

Solution

1. **Assertion (A):** If on mixing the two liquids, the solution becomes hot, it implies that it shows negative deviation from Raoult's law.

Reason (R): Solution which show negative deviation are accompanied by decrease in volume.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

2. **Assertion (A):** If a liquid more volatile than the solvent is added to the solvent, the vapour pressure of the solution may increase, i.e. $p_s > p^\circ$

Reason (R): In the presence of more volatile liquid solute, Raoult's law does not hold good.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

3. **Assertion (A):** Water boils at 373 K as the vapour pressure at this temperature becomes equal to atmosphere pressure.

Reason (R): Vapour pressure of water is less than 1.013 bar at 373 K.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

4. **Assertion (A):** The depression in freezing point depends on the amount of the solute and nature of solvent.

Reason (R): For aqueous solutions of different electrolytes, molal depression constant will have different value.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

5. **Assertion (A):** 0.1 M solution of glucose has higher increment in the freezing point than 0.1 M solution of urea.

Reason (R): K_f for both has different values.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

6. **Assertion (A):** Increasing pressure on pure water decrease its freezing point.

Reason (R): density of water is maximum at 273 K.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

7. **Assertion (A):** The molecular weight of acetic acid determined by depression in freezing point method in benzene and water was found to be different.

Reason (R): Water is polar and benzene is non-polar.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

8. **Assertion (A):** When dried fruits and vegetables are placed in water, they slowly get swelled.

Reason (R): It happens due to the phenomenon of reverse osmosis.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

9. **Assertion (A):** Reverse osmosis is used to purify sea water.

Reason (R): Solvent molecules pass from concentrate solution to pure solvent through semipermeable membrane if high pressure is applied on solution side.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

10. **Assertion (A):** If red blood cells were removed from the body and placed in pure water, pressure inside the cell increases.

Reason (R): The concentration of the salt content in the cells increases.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

11. **Assertion (A):** The molecular weight of acetic acid determined by depression in freezing point method in benzene and water was found to be different.

Reason (R): Water is polar and benzene is non-polar solvent.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

12. **Assertion (A):** Reverse osmosis is used to purify saline water.

Reason (R): Solvent molecules pass from concentrated to dilute solution through semipermeable membrane if high pressure is applied on solution.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false



13. Assertion (A): Vant Hoff's factor for dissociating electrolytes is always greater than unity.

Reason (R): The no. of particles increases in solution due to electrolytic dissociation.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

14. Assertion (A): The vapour pressure of 0.45 molar urea solution is more than that of 0.45 molar solution of sugar.

Reason (R): Elevation of vapour pressure is directly proportional to the number of species present in the solution.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

15. Assertion (A): Mixture of ethanol and cyclohexane shows positive deviation.

Reason (R): Cyclohexane breaks the intermolecular H-bonding between ethanol molecules to some extent.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	3	3	4	3	1	3	2	3	2	1	1	4	1