple proportions
    (4) Constant volume

22. A compound possesses 8% sulphur by mass. The least molecular mass is
    (1) 200              (2) 400
    (3) 155              (4) 355

23. If 1 M and 2.5 L NaOH solution is mixed with another 0.5 M and 3 L NaOH solution, then molarity of the resultant solution will be
    (1) 1.0 M            (2) 0.73 M
    (3) 0.80 M           (4) 0.50 M

24. 171 g of cane sugar $(C_{12}H_{22}O_{11})$ is dissolved in 1 L of water. The molarity of the solution is
    (1) 2.0 M            (2) 1.0 M
    (3) 0.5 M            (4) 0.25 M

25. Calculate the molality of 1 L solution of 93% $H_2SO_4$ (weight/volume). The density of the solution is 1.84 g mL$^{-1}$
    (1) 10.43            (2) 20.36
    (3) 12.05            (4) 14.05

26. $6.02 \times 10^{20}$ molecules of urea are present in 100 mL of its solution. The concentration of urea solution is
    (1) 0.02 M           (2) 0.01 M
    (3) 0.001 M          (4) 0.1 M
    (Avogadro constant, $N_A = 6.02 \times 10^{23} \, mol^{-1}$)

27. A 5 molar solution of $H_2SO_4$ is diluted from 1 L to 10 L. What is the normality of the solution?
    (1) 0.25 N           (2) 1 N
    (3) 2 N              (4) 7 N

28. If 5.0 gm of $BaCl_2$ is present in $10^6$ gm solution, the concentration is
    (1) 1 ppm            (2) 5 ppm
    (3) 50 ppm           (4) 1000 ppm

29. The number of moles of KCl in 1000 mL of 3 molar solution is
    (1) 1                (2) 2
    (3) 3                (4) 1.5

30. A solution contains 1 mole of water and 4 mole of ethanol. The mole fraction of water and ethanol will be
    (1) 0.2 water + 0.8 ethanol
    (2) 0.4 water + 0.6 ethanol
    (3) 0.6 water + 0.8 ethanol
    (4) 0.8 water + 0.2 ethanol