CLASS-IX (CHEMISTRY)

CH-1: MATTER IN OUR SURROUNDINGS

CHECK YOUR PROGRESS (ANSWERS)

From PART-1

1. The smell of hot sizzling food reaches you several meters away, but to get the smell from cold food you have to go close. Give reason.

It is because the particles of the smell of the hot food are at higher temperature and hence they are having high kinetic energy and diffuse faster than the particles of the smell of the cold food.

---

2. A diver is able to cut through water in a swimming pool. Which property of matter does this observation show?

A driver is able to cut through water in a swimming pool. It shows that particles of water are having greater space or gaps between them. And also they have lesser force of attraction between them.

From PART-2

1. Define 'diffusion' in two or more ways.

The spontaneous intermixing of particles of two types as a result of their natural movement is called diffusion.

OR

Diffusion is the movement of particles from its higher concentration to its lower concentration by their own.

---

2. Collect more examples where diffusion plays an important role.

Importance of diffusion:

a. Oxygen enters our bloodstream through diffusion and allows cells to get oxygen for survival.

b. Digested food molecules move down the concentration gradient from the intestine to the blood.

From PART-3

1. Differentiate between:

(a) Melting and Boiling

Melting	Boiling
1. It is a process in which a solid changes to its liquid state by absorbing heat.	1. It is a process in which a liquid changes to its gaseous state by absorbing heat.
2. e.g- Conversion of ice into water.	2. e.g- Conversion of water into steam.

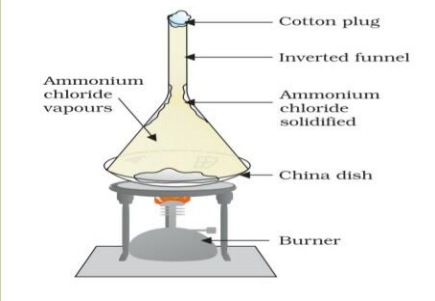
(b) Melting point and Boiling point

Melting point	Boiling point
1. It is the constant temperature at which a solid changes to its liquid state at atmospheric pressure.	1. It is the constant temperature at which a liquid changes to its gaseous state at atmospheric pressure.
2. e.g- Melting point of ice is 0°C.	2. e.g- Boiling point of water is 100°C.

2. What is the use of dry ice?

Dry ice is used as refrigerant.

3. Identify the 'state change'. And name the process.



Solid ammonium chloride is converting vapours of ammonium chloride and vice-versa. This is sublimation process.

From PART-4

1. Why does latent heat not change the temperature of the substance?

Latent heat helps to overcome the force of attraction between the particles in order to bring about the change of state. Since it does not increase the K.E of the particles, the temperature remains constant.

2. Define 'latent heat of fusion of ice'.

Latent heat of fusion of ice is the amount of heat energy that is required to change 1kg of ice into water at atmospheric pressure and at 0°C.

3. Define 'latent heat of vaporization of water'.

Latent heat of vaporization of water is the amount of heat energy that is required to change 1kg of water into steam at atmospheric pressure and at 100°C.

From PART-5

1. Convert:

(a) 100°C into °F

Given-Temperature in Celsius scale=100°C

we know, $\frac{C}{5} = \frac{F-32}{9}$

or, $\frac{100}{5} = \frac{F-32}{9}$

or, $20 = \frac{F-32}{9}$

or, $20 \times 9 = F - 32$

or, $180 = F - 32$

or, $F = 180 + 32$

or, $F = 212$

therefore, 100°C = 212°F

(b) 300 K into °C

Given-Temperature in Kelvin scale=300 K

we know, K = C + 273

or, C = K – 273

or, C = 300 – 273

or, C = 27

Therefore, 300 K = 27°C

(c) 41°F into K

Given-Temperature in Fahrenheit scale=41°F

we know, $\frac{K-273}{5} = \frac{F-32}{9}$

or, $\frac{K-273}{5} = \frac{41-32}{9}$

or, $\frac{K-273}{5} = \frac{9}{9}$

or, $K - 273 = 5$

or, K = 5 + 273

or, K = 278

therefore, 41°F = 278 K

---

2. Normal human body temperature is 37°C. Convert this temperature into °F.

Given-Temperature in Celsius scale=37°C

we know, $\frac{C}{5} = \frac{F-32}{9}$

or, $\frac{37}{5} = \frac{F-32}{9}$

or, $\frac{37\times9}{5} = F - 32$

or, $\frac{333}{5} = F - 32$

or, 66.6 = F - 32

or, F = 66.6 + 32

or, F = 98.6

therefore, 37°C = 98.6°F

---

3. At what temperature do Celsius and Fahrenheit scale has the same value?

We know, $\frac{C}{5} = \frac{F-32}{9}$

let $C = F = x$

therefore, $\frac{x}{5} = \frac{x-32}{9}$

or, $9x = 5(x - 32)$

or, $9x = 5x - 160$

or, $9x - 5x = -160$

or, $4x = -160$

or, $x = \frac{-160}{4}$

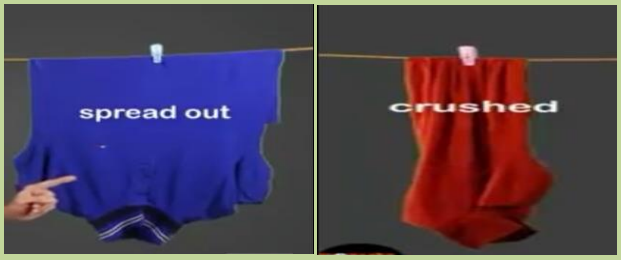
or, $x = -40$

therefore, $C = F = x = -40$

At - 40°, both the Celsius and the Fahrenheit scale has the same value.

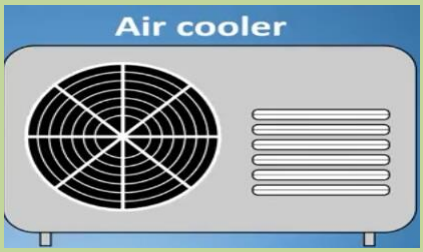
From PART-6

1. Which one will dry first: spread out blue t-shirt or crushed red t-shirt?



The spread out blue t-shirt will dry first as exposed surface area for evaporation is more.

2. Why an air cooler cool better on a hot dry day?



On a hot dry day, there is much less humidity and temperature is high. Thus on a hot dry day, the rate of evaporation increases and hence causing a better cooling effect by the air cooler.

3. Doctors advice patients with high fever to keep a wet cloth on their forehead. Give reason.

Doctors advice patient with high fever to keep a wet cloth on their forehead because water in the wet cloth absorbs heat from the hot forehead and evaporates, thus helping in lowering the body temperature.

4. How evaporation of water from the ocean's surface is helpful to us?

Evaporation from the ocean's surface is very much helpful since it is a part of water cycle. It helps in formation of clouds, production of fresh water and in rainfall maintaining the climatic heat and moisture balance.