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**CYCLE TEST-1**

**GRADE – XII MARK - 20**

**SUBJECT – CHEMISTRY(043) TIME – 40 MINS**

1. One component of a solution follows Raoult’s law over the entire range 0≤x1 ≤1. The second component must follow Raoult’s law in the range when x2 is

 a) close to zero b) close to 1

 c) 0≤x2≤0.5 d) 0≤x2≤1

2. Which of the following is useful in relating concentration of solution with its vapour pressure.

a) mole fraction b) parts per million

c) mass percentage d) molality

3. At a given temperature, osmotic pressure of a concentrated solution of a substance ---------

a) is higher than that at a dilute solution

b) is lower than that of a dilute solution

c) is same as that of a dilute solution

d) can not be compared with osmotic pressure of dilute solution

4. Dry air is passed through a solution containing 10g of the solute in 90 g of water and then through pure water. The loss in weight of solution is 2.5g and that of pure solvent is 0.05g. Calculate the molecular weight of the solute.

a) 50 b) 180

c) 100 d) 25

5. An unripe mango placed in a concentrated salt solution to prepare pickle, shrivels because

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 a) it gains water due to osmosis b) it loses water due to reverse osmosis

 c) it gains water due to reverse osmosis d) It loses water due to osmosis

6. What are isotonic solutions?(2m)

7. Arrange the following solutions in increasing order of their van’t Hoff factor(2m)

0.1 M CaCl2, 0.1 M KCl, 0.1 M Al2(SO4)3, 0.1 M C12H22O12

8. Define:

i) Osmosis ii) Osmotic pressure

What are the advantages of using osmotic pressure as compared to other colligative properties for the determination of molar mass of solutes in solutions.(3m)

9. Explain why the freezing point of a solvent is lowered on dissolving a non-volatile solute into it(3m)

10. a. A 5% solution of cane sugar in water has freezing point of 271K. Calculate the freezing point of a 5% glucose in water if freezing point of pure water is 273.15K

 b. Between 2M glucose solution and 1M glucose solution, which one has a lower freezing point?(5m)