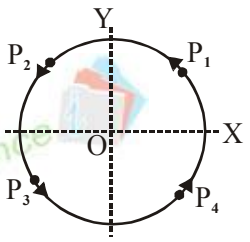
PHYSICS

1. In the equation $b = a^2 \cos^2 2\pi \frac{\beta\gamma}{\alpha}$, if the units of a, α and β are m, s^{-1} and $(m/s)^{-1}$ respectively. The units of b and γ are
   (1) m and $(m/s^2)^{-1}$ (2) m^2 and (m/s^2)
   (3) m^2 and $(m/s^2)^{-1}$ (4) m and m/s^2
2. Which of the following is *not* a unit of energy?
   (1) erg (2) joule
   (3) kilowatt (4) kilowat hour
3. If $x = at + bt^2$ where x *is* in metres and t is in seconds, then unit of b is
   (1) m (2) m/s
   (3) m/s^2 (4) ms^2
4. The pressure P, volume V and temperature T of a real gas are related by the equation
$$\left(P + \frac{a}{V^2}\right)(V - b) = RT$$
where a, b & R are constants, the dimensions of a is same as that of
   (1) p (2) RT
   (3) V (4) pV^2
5. Of the following which one has dimensions different from the remaining three
   (1) Energy per unit volume
   (2) Force per unit area
   (3) Stress × strain (4) Force × area
6. If energy E, time T and momentum P are chosen as fundamental quanties, then the dimension of length will be
   (1) ETP^{-1} (2) $ET^{-1}P^{-1}$
   (3) ETP (4) $E^{-1}P^{-1}P$
7. The physical quantity that has the ratio of 10^3 between its numerical values in SI units and CGS units is
   (1) Young's modulus (2) Density
   (3) Pressure (4) Energy
8. The physical quantity which has dimensional formula MT^{-3} is
   (1) Surface tension (2) Solar constant
   (3) Density (4) Compressibility
9. The dimensional formula for calorie is
   (1) ML^2T^{-2} (2) MLT^{-2}
   (3) $M^2L^2T^{-1}$ (4) $ML^{-1}T^{-1}$
10. If $x = \frac{B}{A}(1 - e^{-At})$, in which x is displacement in metres and t is time in seconds, then the unit of B is
   (1) $m^{-1}s^{-1}$ (2) $m\,s^{-1}$
   (3) $m\,s^{-2}$ (4) $m^{-1}s$
11. If the momentum of a body is increased by 0.1%, its K.E. will increase by
   (1) 0.01% (2) 0.5%
   (3) 0.1% (4) 0.2%
12. A particle is moving in uniform circular motion with origin as the centre in fig. At which point the velocity of particle can be $2i - 2j$



   (1) P_1
   (2) P_2
   (3) P_3
   (4) P_4
13. Following sets of three forces act on a body. In which case the resultant cannot be zero?
   (1) 10 N, 10 N, 10 N (2) 10 N, 10 N, 20 N
   (3) 10 N, 20 N, 20 N (4) 10 N, 20 N, 40 N
14. Two forces have magnitudes in the ratio 3 : 5 and the angle between their direction is 60°. If their resultant is 35 N, their magnitudes are
   (1) 12 N, 20 N (2) 15 N, 25 N
   (3) 18 N, 30 N (4) 21 N, 28 N
15. For any two vectors $\vec{A}$ & $\vec{B}$ if $\vec{A}.\vec{B} = |\vec{A} \times \vec{B}|$, the magnitude $\vec{C}$, where $\vec{C} = \vec{A} + \vec{B}$ is
   (1) $\sqrt{A^2 + B^2 + \sqrt{2}AB}$ (2) $\sqrt{A^2 + B^2}$
   (3) $A + B$ (4) $\sqrt{A^2 + B^2 + AB/\sqrt{2}}$
16. Which is not a unit of magnetic flux?
   (1) Weber (2) Gauss
   (3) Maxwell (4) Tesla × $metre^2$
17. The number N of particles crossing a unit area perpendicular to X-axis in unit time is given by
$$N = -D\frac{dn}{dx}$$
where n is the number of particles per unit volume, then the dimensional formula for diffusion constant D is
   (1) LT^2 (2) L^2T^{-4}
   (3) $L\,T^{-3}$ (4) L^2T^{-1}
18. Of the following quantities which has dimensions different from the remaining three
   (1) eV (2) hv
   (3) $\frac{1}{2}\varepsilon_0 E^2$ (4) kT

19. If the velocity of light C, the universal gravitational constant G and Planck's constant h be chosen as fundamental quantities then the dimensions of mass is this system
(1) hCG (2) hCG^{-1}
(3) $h^{-1}C^{-1}G$ (4) $h^{1/2}C^{1/2}G^{-1/2}$

20. The force F acting on a particle in terms of time t and distance x is given by
$$F = (A\cos Bx)\,(C\sin Dt)$$
The dimensions of (AC) and (BD) respectively are
(1) MLT^{-2}, $M^0L^{-1}T^1$ (2) MLT^{-2}, $ML^{-1}T^{-1}$
(3) ML^2T^{-2}, $M^0L^{-1}T^{-2}$ (4) MLT^{-2}, $M^0L^{-1}T^{-1}$

21. The density of a material in the CGS system is 8 g/cm^3. In a system in which the unit of length is 5 cm and the unit of mass is 20 g, the density is
(1) 16 units (2) 25 units
(3) 32 units (4) 50 units

22. The time period of a simple pendulum is to be determined with the help of a stop clock having a least count of $\frac{1}{3}$ second. If the estimated time period is about 2 seconds, time for a least how many oscillations must be recorded so that the periodic time is determined with an error less than 0.67%
(1) 6 (2) 12
(3) 18 (4) 25

23. If none of vectors $\vec{A}, \vec{B}$ & $\vec{C}$ is zero and if $\vec{A}\times\vec{B}=0$ and $\vec{B}\times\vec{C}=0$, then the angle between $\vec{A}$ & $\vec{C}$ is
(1) 0 (2) $\pi/2$
(3) π (4) None of these

24. If $\vec{A}=\vec{B}+\vec{C}$ and the magnitudes of $\vec{A}, \vec{B}$ & $\vec{C}$ are 5, 4 & 3 units respectively, the angle between $\vec{A}$ & $\vec{C}$ is
(1) $\cos^{-1}\left(\frac{3}{5}\right)$ (2) $\cos^{-1}\left(\frac{4}{5}\right)$
(3) $\sin^{-1}\left(\frac{3}{4}\right)$ (4) $\frac{\pi}{2}$

25. The scalar product of two vector $\vec{A}$ & $\vec{B}$ is $5\sqrt{3}$ and the magnitude of their vector product is 5. The angle between the vector $\vec{A}$ & $\vec{B}$ is
(1) 30° (2) 45°
(3) 60° (4) 90°

26. The dimensional formula of electrical conductivity is
(1) $[M^{-1}L^{-3}T^3A^2]$ (2) $[ML^3T^3A^2]$
(3) $[M^2L^3T^{-3}A^2]$ (4) $[ML^3T^{-3}A^{-2}]$

27. If energy E, velocity V and time T are chosen as fundamental quantities, then the dimensional formula of surface tension is
(1) $[EV^{-2}T^{-2}]$ (2) $[EV^{-1}T^{-2}]$
(3) $[EV^{-2}T^{-1}]$ (4) $[E^2V^{-1}T^{-2}]$

28. What is the unit of k is the relation $U=\frac{ky}{y^2+a^2}$ where U represents the potential energy, y represents the displacement and a represents the maximum displacement *i.e.,* amplitude?
(1) m s^{-1} (2) m s
(3) J m (4) J s^{-1}

29. The unit of electric field is not equivalent to
(1) N C^{-1} (2) J C^{-1}
(3) V m^{-1} (4) J C^{-1} m^{-1}

30. The velocity of a body which has fallen freely under gravity varies as g^p h^q, where g is the acceleration due to gravity and 'h' is the height through which it has fallen. The values of p and q are
(1) $-\frac{1}{2},\frac{1}{2}$ (2) $\frac{1}{2},-\frac{1}{2}$
(3) $\frac{1}{2},\frac{1}{2}$ (4) $-\frac{1}{2},-\frac{1}{2}$

31. In a particular system, the units of length, mass and time are chosen to be 10 cm, 10 g and 0.1 S respectively. The unit of force in this system will be
(1) 0.1 N (2) 1 N
(3) 10 N (4) 100 N

32. The resultant of two forces, each P, acting at an angle θ is
(1) $2P\sin\frac{\theta}{2}$ (2) $2P\cos\frac{\theta}{2}$
(3) $2P\cos q$ (4) $P\sqrt{2}$

33. The following four forces act simultaneously on a particle at rest at the origin of the co-ordinate system,
$\vec{F}_1=2\hat{i}-3\hat{j}-2\hat{k}$, $\vec{F}_2=5\hat{i}+8\hat{j}+6\hat{k}$,
$\vec{F}_3=-4\hat{i}-5\hat{j}+5\hat{k}$, and $\vec{F}_4=-3\hat{i}+4\hat{j}-7\hat{k}$
The particle will move in
(1) XY plane (2) YZ plane
(3) ZX plane (4) Space

34. Two forces 8 N and 12 N act at 120°. The third force require to keep the body in equilibrium is
(1) 4 N (2) $4\sqrt{7}$ N
(3) 20 N (4) None of these

35. Given : $\vec{A}=3\hat{i}-4\hat{j}-2\hat{k}$ and $\vec{B}=2\hat{i}+4\hat{j}-5\hat{k}$. The angle which $\vec{A}+\vec{B}$ makes with Y-axis is
(1) 0° (2) 45°
(3) 60° (4) 90°

36. The vector sum of the forces of 10 N and 6 N can be
(1) 2 N (2) 8 N
(3) 18 N (4) 20 N

37. A man walks 40 m North, then 30 m East and then 40 m South. What is his displacement from the starting point?
(1) 30 m East (2) 150 m West
(3) 40 m West (4) 150 m East

38. The resultant $\vec{C}$ of $\vec{A}$ and $\vec{B}$ is perpendicular to $\vec{A}$. Also, $|\vec{A}|=|\vec{C}|$. The angle between $\vec{A}$ and $\vec{B}$ is
(1) $\frac{\pi}{4}$ radian (2) $\frac{3\pi}{4}$ radian
(3) $\frac{5\pi}{4}$ (4) $\frac{7\pi}{4}$

39. The resultant of two vectors $\vec{A}$ and $\vec{B}$ is perpendicular to $\vec{A}$. The magnitude of the resultant is equal to half of the magnitude of $\vec{B}$. The angle between $\vec{A}$ & B is
(1) 0° (2) 60°
(3) 150° (4) 180°

40. In an equilateral triangle *ABC, AL, BM* and *CN are the* medians. Which of the following would correctly represent the resultant of two forces represented by *BC* & *BA*?
(1) AC (2) 2AL
(3) 2BM (4) 2CN

41. A vector of length *m* is turned through an angle β about its tail. The change in the position vector of its head is
(1) $2m.\sin\frac{\beta}{2}$ (2) $2m.\cos\frac{\beta}{2}$
(3) $2m.\tan\frac{\beta}{2}$ (4) $2m.\cot\frac{\beta}{2}$

42. Vector $\vec{A}$ is 2 cm long and is 60° above the x-axis in the first quadrant. Vector $\vec{B}$ is 2 cm long and is 60° below the x-axis in the fourth quadrant. The sum $\vec{A}+\vec{B}$ is a vector of magnitude
(1) 2 along + y-axis (2) 2 along + x-axis
(3) 1 along + x-axis (4) 2 along – x-axis

43. If the resultant of two vectors $\vec{A}$ & $\vec{B}$ is perpendicular to $\vec{A}$, then the angle between $\vec{A}$ & $\vec{B}$ is
(1) $\tan^{-1}\left(-\frac{A}{B}\right)$ (2) $\sin^{-1}\left(\frac{A}{B}\right)$
(3) $\tan^{-1}\left(\frac{A}{B}\right)$ (4) $\cos^{-1}\left(-\frac{A}{B}\right)$

44. Two point masses 1 & 2 move with uniform velocities $\vec{v}_1$ & $\vec{v}_2$ respectively. Their initial position vectors are $\vec{r}_1$ & $\vec{r}_2$ respectively. Which of the following should be satisfied for the collision of the point masses?
(1) $\frac{\vec{r}_2-\vec{r}_1}{|\vec{r}_2+\vec{r}_1|}=\frac{\vec{v}_2+\vec{v}_1}{|\vec{v}_2-\vec{v}_1|}$ (2) $\frac{\vec{r}_2-\vec{r}_1}{|\vec{r}_2-\vec{r}_1|}=\frac{\vec{v}_1-\vec{v}_2}{|\vec{v}_1-\vec{v}_2|}$
(3) $\frac{\vec{r}_2-\vec{r}_1}{|\vec{r}_2+\vec{r}_1|}=\frac{\vec{v}_2-\vec{v}_1}{|\vec{v}_2+\vec{v}_1|}$ (4) $\frac{\vec{r}_2+\vec{r}_1}{|\vec{r}_2+\vec{r}_1|}=\frac{\vec{v}_2-\vec{v}_1}{|\vec{v}_2+\vec{v}_1|}$

45. In going from one city to another, a car travels 75 km north, 60 km north-west and 20 km east. The magnitude of displacement between the two cities is (Take $1/\sqrt{2}=0.7$)
(1) 170 km (2) 137 km
(3) 119 km (4) 140 km

46. Two forces *P* and *Q* acting at a point are such that if *P* is reversed, the direction of the resultant is turned through 90°. Then
(1) $P=Q$ (2) $P=2Q$
(3) $P=\frac{Q}{2}$
(4) Non relation between *P* & *Q*

47. Two vectors $\vec{a}$ & $\vec{b}$ are at an angle of 60° with each other. Their resultant makes an angle of 45° with $\vec{a}$. If $|\vec{b}|=2$ units, then $|\vec{a}|$ is
(1) $\sqrt{3}$ (2) $\sqrt{3}-1$
(3) $\sqrt{3}+1$ (4) $\frac{\sqrt{3}}{2}$

48. A carrom board (4' × 4') has the queen at the centre. The queen hit by the striker moves to the front edge, rebounds and goes in the hole behind the striking line. The displacement of the queen from the centre of the hole is
(1) 4' (2) $2\sqrt{2}$'
(3) $\frac{2}{3}\sqrt{10}$' (4) $\frac{4}{3}\sqrt{10}$'

49. The resultant of three vectors 1, 2 & 3 units whose directions are those of the sides of an equilateral triangle is at an angle of
(1) 30° with the first vector
(2) 15° with the first vector
(3) 100° with the first vector
(4) 150° with the first vector

50. The resultant of two vectors $\vec{P}$ and $\vec{Q}$ is $\vec{R}$. If the magnitude of $\vec{Q}$ is doubled, the new resultant becomes perpendicular to $\vec{P}$, then the magnitude of $\vec{R}$ is
(1) $\frac{P-Q}{2PQ}$ (2) $\frac{P+Q}{P-Q}$
(3) Q (4) $\frac{P}{Q}$

CHEMISTRY

51. 1.5 mole of Benzene is completely converted into carbondioxide. Carbondioxide is partially used in photosynthesis for preparation of glucose. If 225 g glucose is formed, then the volume of CO_2 left at NTP is

(1) 3.36 L (2) 33.6L

(3) 1.8 L (4) 18.4L

52. H_3BO_3 on heating decompose on two ways

$H_3BO_3 \rightarrow HBO_2 + H_2O$... (i)

$H_3BO_3 \rightarrow B_2O_3 + H_2O$ ... (ii)

if 9 mole H_3BO_3 is taken some part decompose like (i) and remaining like (ii). If total 11 mole of H_2O is formed. Then the mole of B_2O_3 formed is

(1) 2 (2) 3

(3) 4 (4) 5

53. 100 ml of a mixture of NaOH and Na_2SO_4 is neutralised by 10 ml of 0.5 M H_2SO_4. The amount of NaOH in 100 ml solution is

(1) 0.2 g (2) 0.4 g

(3) 0.6 g (4) 0.8 g

54. How many number of sulphate ions in 100 ml of 0.001 M H_2SO_4 solution?

(1) 6.022×10^{19} (2) 6.023×10^{24}

(3) 10^{-4} (4) 2×10^{-4}

55. Match the following :

(i) 1 gm atom	(a) 16 gm of O
(ii) 1 gm molecule	(b) 22.4 lt
(iii) gm molar volume	(c) 1 mol of O_2
(iv) Equivalent mass of oxygen	(d) 8 gm
(v) 1 Equivalent of H_2	(e) 11.2 lt

(1) i-a, ii-c, iii-b, iv-d, v-e

(2) i-b, ii-a, iii-c, iv-d, v-e

(3) i-c, ii-b, iii-d, iv-a, v-e

(4) i-e, ii-b, iii-c, iv-d, v-a

56. The empirical formula of a compound is H_2CO, 0.0833 moles of the compound contains Ig hydrogen. The molecular formula of the compound is

(1) $C_6H_{12}O_6$ (2) $C_5H_{10}O_5$

(3) $C_4H_8O_4$ (4) $C_3H_6O_3$

57. The number of moles of KI required to produce 0.4 moles of K_2Hgl_4 by reaction with $HgCl_2$ is

(1) 0.4 (2) 0.8

(3) 3.2 (4) 1.6

58. The volume of oxygen that will be required for complete combustion of 18.2 litres of propane at NTP

(1) 91 litre (2) 81 litre

(3) 72.8 litre (4) None of these

59. How many moles of HCl will be present in 100 mL of a solution of specific gravity 1.08, containing 20% HCl by mass ?

(1) 0.50 (2) 0.60

(3) 0.80 (4) 0.12

60. The solubility of K_2SO_4 in water is 16g at 50°C. The minimum amount of water required to dissolve 4g K_2SO_4 is:

(1) 10g (2) 25g

(3) 50g (4) 75g

61. One litre of N/2 HCl solution was heated in a beaker. When volume was reduced to 600 mL, 3.25 g of HCl was given out. The new normality of solution is:

(1) 6.85 (2) 0.685

(3) 0.1043 (4) 6.50

62. Molarity of H_2SO_4 (density 1.8g/mL) is 18M. The molality of this H_2SO_4 is:

(1) 36 (2) 200

(3) 500 (4) 18

63. The molality of 1M solution of NaCl (specific gravity 1.0585 g/mL) is:

(1) 1.0585 (2) 1.0

(3) 0.10 (4) 0.0585

64. No. of oxalic acid molecules in 100 mL of 0.02 N oxalic acid are:

(1) 6.023×10^{20}

(2) 6.023×10^{21}

(3) 6.023×10^{22} (4) 6.023×10^{23}

65. Which mode of expressing concentration is independent of temperature ?

(1) Molarity (2) Molality

(3) Formality (4) Normality

66. 1.0 g of pure calcium carbonate was found to require 50 mL of dilute HCl for complete reactions. The strength of the HCl solution is given by:

(1) 4 N (2) 2 N

(3) 0.4 N (4) 0.2 N

67. Insulin contains 3.4% sulphur. The minimum mol. weight of insulin is:

(1) 941.176 (2) 944

(3) 945.27 (4) None of these

68. Number of mole in $1m^3$ gas at NTP are:

(1) 44.6 (2) 40.6

(3) 42.6 (4) 48.6

69. 2.76g of silver carbonate on being strongly heated yields a residue weighing:

(1) 2.16g (2) 2.48g

(3) 2.32g (4) 2.64g

70. The percent of N in 66% pure $(NH_4)_2SO_4$ sample is:

(1) 32 (2) 28

(3) 14 (4) None of these

71. Mole fraction of I_2 in C_6H_6 is 0.2. The molality of I_2 in C_6H_6 is :

(1) 3.2 (2) 6.40

(3) 1.6 (4) 2.30

72. Chlorophyll, a green colouring matter contains 2.68% Mg. The number of atoms of Mg present in 1g chlorophyll are:

(1) 6.72×10^{20}

(2) 6.72×10^{21}

(3) 6.72×10^{22}

(4) 6.72×10^{23}

73. 16g of SO_x occupies 5.6 litre at STP. Assuming ideal gas nature, the value of x is:

(1) 1 (2) 2

(3) 3 (4) None of these

74. Equal moles of H_2O and NaCl are present in a solution. The molality of NaCl solution is:

(1) 55.6 (2) 5.56

(3) 1 (4) 0.5

75. Total number of atoms present in 1.0 cm^3 of solid urea (density 0.3 g/cm^3) at 25°C are:

(1) 3.01×10^{21} (2) 2.41×10^{22}

(3) 3.01×10^{22} (4) 2.41×10^{23}

76. Number of positive ions in 1.45 mole of K_2SO_4 are:

(1) 1.75×10^{24} (2) 8.73×10^{23}

(3) 8.73×10^{24} (4) 1.75×10^{23}

77. The weight of 11.2 litres of CO_2 at STP would be

(1) 88 g (2) 44 g

(3) 32 g (4) 22 g

78. V_1 mL of a solution of normality N_1 is diluted to get a solution of normality N_2. What would be the value of V_2 i.e., volume of water required for dilution.

(1) $V_2 = \frac{N_1V_1}{N_2}$

(2) $V_2 = \frac{N_1V_1}{N_2} - V_1$

(3) $V_2 = \frac{N_1V_1}{N_2} - \frac{V_1N_2}{N_1}$

(4) $V_2 = \frac{N_1V_1}{N_2} - V_1N_1$

79. How many formula units are there in a 42 g sample of $(NH_4)_2\ Cr_2O_7$ (formula wt. = 252)?

(1) 7.0×10^{23} (2) 1.0×10^{23}

(3) 6.0×10^{23} (4) 1.4×10^{22}

80. In Haber process, 30 L of dihydrogen and 30L of dinitrogen were taken for reaction which yielded only 50% of the expected product. What will be the composition of the gaseous mixture under the aforesaid conditions in the end?

(1) 20 L NH_3, 25 L N_2 and 20 L H_2

(2) 10 L NH_3, 25 L N_2 and 15 L H_2

(3) 20 L NH_3, 10 L N_2 and 30 L H_2

(4) 20 L NH_3, 25 L N_2 and 15 L H_2

81. For the reaction $A + 2B \rightarrow C$, 5 moles of A and 8 moles of B will produce

(1) 5 moles of C (2) 4 moles of C

(3) 8 moles of C (4) 13 moles of C

82. The number of gram atoms of oxygen in 0.16 mol of $H_2S_2O_7$ is

(1) 7 (2) 1.12

(3) 11.2 (4) 3.5

83. One requires 0.01 mole of Na_2CO_3. Mass of Na_2CO_3. $10H_2O$ to be taken is :

(1) 1.06 g (2) 2.86 g

(3) 0.10 g (4) 3.60 g

84. The rest mass of an electron is 9.11×10^{-31} kg. Molar mass of the electron is :

(1) 1.5×10^{-31} kg mol^{-1} (2) 9.11×10^{-31} kg mol^{-1}

(3) 5.5×10^{-7} kg mol^{-1} (4) 6.02×10^{23} kg mol^{-1}

85. An aqueous solution of 6.3 g of oxalic acid dihydrate is made up to 250 ml. The volume of 0.1 N NaOH required to completely neutralise 10 ml of this solution is

(1) 40 ml (2) 20 ml

(3) 10 ml (4) 4 ml

86. How much of NaOH is required to neutralise 1500 cm^3 of 0.1 N HCl ? (Na = 23)

(1) 40 g (2) 4 g

(3) 6 g (4) 60 g

87. The mass of oxygen that would be required to produce enough CO which completely reduces 1.6 kg Fe_2O_3 (at. mass Fe = 56) is :

(1) 240 g (2) 480 g

(3) 720 g (4) 960 g

88. A solution is prepared by dissolving 18.25 grams of NaOH in distilled water to give 200 cm^3 of solution. What amount of NaOH is present in 1 litre of solution?

(molar mass of NaOH = 40 grams)

(1) 2.28 moles (2) 1 mole

(3) 0.6 mole (4) 0.456 mole

89 The number of atoms in 64 g of sulphur in gaseous state is

(1) $2\ N_A$ (2) $N_A/2$

(3) N_A (4) $4\ N_A$

90. If 224 ml of a triatomic gas has a mass of 1 gm of STP, then the mass of 1 atom is

(1) 8.30×10^{-23} g (2) 2.08×10^{-23} g

(3) 5.53×10^{-23} g (4) 6.24×10^{-23} g

91. The conversion of oxygen to ozone occurs to the extent of 15% only. The mass of ozone that can be prepared from 67.2L of oxygen at S.T.P. will be -

(1) 14.4g (2) 95g

(3) 640g (4) 64g

92. 10g of a piece of marble was put into excess of dilute HCl acid. When the reaction was complete, 1120 cm^3 of CO_2 was obtained at S.T.P. The percentage of $CaCO_3$ in the marble is -

(1) 10% (2) 25%

(3) 50% (4) 75%

93. A 5 molar solution of H_2SO_4 is diluted from 1 litre to 10 litres. the normality of the solution will be

(1) 1.0 N (2) 2.0 N

(3) 0.5 N (4) 10 N

94. A 2.0 litre solution of 2.0 N H_2SO_4 will completely react with how many mol of NaCl ?

(1) 3 mol

(2) 2 mol

(3) 1 mol

(4) 4 mol

95. If N represents Avogadros Number, then the number of carbon atoms in 14 g of C-14 is

(1) $\frac{14\ N}{12}$ (2) $\frac{12\ N}{14}$

(3) N (4) 14 N

96. The mass of oxygen in g present in 3.22 g of $Na_2SO_4.10H_2O$ (molecular mass = 322) is

(1) 0.64 g (2) 0.32 g

(3) 2.24 g (4) 22.4 g

97. $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(l)$

Two mol of each reactant react to completion. Then

(1) No ammonia remains

(2) 2 mol NO is formed

(3) 2 mol water is formed

(4) Oxygen is completely consumed

98. The molarity of H_2O is

(1) 70 M (2) 50 M

(3) 55.5 M (4) None of these

99. 3 g of oxide of metal is converted to chloride completely and it yielded 5g of chloride. The equivalent mass of metal is

(1) 12 (2) 3.325

(3) 33.25 (4) 20

100. 8.4 g $MgCO_3$ on heating leaves behind a residue weighing 4.0 g. Carbon dioxide released into the atmosphere at STP will be

(1) 2.24 L (2) 4.48 L

(3) 1.12 L (4) 0.56 L