Concentration terms

1. 8 g NaOH is dissolved in one litre of solution, its molarity is

    (A) 0.8 M   (B) 0.4 M   (C) 0.2 M   (D) 0.1 M

2. For preparing 0.1 M solution of H_2SO_4 in one litre, we need H_2SO_4

    (A) 0.98 g   (B) 4.9 g   (C) 49.0 g   (D) 9.8 g

3. What is mass percent of the solute in the solution obtained by mixing 5 g of the solute in 50 g of water ?

    (A) 10 %   (B) 9.1 %   (C) 91 %   (D) 50 %

4. The number of moles of NaCl present in its 250 cm³, 0.5 M solution are

    (A) 0.5 mol   (B) 0.25 mol   (C) 0.125 mol   (D) 12.5 mol

5. How many grams of NaOH are needed to prepare 250 cm³ of 0.4 M NaOH solution ?

    (A) 8 g   (B) 40 g   (C) 80 g   (D) 4 g

6. The molarity of sugar $(C_{12}H_{22}O_{11})$ solution if its 20 g are dissolved in 2 litre solution, is

    (A) 0.029 M   (B) 0.29 M   (C) 2.9 M   (D) 0.0029 M

7. Determine mole fraction of CH_3OH in a solution obtained by mixing 1.2 mole CH_3OH with 4.8 mole H_2O

    (A) 0.8   (B) 0.2   (C) 0.25   (D) 0.5

8. Calculate the volume in litre of 0.1 M solution of HCl which contains 0.365 g HCl ?

    (A) 10^{-2} L   (B) 0.1 L   (C) 1 L   (D) 10 L

9. The molarity of a HCl solution, which is 1.825 % (w/v) is :

    (A) M/10   (B) M/2   (C) M/5   (D) M/20

10. What volume of a 0.8 M solution contains 100 millimoles of the solute ?

    (A) 80 mL   (B) 125 mL   (C) 125 L   (D) 80 L

11. What approximate volume of 0.40 M $Ba(OH)_2$ solution must be added to 50.0 mL of 0.30 M NaOH solution to get a solution in which the molarity of the OH^- ions is 0.50 M ?

    (A) 33 mL   (B) 66 mL   (C) 133 mL   (D) 100 mL

12. Equal moles of H_2O and NaCl are present in a solution. Hence, molality of NaCl solution is :

    (A) 0.55   (2) 55.5   (C) 1.00   (D) 0.18

13. Calculate molality of a solution in which 5.6 g KOH is dissolved in 200 g water

    (A) 0.5 m   (B) 1.5 m   (C) 1.5 m   (D) 0.05 m

14. 1000 g aqueous solution of $CaCO_3$ contains 10 g of calcium carbonate. Concentration of solution is

    (A) 10 ppm   (B) 100 ppm   (C) 1000 ppm   (D) 10000 ppm

15. Calculate the molarity when

    (a) 4.9 gm H_2SO_4 acid dissolved in water to result 500 ml solution

    (b) 56 gm of KOH dissolved in water to result 500 ml solution

15. The mole fraction of I_2 in C_6H_6 is 0.02, then molality of solution approxmately will be:

(A) 0.16   (B) 0.26   (C) 2.6   (D) 1.6

Interconversions of different conentration terms

17. Arrange in increasing order of Molarity of solute in following solutions considering water as solvent. Show your calculations:

(i) 224 gm/lit. KOH   (ii) 11.2% w/v KOH   (iii) 5m KOH   (d = 0.64 gm/ml)

(A) (ii) < (iii) < (i)   (B) (iii) < (ii) < (i)   (C) (iii) < (i) < (ii)   (D) (i) < (ii) < (iii)

18. A solution of A(mol. wt. = 20) and B(mol. wt. = 10), [Mole fraction $X_B = 0.6$] having density 0.7 gm/ml then molarity and molality of B in this solution will be _____ and _____ respectively.

(A) 30 M, 75 m   (B) 75 m, 30 M   (C) 7.5 m, 30 M   (D) None of these

19. Match the column :

Column I	Column II
(A) 16% w/v. $H_2C_2O_4$ (d = 1.1602 g/ml.)	(P) 1.78 M
(B) 17.45 % w/v H_2SO_4 (d = 1.1745 g/ml)	(Q) 1.78 m
(C) Pure water	(R) 1.5 M
(D) 5 % w/w NaOH (d = 1.2 gm/ml)	(S) 55.5 M

20.

Column I	Column II
(A) 10 M MgO $(d_{solution} = 1.20$ gm/ml) Solute : MgO, Solvent: H_2O	(P) $W_{solvent}$ = 120 gm per 100 ml of solution
(B) 40% w/v NaOH $(d_{solution} = 1.6$ gm/ml) Solute : NaOH, Solvent: H_2O	(Q) $W_{solution}$ = 150 gm per 100 gm solvent
(C) 8 m $CaCO_3$ Solute : $CaCO_3$, Solvent: H_2O	(R) W_{solute} = 120 gm per 100 gm of solvent
(D) 0.6 mol fraction of 'X' (molecular mass = 20) in 'Y' (molecular mass 25) Solute : X, Solvent : Y	(S) $W_{solvent}$ = 125 gm per 100 gm of solute

RACE # 18

1. (C)   **2.** (D)   **3.** (B)   **4.** (C)   **5.** (D)   **6.** (A)   **7.** (B)   **8.** (B)   **9.** (B)   **10.** (B)
11. (A)   **12.** (B)   **13.** (A)   **14.** (D)   **15.** (a) 0.1M (b) 2 M **15.** (B)   **17.** (A)
19. (A)→P,Q; (B)→P,Q; (C)→S (D)→R   **20.** (A)→Q (B)→P (C)→S (D)→R