Section – A (01 marks each)

1. **The boiling point of alcohol is 78 °C. What is the temperature on Kelvin scale?**
   351.15K is the answer because we just have to add 273.15 to 78 to get answer :) **351 K** is the Kelvin scale temperature of the ethyl alcohol. Hence, temperature of 78°C on Celsius scale is equal to **351 K** on the Kelvin scale.

2. **The rate of evaporation of a liquid increases on heating. Explain.**
   The rate of evaporation is directly proportional to temperature. it increase with the increase in temperature because of increase in kinetic energy of molecules.

3. **Why do the gases exert more pressure on the walls of the container than the solids?**
   Gases exert more pressure on the walls of the container than solids do because there is more kinetic energy (thermal energy) in the gases which make it's particle to move with great speed. So, they exert more pressure than solids.

4. **Which gas is called dry ice? Why?**
   Dry Ice is the common name for solid carbon dioxide (CO2). It gets this name because it does not melt into a liquid when heated; instead, it changes directly into a **gas** (This process is **known as** sublimation).

5. **Name two elements which exist in liquid state at room temperature.**
   Mercury and bromine are liquid at room temperature.

6. **What is physical state of water at 100 °C and 250 °C?**
   a) The physical state of water at its boiling point temperature of 100 degree Celsius will be both liquid state as well as gaseous state. This is because at its boiling point of 100 degree Celsius the liquid state of water starts changing into its Gaseous state (steam).
   b) The physical state of water at a temperature of 250 degree Celsius which is much above its boiling point will be gaseous state.

7. **Why does a desert cooler cool better on a hot dry day?**
   A **desert cooler** cools **better on a hot dry day** because on a **hot dry day** temperature is high and humidity is less which helps in **better** evaporation. Due to the higher rate of evaporation it gives **better cooling** effect.

8. **What type of clothes should we wear in summer?**
   We should wear cotton **clothes** and light coloured **clothes** in **summers**. **We** sweat a lot in **summers**. Cotton is a good absorber of water. Thus, it absorbs sweat from our body and exposes the sweat to the atmosphere, making its evaporation faster.

9. **Give reasons for the following observations: Naphthalene balls disappear with time without leaving any solid.**
   Naphthalene balls disappear with time without leaving any solid because they undergo sublimation i.e., they directly change into vapour **without** passing through the liquid state. ... The perfumes contain solvent which carries pleasant smelling vapour.

10. Name the technique to separate butter from curd.

Butter from curd can be separated by the **technique** of centrifugation.

Salt from sea water can be separated by the **technique** of crystallization or by the evaporation.

Camphor is sublimable but salt is not. So, camphor can be separated from salt sublimation **technique**.

11. What type of mixtures are separated by the technique of crystallization?

Crystallization is a process that separates a pure solid in the form of its **crystals** from a solution. The **crystallization method** is used to purify solids. For example, the salt we get from sea water **can** have many impurities in it.

12. In what respect does a true solution differ from a colloidal solution?

The **true solution** is the homogenous mixture, while **Colloidal solution** and Suspension are the heterogeneous.

True solution which completely soluble in water and while the colloidal solution or not soluble in water was adopted they stuck at the bottom not properly.

Section – B (02 marks each)

13. Account for the following: Steam at 100 °C produces more sever burn than boiling water at the same temperature.

Steam has more energy than boiling water. It possesses the additional latent heat of vaporization. Therefore, burns produced by steam are more severe than those produced by boiling water.

14. Define the term sublimation. Name any two substances that sublime.

The process by which a substance change its state of solid to vapour without passing through its liquid state is done by process called sublimation.
Examples: Naphtaline balls and Camphor.

15. Write the appropriate method of separation of the following mixtures:

a) Ammonium chloride from common salt

The easiest way to **separate common salt** and **ammonium chloride** from a mixture is through the process of sublimation. Sublimation is the process in which a solid substance is directly converted to the gaseous phase, without the intermediate liquid phase.

b) Colors in a dye

This process of separation of components of a mixture is known as chromatography. Kroma in Greek means color. This technique was first used for separation of colors, so this name was given. Chromatography is the technique used for separation of those solutes that dissolve in the same solvent.

c) Cream from milk
The **process** by which **cream** is **separated** from **milk** is called centrifugation. Well, Centrifugation is a **process** where a mixture can be **separated** through spinning. The **process** is used to separate skim **milk** from whole **milk**, from the big separators.

d) Acetone from water
The method is fractional distillation. Because acetone and water is immiscible. So they will be separated by fractional distillation.

16. In **which category, homogeneous or heterogeneous mixture would you place colloids? Give any two important characteristics of suspension and colloids.**
Colloids are rather classified as heterogeneous mixtures....as they don't completely dissolve in a solution rather just remain fused in it.

Characteristics of suspension
1. Its a heterogeneous mixture.
2. Particles of a suspension can be seen by the naked eye.
3. Particles of a suspension scatter a beam of light passing through it and makes its path visible.
4. The solute particles settle down when a suspension is left undisturbed, that is, a suspension is unstable. They can be separated from mixture by filtration.

Characteristics of colloidal solutions
1. It is a heterogeneous mixture.
2. Size of particles of a colloid are too small to be individually seen by naked eyes.
3. Colloids are big enough to scatter a beam of light passing through it and makes its path visible.
4. They don't settle down when undisturbed, that is, a colloid is quite stable.
5. They cannot be separated from mixture by the process of filtration. But, a special technique of separation known as centrifugation can be used to separate colloidal particles.

17. Classify the following into physical / chemical changes:

a) Digestion of food
Digestion of food is a chemical change, as there are chemicals in the digestive tract that break down the food.

b) Melting of ice
melting of ice is physical change.

c) Mixing of iron filling and Sulphur powder.
mixing of iron and sulphur is a physical change.

d) Mixing of iron filling and Sand
Mixing of iron filings and sand is a physical change, as they just mix with each other without the need of a chemical reaction.

e) **Rusting of Iron.**
chemical change.

f) **Burning of Candle.**
Burning of a candle is also a physical change, as the flame causes the wax to melt down.

g) **Freezing of water.**
Freezing of water is also a physical change, as liquid water changes into solid ice without the need of a chemical reaction.

18. **A student recorded the mass of dry raisins as 6.0 g and mass of raisins after soaking them in water for about 5 hours as 10.5 g. Calculate the percentage of water absorbed by raisins.**
Mass of water =10.5-6=4.5
Now, take the percentage, as given below
(4.5/10.5)*100=42.85%

19. What mass of sodium sulphate will react with 5.22 g of barium chloride to produce 6.10 g of sodium chloride and 2.8 g of barium sulphate? Name the law which governs your answer.
Chapter (3).

20. **While determining the melting point of ice it was observed that even when ice cubes were being moderately heated using the gas burner, the temperature did not rise for some time till the whole ice melts. Give possible reason.**
Because the heat absorbed by the Ice during melting at the melting point is used for phase transformation.

Melting is a phase transformation when a solid changes to a liquid. When a solid is heated, it's temperature increases gradually till the melting point is reached. At melting point, the heat supplied is used by atoms and molecules to break away from the crystal lattice. In solids, the atoms and molecules are held in place due to strong attractive forces.

21. **What happens when iron nail is dipped in copper sulphate solution for 20 minutes? Write your observation. Identify the type of change involved.**
When iron nail is dipped in Copper sulphate, it takes reaction between them and Copper sulphate changes its color from blue to light green.

This should determine more reactive than copper.

This could replace copper from $CuSO_4$, and blue color and $FeSO_4$ is in light green color. It will change its colors due to copper iron nails functions.