

## The Liquid State

### 1. A manifestation of surface tension is

- 1) Rise of liquid a capillary tube
- 2) Spherical shape of liquid drops
- 3) Upward movement of water in soils
- 4) All the above

### 2. The unit of surface tension is

- 1) Dynes  $\text{cm}^{-2}$
- 2) Ergs/cm
- 3) Joules  $\text{m}^{-1}$
- 4)  $\text{N.m}^{-1}$

### 3. Generally liquid drops assume spherical shape because

- 1) A sphere has maximum surface area
- 2) A sphere has minimum surface area
- 3) Sphere is symmetrical in shape
- 4) None of these

### 4. The surface tension of water at $20^{\circ}\text{C}$ is $72.75 \text{ dyne cm}^{-1}$ . Its value in SI system is

- 1)  $2.275 \text{ N m}^{-1}$
- 2)  $0.7275 \text{ N m}^{-1}$
- 3)  $0.07275 \text{ N m}^{-1}$
- 4) None of the above

### 5. A surface active substance is

- 1) Cholesterol
- 2) Alcohol
- 3) Soap
- 4) All

### 6. On heating a liquid, its surface tension

- 1) Increases
- 2) Decreases
- 3) Remains same
- 4) Is reduced to zero

### 7. Water drops stick to a glass surface due to

- 1) Cohesion
- 2) Adhesion
- 3) Flocculation
- 4) None of these

**8. Find incorrect match**

- 1) Unit of surface energy =  $\text{J-m}^{-2}$
- 2) Unit of surface tension (T) =  $\text{N - m}^{-1}$
- 3) Molecules on the surface of liquid = less energy.
- 4) Minimum surface area of a liquid = Lowest energy state

**9. Sharp glass edges are heated for making them smooth (polishing of glass) which is due to its**

- 1) Viscosity
- 2) Surface tension
- 3) Fluidity
- 4) Expansion nature of glass

**10. When mercury is dropped over a glass surface the globules are spherical which is due to its**

- 1) Viscosity
- 2) Surface tension
- 3) Fluidity
- 4) Metallic nature

**11. Liquids show viscosity which is due to**

- 1) Creation of friction between the layers of the fluid.
- 2) Inter molecular attraction forces of the liquid.
- 3) Inter molecular repulsion forces of the liquid.
- 4) 1 & 2

**12. Find correct statement.**

- 1) Due to viscosity, velocity of flow of water at the surface is more than that at the bottom in a river.
- 2) Velocity gradient =  $dv/dx$ .
- 3) Viscosity coefficient is related to absolute temperature as  $\eta = A \cdot e^{E/RT}$ .
- 4) All are correct.

**13. Laminar flow of a liquid means**

- 1) Regular gradation of velocity for layers in passing from one layer to the next layer of a liquid
- 2) Showing constancy in the velocity of layers of a liquid
- 3) Increase in the velocity of layers from surface to bottom of a liquid
- 4) All

**14. The viscosity of four liquids P, Q, R and S are 85, 11.4, 18 and 12.3 respectively, then which flows slowly.**

- 1) P
- 2) Q
- 3) R
- 4) S

**15. The thickness of window panes of old buildings is more at the bottom than at the top which is due to**

- 1) Surface tension of glass
- 2) Viscosity of glass
- 3) Expansion of solid at a given temperature
- 4) Expansion of liquid at a given temperature

**16. The graph of viscosity coefficient ( $\eta$ ) and absolute temperature (T) is \_\_\_\_**

- 1) Straight line passing through origin
- 2) Straight line parallel to temperature axis
- 3) Straight line with (+) ve slope
- 4) Rectangular hyperbola

**17. The internal resistance to flow in liquid is called**

- 1) Fluidity
- 2) Specific resistance
- 3) Viscosity
- 4) Surface tension

**18. Which has the maximum viscosity?**

- 1) Water
- 2) Glycol
- 3) Acetone
- 4) Ethanol

**19. The unit of viscosity is**

- 1) Poise                      2) Millipoise                      3) Centipoise                      4) All these

**20. Poise stands for**

- 1) 1 dynes cm sec<sup>-2</sup>    2) 1 dyne sec cm<sup>-2</sup>    3) 10<sup>18</sup>e.s.u.cm    4) 10<sup>-7</sup> erg sec.

**21. Which of the following expression regarding the unit of coefficient of**

**Viscosity is not true?**

- 1) Dyne cm<sup>-2</sup> s                      2) Dyne cm<sup>-2</sup> s<sup>-1</sup>  
3) Nm<sup>-2</sup>s                      4) 1 poise = 10<sup>-1</sup> kgm<sup>-1</sup>s<sup>-1</sup>

**22. In SI system, the units of coefficient of viscosity, are**

- 1) Kg s<sup>-1</sup>m<sup>-2</sup>    2) Kg m<sup>-1</sup> s<sup>-1</sup>    3) Kg cm<sup>-1</sup> s<sup>-1</sup>    4) g m<sup>-1</sup> s<sup>-1</sup>

**23. With rise in temperature of a liquid, the viscosity**

- 1) Increases                      2) Decreases  
3) Remains constant                      4) May increase or decrease

**24. With the increasing molecular weight of a liquid, the viscosity**

- 1) Decreases                      2) Increases  
3) No effect                      4) All are wrong

**25. The presence of ionic salts in a liquid**

- 1) Decreases the viscosity of the liquid  
2) Increases the viscosity of the liquid  
3) Does not affect the viscosity of the liquid  
4) None of the above is correct

**26. As temperature increases, vapour pressure of a liquid**

- 1) Increases linearly                      2) Decreases linearly  
3) Increases exponentially                      4) Decreases exponentially

**27. Rate of evaporation depends up on**

- a) Nature of liquid
- b) Surface area of the liquid
- c) Temperature
- d) Flow of air current over the surface

**The correct answer is**

- 1) a, b only
- 2) b, c only
- 3) a, b, and c only
- 4) a, b, c and d

**28. At a given temperature**

- a) Vapour pressure of a solution containing nonvolatile solute is proportional to mole fraction of solvent
- b) Lowering of vapour pressure of solution containing nonvolatile solute is proportional to mole fraction of solute
- c) Relative lowering of vapour pressure is equal to mole fraction of solute

**The correct combination is**

- 1) a only
- 2) a, b only
- 3) a, b and c only
- 4) b, c only

**29 (A): Increase in temperature increases vapour pressure of a liquid.**

**(R): Volume of a solution increases by increasing the temperature.**

- 1. Both A and R are true, R explains A.
- 2. Both A and R are true, R does not explain A.
- 3. A is true and R is false.
- 4. A is false but R is true.

**30 (A): Rate of evaporation increases with an increase in the surface area of the vessel.**

**(R): Evaporation is a surface phenomenon.**

- 1. Both A and R are true, R explains A.
- 2. Both A and R are true, R does not explain A.
- 3. A is true and R is false.

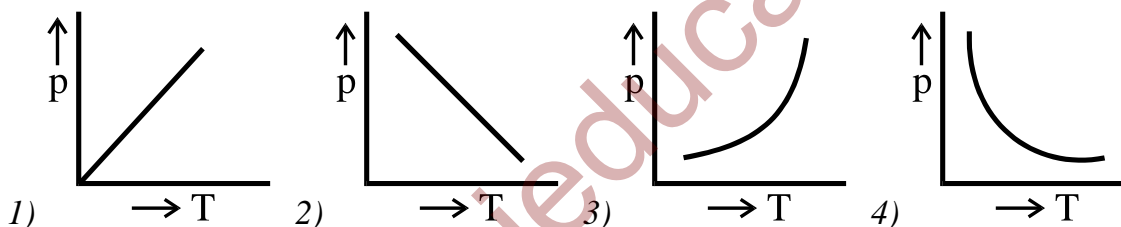
4. A is false but R is true.

31. Which of the following statements are correct?

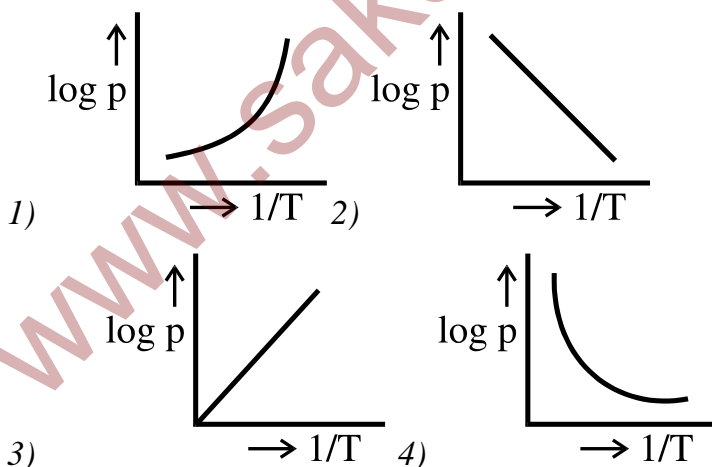
- a) The boiling point of a solution is greater than pure liquid.
- b) The temperature where the vapour pressure of liquid equals to atmospheric pressure is called its boiling point.
- c) The vapour pressure of pure solvent is less than the vapour pressure of solution containing non volatile solute.
- d) The temperature of liquid remained in the container after evaporation is more than before the evaporation.

1) a, b    2) b, c    3) c, d    4) a, d

32. The graph obtained by taking vapour pressure (P) of a liquid on y-axis and temperature (T) on x-axis will be



33. Which graph of the following represents the graph between  $\log p$  (on Y - axis) and  $1/T$  (on X - axis)?



34. (A): Sea water boils at higher temperature than distilled water.

**(R): Addition of non volatile solute to a solvent lowers the vapour pressure.**

1. Both A and R are true, R explains A.
2. Both A and R are true, R does not explain A.
3. A is true and R is false.
4. A is false but R is true.

**35. (A): A pressure cooker reduces cooking time.**

**(R): The boiling point of water inside the cooker is increased.**

1. Both A and R are true, R explains A.
2. Both A and R are true, R does not explain A.
3. A is true and R is false.
4. A is false but R is true.

**36. Which statement about evaporation is incorrect?**

- 1) Evaporation takes place at all temperature.
- 2) Evaporation occurs only at the surface.
- 3) Evaporation produces cooling.
- 4) Average K.E of residual liquid molecules increase as evaporation occurs.

**37. Vapour pressure of Benzene at its boiling point is**

- 1. 76mm      2. 760mm      3. 760cm      4. 76atm**

**KEY**

- 1) 4    2) 4    3) 2    4) 3    5) 4    6) 2    7) 2    8) 3    9) 2    10) 2  
11) 4    12) 4    13) 1    14) 2    15) 2    16) 4    17) 3    18) 2    19) 4    20) 2  
21) 2    22) 2    23) 2    24) 2    25) 2    26) 1    27) 2    28) 3    29) 1    30) 2  
31) 3    32) 4    33) 1    34) 2    35) 3    36) 4    37) 2