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DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth   SUBJECT : CHEMISTRY
DATE : 08th April, 2022   DPP No.   : 2

Topic :-SOLUTIONS

1.   Which is not applicable to distribution law?

a) Parke's process

b) Solvent extraction

c) Pattinson's process

d) Partition chromatography

2.   Which of the following is the expression of Raoult's law?
(p =vapour pressure of pure solvent, p_s =vapour pressure of the solution)
a) $\dfrac{p - p_s}{p} = \dfrac{n}{n + N}$ b) $\dfrac{p_s - p}{p} = \dfrac{N}{N + n}$ c) $\dfrac{p - p_s}{p_s} = \dfrac{N}{N - n}$ d) $\dfrac{p_s - p}{p_s} = \dfrac{N - n}{N}$

3.   For determination of molar mass of colloids, polymers and protein, which property is used ?

a) Diffusion pressure   b) Atmospheric pressure

c) Osmotic pressure   d) Turgor pressure

4.   3.0 molal NaOH solution has a density of 1.110 g/mL. The molarity of the solution is

a) 3.9732   b) 2.9732   c) 1.9732   d) 0.9732

5.   Sodium sulphate is soluble in water, while barium sulphate is sparingly soluble because :

a) The hydration energy of sodium sulphate is more than its lattice energy

b) The lattice energy of barium sulphate is less than the hydration energy

c) The lattice energy has no role to play in solubility

d) The hydration energy of sodium sulphate is less than its lattice energy

6. Distribution law is applicable when :

    a) Temperature remains constant

    b) Dilute solutions are employed

    c) The two solvents are mutually insoluble

    d) All are correct

7. 10 cm^3 of 0.1 N monobasic acid requires 15 cm^3 of sodium hydroxide solution whose normality is

    a) 1.5 N   b) 0.15 N   c) 0.066 N   d) 0.66 N

8. Density of a 2.05 M solution of acetic acid in water is 1.02 g/mL. The molality of the solution is

    a) 1.14 mol kg^{-1} b) 3.28 mol kg^{-1} c) 2.28 mol kg^{-1} d) 0.44 mol kg^{-1}

9. x gram of water is mixed in 69 g of ethanol. Mole fraction of ethanol in the resultant solution is 0.6. What is the value of x in grams?

    a) 54   b) 36   c) 180   d) 18

10. Dissolution of a solute is an exothermic process if :

    a) Hydration energy > lattice energy

    b) Hydration energy < lattice energy

    c) Hydration energy = lattice energy

    d) None of the above

11. Molarity is expressed as

    a) L/mol   b) Mol/L   c) Mol/1000 g   d) g/L

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12. The amount of anhydrous Na_2CO_3 present in 250 mL of 0.25 M solution is

    a) 6.0 g   b) 6.625 g   c) 66.25 g   d) 6.225 g

13. Which of the following compounds correspond to maximum van'thoff factor for dilute solution?

    a) HCl b) $MgSO_4$ c) K_2SO_4 d) $K_4Fe(CN)_6$

14. Solute A is a ternary electrolyte and solute B is non-electrolyte. If $0.1\,M$ solution of solute B produces an osmotic pressure of $2P$, then $0.05\,M$ solution of A at the same temperature will produce an osmotic pressure equal to :

    a) P b) $1.5\,P$ c) $2\,P$ d) $3\,P$

15. A solution of sucrose (molar mass 342 g mol^{-1}) has been produced by dissolving 68.5 g sucrose in 1000 g water. The freezing point of the solution obtained will be : (K_f for H_2O = 1.86 Kkg mol^{-1})

    a) -0.372 C   b) -0.520 C   c) $+0.372$ C   d) -0.570 C

16. A mixture of ethyl alcohol and propyl alcohol has a vapour pressure of 290 mm at 300 K. the vapour pressure of propyl alcohol is 200 mm. If the mole fraction of ethyl alcohol is 0.6, its vapour pressure (in mm) at the same temperature will be

    a) 350   b) 300   c) 700   d) 360

17. How many grams of sulphuric acid is to be dissolved to prepare 200 mL aqueous solution having concentration of $[H_3O^+]$ ions 1 M at 25°C temperature.
    $[H = 1, O = 16, S = 32\ g.mol^{-1}]$

    a) 4.9g   b) 19.6g   c) 9.8g   d) 0.98g

18. What is the molarity of H_2SO_4 solution if 25 mL is exactly neutralised with 32.63 mL of 0.164 M NaOH?

    a) 0.107 M   b) 0.126 M   c) 0.214 M   d) -0.428 M

19. What is the molality of ethyl alcohol (mol. wt. = 416) in aqueous solution which freezes at -10 C?.(K_f for water = 1.86 K molality^{-1})

    a) 3.540　　　　　　　b) 4.567　　　　　　　c) 5.376　　　　　　　d) 6.315

20. The solubility order for the following gases is :

    a) $NH_3 > CO_2 > O_2 > H_2$

    b) $H_2 > O_2 > NH_3 > CO_2$

    c) $CO_2 > NH_3 > O_2 > N_2$

    d) $O_2 > H_2 > NH_3 > CO_2$

Space for Rough Work