

CHEMISTRY
CLASS 12
SELF ASSESSMENT

Time – 45 min

F.M. = 20

Q1. Correct the statements by changing the underlined part: **[5]**

- (a) The freezing point of a solution is directly proportional to its molality.
- (b) Osmotic pressure and boiling point are colligative properties.
- (c) The boiling point is directly proportional to the molality of the solution.
- (d) All solutions obey Raoult's law.
- (e) Water boils below 100°C by the addition of NaCl.

Q2. Choose the answer by selecting the correct alternative from the choices given: **[5]**

(i) The osmotic pressure of equimolar solutions of glucose, sodium chloride and barium chloride will in the order

- (a) $\text{BaCl}_2 > \text{NaCl} > \text{glucose}$
- (b) $\text{BaCl}_2 > \text{glucose} > \text{NaCl}$
- (c) $\text{Glucose} > \text{BaCl}_2 > \text{NaCl}$
- (d) $\text{NaCl} > \text{BaCl}_2 > \text{glucose}$

(ii) For a dissociated solute in solution, the value of van't Hoff factor is:

- (a) zero
- (b) one
- (b) greater than one
- (d) less than one

(iii) Out of the following solutions, the one having the highest boiling point will be:

- (a) 0.1 M NaCl
- (b) 0.1 M BaCl_2
- (b) 0.1 M KNO_3
- (d) 0.1 M $\text{K}_4[\text{Fe}(\text{CN})_6]$

(iv) 6.2×10^{20} molecules of urea are present in 100 ml of its solution. The concentration of solution is:

- (a) 0.001 M
- (b) 0.1 M
- (c) 0.02 M
- (d) 0.01 M

(v) Of the following terms used for denoting concentration of a solution, the one which does not get affected by temperature is:

- (a) Molarity
- (b) Molality
- (c) Normality
- (d) Formality

Q3. The molecular weights of KCl and glucose are determined by the depression of freezing point method. As compared to their theoretical molecular weights, what do you expect are the molecular weights determined by this experiment? Give reason. [2]

Q4. Calculate the osmotic pressure of a solution containing 3.42 g of sucrose in 1 litre of water at 400K. [3]

Q5. Common salt is used to clear snow on the roads. Why? [1]

Q6. Discuss the following giving one example each: [2x2]
a. Williamson's synthesis
b. Darzen's method