

Chapter 2

Solutions

(Assertion and Reason Questions)

Directions: These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses.

- (a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
- (b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
- (c) If the Assertion is correct but Reason is incorrect.
- (d) If both the Assertion and Reason are incorrect.

Q.1. Assertion : Molarity of a solution in liquid state changes with temperature.
Reason : The volume of a solution changes with change in temperature.

Q.2. Assertion : If a liquid solute more volatile than the solvent is added to the solvent, the vapour pressure of the solution may increase i.e., $p_s > p_o$.
Reason : In the presence of a more volatile liquid solute, only the solute will form the vapours and solvent will not.

Q.3. Assertion : If one component of a solution obeys Raoult's law over a certain range of composition, the other component will not obey Henry's law in that range.
Reason : Raoult's law is a special case of Henry's law.

Q.4. Assertion : Azeotropic mixtures are formed only by non-ideal solutions and they may have boiling points either greater than both the components or less than both the components.

Reason : The composition of the vapour phase is same as that of the liquid phase of an azeotropic mixture.

Q.5. Assertion : When methyl alcohol is added to water, boiling point of water increases.

Reason : When a volatile solute is added to a volatile solvent elevation in boiling point is observed.

Q.6. Assertion : When NaCl is added to water a depression in freezing point is observed.

Reason : The lowering of vapour pressure of a solution causes depression in the freezing point.

Q.7. Assertion : When a solution is separated from the pure solvent by a semi-permeable membrane, the solvent molecules pass through it from pure solvent side to the solution side

Reason : Diffusion of solvent occurs from a region of high concentration solution to a region of low concentration solution.

-X-X-X-

ANSWER KEY

Q.1 : (a)

Q.2 : (c) Both the solute and solvent will form the vapours but vapour phase will become richer in the more volatile component.

Q.3 : (b)

Q.4 : (b)

Q.5 : (d)

Q.6 : (a)

Q.7 : (b)