

## NEET SOLUTIONS — ABNORMAL MOLAR MASS AND ABNORMAL COLLIGATIVE PROPERTIES — PYQS

**Max. Marks: 36**
**Questions: 9**

### Section A (MCQ) — 9 questions

**Q.1** The van't Hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is [NEET 2016 (Phase 2)]

- (1) 0                      (2) 1                      (3) 2                      (4) 3

Scan or tap for the full solution



**Q.2** The boiling point of 0.2 mol kg<sup>-1</sup> solution of X in water is greater than equimolal solution of Y in water. Which one of the following statements is true in this case? [AIPMT 2015 (Cancelled)]

- (1) Molecular mass of X is less than the molecular mass of Y.  
 (2) Y is undergoing dissociation in water while X undergoes no change.  
 (3) X is undergoing dissociation in water.  
 (4) Molecular mass of X is greater than the molecular mass of Y.

Scan or tap for the full solution



**Q.3** Which one of the following electrolytes has the same value of van't Hoff factor (i) as that of Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> (if all are 100% ionised)? [AIPMT 2015 (Cancelled)]

- (1) Al(NO<sub>3</sub>)<sub>3</sub>                      (2) K<sub>4</sub>[Fe(CN)<sub>6</sub>]  
 (3) K<sub>2</sub>SO<sub>4</sub>                      (4) K<sub>3</sub>[Fe(CN)<sub>6</sub>]

Scan or tap for the full solution



**Q.4** Of the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression? [AIPMT 2014]

- (1) KCl                      (2) C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>  
 (3) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>                      (4) K<sub>2</sub>SO<sub>4</sub>

Scan or tap for the full solution



**Q.5** A 0.1 molal aqueous solution of a weak acid is 30% ionized. If K<sub>f</sub> for water is 1.86 °C/m, the freezing point of the solution will be [AIPMT 2011 (Mains)]

- (1) -0.18 °C                      (2) -0.54 °C  
 (3) -0.36 °C                      (4) -0.24 °C

Scan or tap for the full solution



**Q.6** The freezing point depression constant for water is 1.86 °C m<sup>-1</sup>. If 5.00 g Na<sub>2</sub>SO<sub>4</sub> is dissolved in 45.0 g H<sub>2</sub>O, the freezing point is changed by -3.82 °C. Calculate the van't Hoff factor for Na<sub>2</sub>SO<sub>4</sub>. [AIPMT 2011 (Prelims)]

- (1) 2.05                      (2) 2.63                      (3) 3.11                      (4) 0.381

Scan or tap for the full solution



**Q.7** The van't Hoff factor i for a compound which undergoes dissociation in one solvent and association in other solvent is respectively [AIPMT 2011 (Prelims)]

- (1) less than one and greater than one  
 (2) less than one and less than one  
 (3) greater than one and less than one  
 (4) greater than one and greater than one

Scan or tap for the full solution



**Q.8** A 0.0020 m aqueous solution of an ionic compound [Co(NH<sub>3</sub>)<sub>5</sub>(NO<sub>2</sub>)]Cl freezes at -0.00732°C. Number of moles of ions which 1 mol of ionic compound produces on being dissolved in water will be (K<sub>f</sub> = 1.86°C/m) [AIPMT 2009]

- (1) 3                      (2) 4                      (3) 1                      (4) 2

Scan or tap for the full solution



**Q.9** 0.5 molal aqueous solution of a weak acid (HX) is 20% ionised. If K<sub>f</sub> for water is 1.86 K kg mol<sup>-1</sup>, the lowering in freezing point of the solution is [AIPMT 2007]

- (1) 0.56 K                      (2) 1.12 K                      (3) -0.56 K                      (4) -1.12 K

Scan or tap for the full solution



**ANSWER KEY**

| Ques. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
|-------|---|---|---|---|---|---|---|---|---|--|--|
| Ans.  | 4 | 3 | 2 | 3 | 4 | 2 | 3 | 4 | 2 |  |  |