VESP Vision

To be the centre of excellence in the field of technical education.

Program Code:-Common to all 1st semester

Course Name:-Basic Science(Physics)

Course Code : - 22102

Course coordinator: Mrs. Deepa Gupte

Date: 12/09/2020

Unit No:3
Unit Name: Heat and Optics

Unit Outcomes(UO3a) Convert the given temperature in different temperature scales
Learning Outcome (LO1) : Students will be able to convert the given temperature in different temperature scales.

Learning Objective/ Key learning

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- Students will be able to use different temperature scales
- Students will be able to convert the given temperature in different temperature scales..

Heat and Temperature

Heat:-heat is energy which produce sensation of hotness.

Unit: SI-J,MKS-Kcal, CGS- cal

Heat energy:-Heat energy of a system is defined as the sum of

energies of all molecules of the body or system.

Temperature:-Temperature is the measure of degree of hotness or

coldness of a body

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Unit: SI-k

Kilocalorie,Calorir,Absolute zero temperature

Kilocalorie:-The amount of heat required to increase the temperature of one kg of water by one degree celsius is called as one kilocalorie

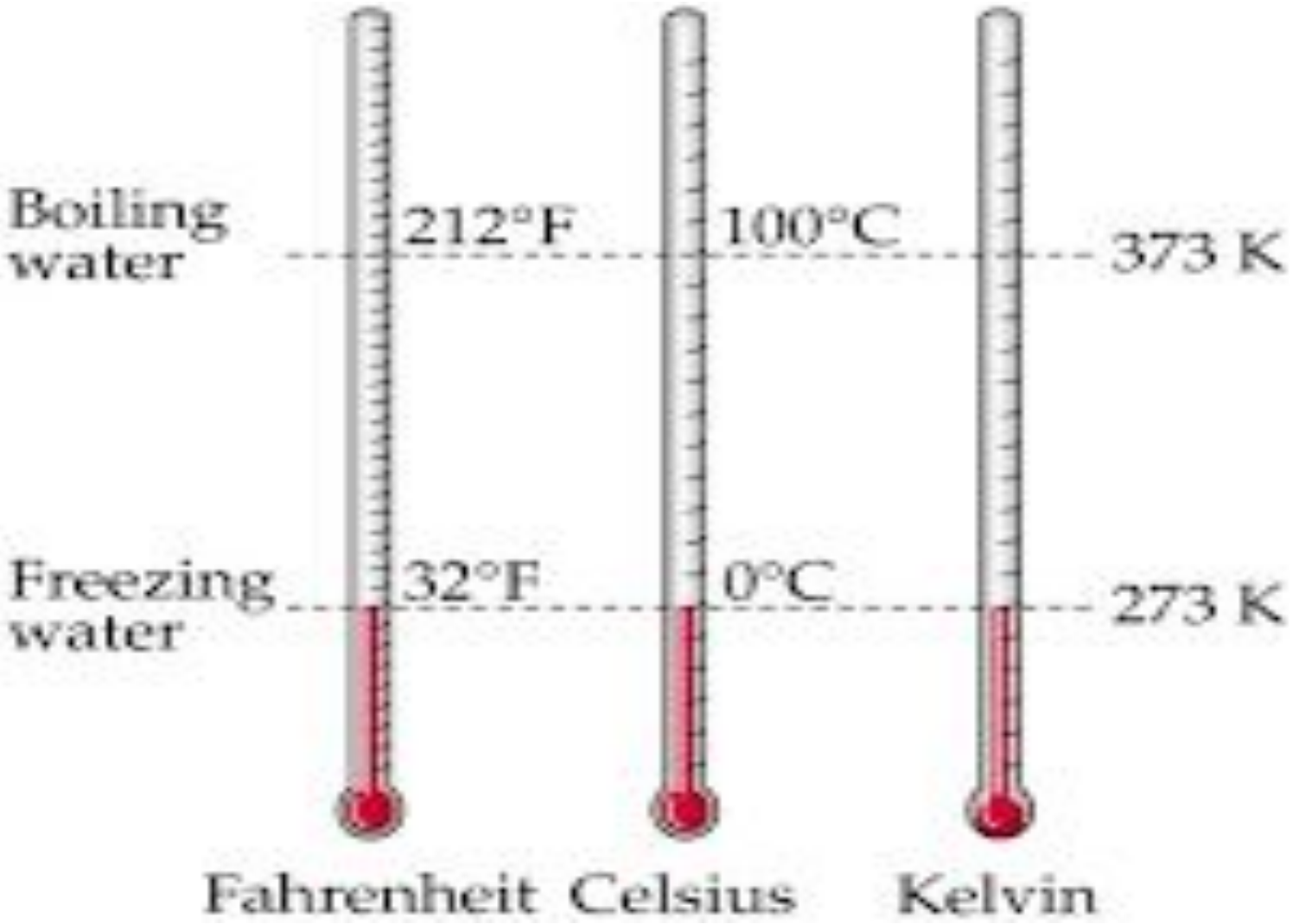
Calorie:-The amount of heat required to increase the temperature of one gram of water by one degree celsius is called as one calorie.

Absolute zero temperature:-The temperature at which pressure and volume of gas theoretically become zero is called as absolute zero temperature.

-273 C = 0 K

Diffrerence between Heat and Temperature

Heat	Temperature
1.heat is a form of energy which produces sensation of hotness.	1.Temperature is the measure of degree of hotness or coldness of a body.
2. It is sum of energies of all molecules of body	2.It measures of average K.E of molecules of body.
3.It flows from high temperature to low temperature	3.It is determines the direction of flow of heat.
4.Heat is cause	4.Temperature is effect.
5.SI unit is J	5. SI unit is K


Boiling water
212°F
100°C
373 K
Freezing water
32°F
0°C
273 K
Fahrenheit
Celsius
Kelvin

Temperature Scales

There are mainly three scales of temperature. They are

i. Celsius scale

ii. Fahrenheit scale

ii. Kelvin scale

Celcius Scale

Andrew Celcius (A Swedish astronomer) developed the Celcius scale

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in the Celcius scale, the freezing temperature of the water is as 0-degree Celcius. The boiling temperature of the water is as 100-degree Celcius.

Celcius scale has 100 equal parts between 0 degrees Celcius and 100 degrees Celcius

Faherenheit Scale

Daniel Gabriel developed the Fahrenheit scale in 1744

In the Fahrenheit scale, the freezing temperature of the water is as 32^0 F and it is the lower point.

The boiling temperature of the water is taken as 212^0 F and is fixed as the upper point. The division of the Fahrenheit scale takes place into 180 equal parts.

If we compare the Fahrenheit scale and Celcius scale, we get the following relation: 100^0 C = 212^0 F and 0^0 C = 32^0

Kelvin Scale

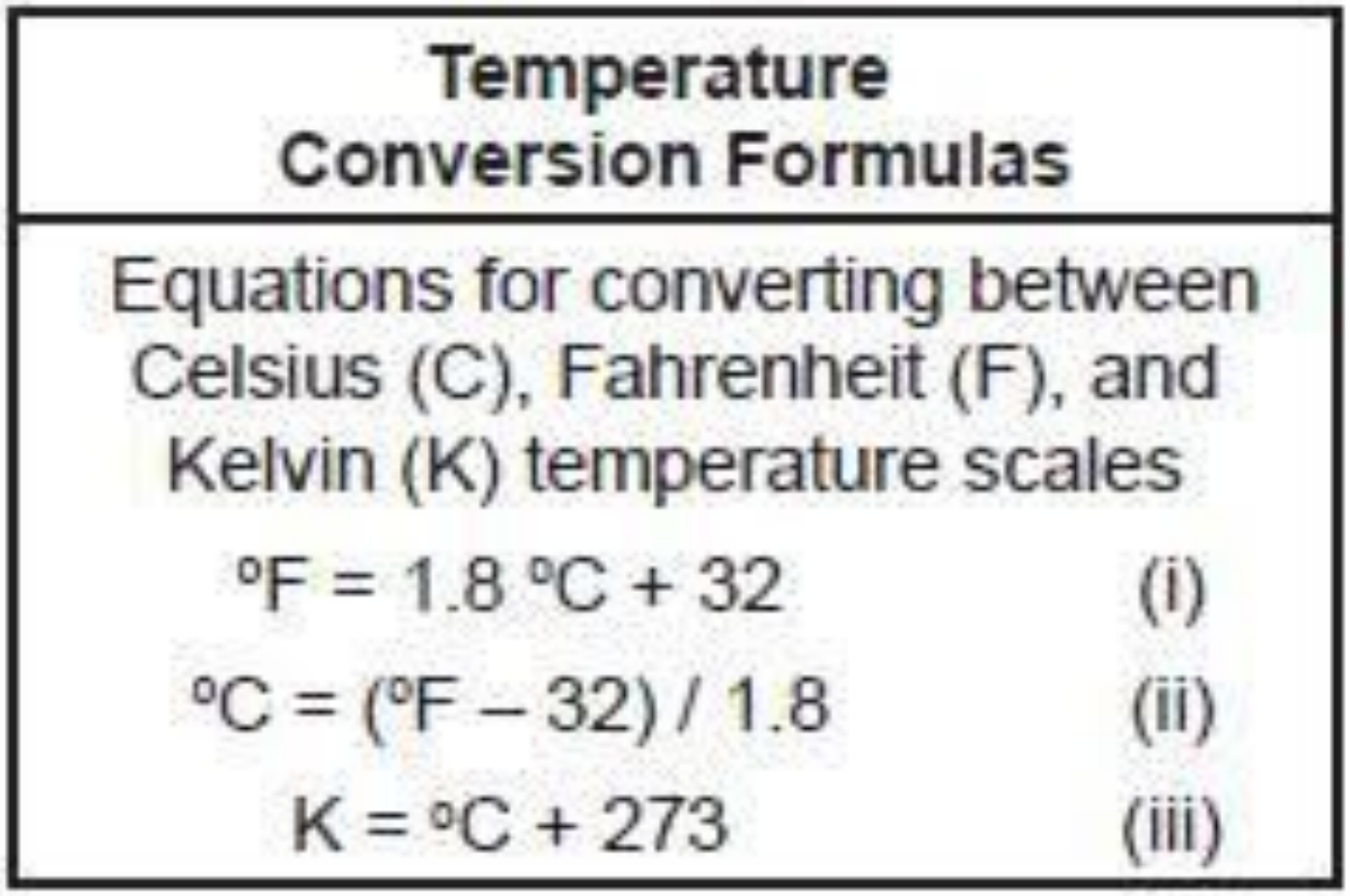
Lord Kelvin developed the Kelvin scale in 1848.

The basis of the Kelvin scale is on the concept of Absolute Zero.

absolute zero as a lower fixed point for the Kelvin scale and its writing takes place as 0 kelvin.

The boiling point of water is taken as 373 kelvin.

Temperature conversion Formulas



Temperature Conversion Formulas

Equations for converting between Celsius (C), Fahrenheit (F), and Kelvin (K) temperature scales

$$^{\circ}F = 1.8\,^{\circ}C + 32 \quad \text{(i)}$$

$$^{\circ}C = (^{\circ}F - 32) / 1.8 \quad \text{(ii)}$$

$$K = ^{\circ}C + 273 \quad \text{(iii)}$$

Conversion formula

The temperature conversion formula from Fahrenheit to Celsius is

$$C = (F - 32) \times 5/9$$

So The Temperature Conversion Formula from Fahrenheit to Kelvin is:

$$K = [(F - 32) \times 5/9] + 273$$