CHEMISTRY CLASS 12 BATCH

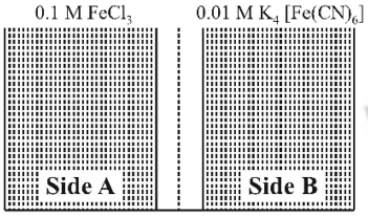
SOLUTIONS

DPP-07

1. A membrane which allows the movement of only solvent particles through it is called
   (1) Animal membrane
   (2) Plant membrane
   (3) Semipermeable membrane
   (4) Permeable membrane

2. Which of the following is not a characteristic of osmosis?
   (1) Applicable only for solutions
   (2) Possible with semipermeable
   (3) Movement of only solvent takes place
   (4) Irreversible

3. When FeCl3 reacts with $K_4[Fe(CN)_6]$ in aqueous solution blue colour of ferri ferrocyanide, $Fe_4[Fe(CN)_6]_3$ is obtained. There are 0.1 M $FeCl_3$ and 0.01 M $K_4[Fe(CN)_6]$ solution are separated by a semi-permeable membrane as shown and osmosis occurs then



   (1) blue colour is seen in side-B
   (2) blue colour is seen in side-A
   (3) blue colour is seen in both sides A and B.
   (4) no blue colour is seen in either side.

4. The process of separating solvent from its solution by applying pressure greater than osmotic pressure is called
   (1) fractional distillation (2) condensation
   (3) distillation (4) reverse osmosis

5. Solution having lesser value of osmotic pressure is called
   (1) Hypotonic solution (2) Hypertonic solution
   (3) Isotonic solution (4) Osmotic solution

6. The osmotic pressure of a solution is 2 atm at 273 K then at 546 K, the osmotic pressure is
   (1) 0.5 atm (2) 1 atm
   (3) 2 atm (4) 4 atm

7. Osmotic pressure is 0.0821 atm at temperature of 300 K. Find concentration in mole/litre.
   (1) 0.33 (2) 0.066
   (3) 3.3 × 10–3 (4) 3

8. 102% solution of glycerine and 2% solution of glucose are isotonic. Molecular mass of glucose is 180 then molecular mass of glycerine.
   (1) 9.18 (2) 0.918
   (3) 91.8 (4) 918

9. Find the osmotic pressure of 12% solution of cane sugar (mol. wt. 342) at 27°C (d= 1 g/ml)
   (1) 9.2 atm (2) 5.62 atm
   (3) 7.32 atm (4) 8.64 atm

10. The osmotic pressure of a M/5 solution of glucose at 47°C is
    (1) 1.25 atm (2) 2.25 atm
    (3) 5.25 atm (4) 7.25 atm

11. The osmotic pressure of 5% (w/v) solution of urea at 27°C is
    (1) 20.5 atm (2) 10.5 atm
    (3) 12.5 atm (4) 15.5 atm

12. Correct expression for Van't Hoff factor in case of association is
    (1) $i = 1 + \left(\frac{1}{n} - 1\right)\alpha$ (2) $i = 1 + (n-1)\alpha$
    (3) $i = 1 + \left(\frac{n}{2} - 1\right)\alpha$ (4) None of these

13. Correct expression for Van't Hoff factor in case of dissociation of $Al_2(SO_4)_3$ is
    (1) i = 1 + 3α (2) i = 1 + 2α
    (3) i = 1 + 4α (4)

14. Elevation in boiling point for equimolal solutions of NaCl, $Al_2(SO_4)_3$, $BaCl_2$ and $MgSO_4$ is highest for (assume α = 1)
    (1) NaCl (2) Na2SO4
    (3) Al2(SO4)3 (4) MgSO4

15. Elevation in boiling point of 1 molal aqueous solution of Na3SO4 is (assume α = 0.2)
(1) 0.52°C (2) 0.83°C
(3) 0.46°C (4) 0.64°C

16. The relationship between osmotic pressure of equimolar solutions of KCl, $Ca(NO_3)_2$ and Na_2SO_4 is (α = 1)
(1) $\pi_{Na_2SO_4} < \pi_{Ca_2(NO_3)_2} = \pi_{KCl}$
(2) $\pi_{KCl} < \pi_{Ca(NO_3)_2} = \pi_{Na_2SO_4}$
(3) $\pi_{Ca(NO_3)_2} = \pi_{KCl} = \pi_{Na_2SO_4}$
(4) $\pi_{Ca(NO_3)_2} \neq \pi_{KCl} \neq \pi_{Na_2SO_4}$

17. A solution of a non-electrolyte substance is isotonic with decimolar solution of NaCl. The molarity of solution of substance is
(1) 0.2 (2) 0.4
(3) 0.5 (4) 0.9

18. Which of the following pairs of solutions are expected to be isotonic at same temperature?
(1) 0.1 M urea and 0.1 M NaCl
(2) 0.1 M urea and 0.2 M MgCl2
(3) 0.1 M NaCl and 0.1 M Na2SO4
(4) 0.1 M Ca(NO3)2 and 0.1 M Na2SO4

19. A 0.2 molal aqueous solution of a weak acid HX is 20% ionized. The freezing point of this solution is (K_f = 1.86 K kg/mole)
(1) –0.44°C (2) –0.34°C
(3) –0.54°C (4) –0.24°C

20. An aqueous solution of NaCl contains 90 gram of water and 58.5 g of NaCl. If vapour pressure of water = 720 mm of Hg at that temperature, find vapour pressure of the solution assuming 100% dissociation.
(1) 514 mm (2) 624 mm
(3) 464 mm (4) 564 mm

21. K_2PtCl_4 is 30% ionized in aqueous solution. The value of its Vant Hoff factor is
(1) 1.2 (2) 1.4
(3) 1.6 (4) 1.8

22. The osmotic pressure of decimolar $K_4[Fe(CN)_6]$ at 227°C is (assuming α = 75%)
(1) 122 atm (2) 134 atm
(3) 159 atm (4) 164 atm

23. Osmotic pressure of 3.725% (w/v) solution of KCl at 27°C is 21.6 atm. Find degree of dissociation of KCl.
(1) 20% (2) 30% (3) 60% (4) 80%

24. Correct expression for degree of dissociation 'α' of electrolyte A_xB_y is given by
(1) $\alpha = \frac{i-1}{x+y-1}$
(2) i = (1 – α) + xα + yα
(3) $\alpha = \frac{i-1}{x-y-1}$
(4) all of the above

25. Elevation in boiling point for 2 molal solution of glucose is 2K. The depression in the freezing point for molal solution of glucose is 2K. The relation between Kb and Kf is
(1) $K_b = 2K_f$ (2) $K_f = 2K_b$
(3) $K_b = K_f$ (4) None of these

26. The process used for desalinization of sea water is
(1) Osmosis (2) Centrifugation
(3) Reverse osmosis (4) Distillation