CHEMISTRY

21. (2)

H_2O contains H and O in a fixed ratio by mass. It illustrates the law of constant composition.

22. (2)

$\because$ 8 gm sulphur is present in 100 gm of substance

$\therefore$ 32 gm sulphur will present =

$\dfrac{100}{8} \times 32 = 400$.

23. (2)

$(2.5 \times 1 + 3 \times 0.5) = M_3 \times 5.5$

or $2.5 + 1.5 = M_3 \times 5.5$

or $M_3 = \dfrac{4}{5.5} = 0.73\,M$.

24. (3)

$\text{Molarity} = \dfrac{w}{\text{m.wt.} \times \text{volume in litre}}$

$= \dfrac{171}{342 \times 1} = 0.5M$

25. (1)

$\text{Molality, (m)} = \dfrac{w \times 1000}{mW} = 14.05$.

26. (2)

$\text{Mole of urea} = \dfrac{6.02 \times 10^{20}}{6.02 \times 10^{23}} = 10^{-3}$ moles

Concentrated of solution (in molarity)

27. (2)

$M_1 V_1 = M_2 V_2$

i.e. $5 \times 1 = M_2 \times 10 \Rightarrow M_2 = 0.5$

Normality of the solution $= 0.5 \times 2 = 1$

28. (2)

$\text{Concentration} = \dfrac{5 \times 10^6}{10^6} = 5$ ppm.

29. (3)

$M = \dfrac{n}{V(l)} \Rightarrow 3 = \dfrac{n}{1} \Rightarrow n = 3$ moles.

30. (1)

0.2 water + 0.8 ethanol; χ_A = mole fraction of water,

χ_B = mole fraction of ethanol

$\chi_A = \dfrac{N_1}{N_1 + N_2}$, $\chi_B = \dfrac{N_2}{N_2 + N_1}$

$\therefore$ Mole fraction of water = 0.2 and ethanol = 0.8.