Thermometry

1. Heat is a form of energy which has capacity to do the work.
2. Temperature is degree of hotness or coldness in a body which determines direction of flow of heat.
3. **Units of Heat**

   a) Standard calorie is amount of heat required to raise temperature of 1g of water from 14.5°C to 15.5°C

   1 cal = 4.2Joule
4. **Units of Temperature**

	°C	F	R	K
LFP	0	32	0	273
UFP	100	212	80	373

$$\frac{C-0}{100}=\frac{F-32}{212-32}=\frac{R-0}{80-0}=\frac{K-273}{373-273} \quad \text{Or} \quad \frac{\Delta C}{100}=\frac{\Delta F}{180}=\frac{\Delta R}{80}=\frac{\Delta K}{100}$$

5. Since cylindrical surface has more surface area, thermometric bulbs are cylindrical.
6. Any property which changes with temperature is called thermometric property.

$$t=\left(\frac{X_t-X_0}{X_{100}-X_0}\right)100 \text{ and } t_2=\left(\frac{X_2-X_0}{X_1-X_0}\right)t_1$$

7. The temperature at which both centigrade and Fahrenheit coincide. (-40°)
8. The temperature at which both Kelvin and Fahrenheit coincide. (574.25°)
9. **Range of Thermometers**

   Mercury Thermometer – (-30°C to 330°C)

   Alcohol thermometer – (-130°C to 78°C)

   Gas Thermometer – (-260°C to 1600°C)

   Resistance Thermometer – (-200°C to 1200°C)

   Vapour pressure Thermometer – (5k to 0.71k)

   Radiation Pyrometer – (800°C to 3000°C)

10. Of all the thermometers, gas thermometers are more sensitive because of their high volume expansion. They have the same scale for all gases.

11. Mercury is used as a thermometric liquid because it has low specific heat, low thermal capacity, low vapour pressure, high thermal conductivity and more expansion.