## Atomic, Molecular and Equivalent masses

25. The mass of a molecule of water is

(a) $3 \times 10^{-26} kg$

(b) $3 \times 10^{-25} kg$

(c) $1.5 \times 10^{-26} kg$

(d) $2.5 \times 10^{-26} kg$

26. 1.24 *gm P* is present in 2.2 *gm*

(a) $P_4S_3$ (b) $P_2S_2$

(c) $PS_2$ (d) $P_2S_4$

27. The atomic weights of two elements *A* and *B* are 40 and 80 respectively. If *x g* of *A* contains *y* atoms, how many atoms are present in 2*x g* of *B*

(a) $\frac{y}{2}$ (b) $\frac{y}{4}$

(c) *y* (d) 2*y*

28. Assuming fully decomposed, the volume of $CO_2$ released at STP on heating 9.85*g* of $BaCO_3$ (Atomic mass of *Ba*=137) will be

(a) 0.84 *L* (b) 2.24 *L*

(c) 4.06 *L* (d) 1.12 *L*

29. If $N_A$ is Avogadro's number then number of valence electrons in 4.2 *g* of nitride ions $(N^{3-})$

(a) 2.4 $N_A$ (b) 4.2 $N_A$

(c) $1.6N_A$ (d) $3.2N_A$

30. The weight of $1 \times 10^{22}$ molecules of $CuSO_4.5H_2O$ is

(a) 41.59 *g*

(b) 415.9 *g*

(c) 4.159 *g*

(d) None of these

31. Rearrange the following (I to IV) in the order of increasing masses and choose the correct answer from (a), (b), (c) and (d) (Atomic mass: *N*=14, *O*=16, *Cu*=63).

I. 1 molecule of oxygen

II. 1 atom of nitrogen

III. $1 \times 10^{-10}$ g molecular weight of oxygen

IV. $1 \times 10^{-10}$ g atomic weight of copper

(a) II<I<III<IV (b) IV<III<II<I

(c) II<III<I<IV (d) III<IV<I<II

32. 1.520 *g* of the hydroxide of a metal on ignition gave 0.995 *gm* of oxide. The equivalent weight of metal is

(a) 1.520 (b) 0.995
(c) 19.00 (d) 9.00

33. How much coulomb charge is present on 1*g* ion of $N^{3-}$
(a) $5.2 \times 10^6$C
(b) $2.894 \times 10^5$C
(c) $6.6 \times 10^6$C
(d) $8.2 \times 10^6$C

34. Ratio of $C_p$ and $C_v$ of a gas X is 1.4, the number of atom of the gas 'X' present in 11.2 litres of it at NTP will be
(a) $6.02 \times 10^{23}$ (b) $1.2 \times 10^{23}$
(c) $3.01 \times 10^{23}$ (d) $2.01 \times 10^{23}$

35. If we consider that 1/6, in place of 1/12, mass of carbon atom is taken to be the relative atomic mass unit, the mass of one mole of a substance will
(a) Decrease twice
(b) Increase two fold
(c) Remain unchanged
(d)Be a function of the molecular mass of the substance

36. What should be the equivalent weight of phosphorous acid, if *P*=31; *O*=16; *H*=1
(a) 82
(b) 41
(c) 20.5
(d) None of these

37. The number of molecule at NTP in 1 *ml* of an ideal gas will be
(a) $6 \times 10^{23}$
(b) $2.69 \times 10^{19}$
(c) $2.69 \times 10^{23}$
(d) None of these

38. The specific heat of a metal is 0.16 its approximate atomic weight would be
(a) 32 (b) 16
(c) 40 (d) 64

39. The weight of a molecule of the compound $C_{60}H_{122}$ is
(a) $1.4 \times 10^{-21}$g
(b) $1.09 \times 10^{-21}$g
(c) $5.025 \times 10^{23}$g
(d) $16.023 \times 10^{23}$g

40. What is the weight of oxygen required for the complete combustion of 2.8 *kg* of ethylene
(a) 2.8 *kg* (b) 6.4 *kg*
(c) 9.6 *kg* (d) 96 *kg*

41. What volume of $NH_3$ gas at STP would be needed to prepare 100*ml* of 2.5 molal (2.5m) ammonium hydroxide solution

(a) 0.056 litres (b) 0.56 litres

(c) 5.6 litres (d) 11.2 litres

42. If the density of water is 1 $g\ cm^{-3}$then the volume occupied by one molecule of water is approximately

(a) $18cm^3$

(b) $22400cm^3$

(c) $6.02 \times 10^{-23}cm^3$

(d) $3.0 \times 10^{-23}cm^3$

43. Caffeine has a molecular weight of 194. If it contains 28.9% by mass of nitrogen, number of atoms of nitrogen in one molecule of caffeine is

(a) 4 (b) 6

(c) 2 (d) 3

44. A 400 *mg* iron capsule contains 100 mg of ferrous fumarate, $(CHCOO)_2Fe$. The percentage of iron pasent in it is approximately

(a) 33% (b) 25%

(c) 14% (d) 8%