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B. Sc. (Hons) physics part - I, paper II Group B
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Zeroth Law of Thermodynamics

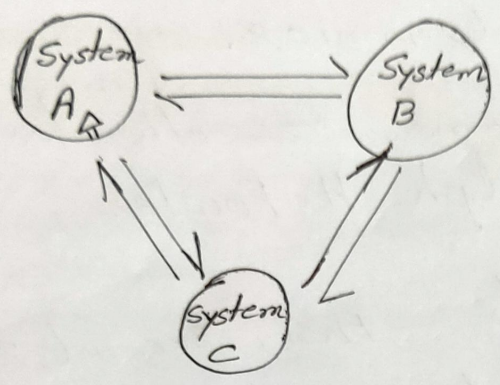


Fig:-1.

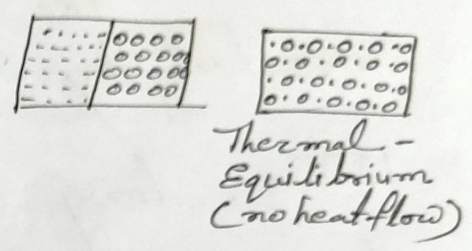


Fig:-2.

zeroth law of thermodynamics

According to this law, two systems in thermal equilibrium with a third system separately, are also in thermal equilibrium with each other. i.e. If two system A & B are in thermal equilibrium with the third system C separately, then both the system A & B will also in thermal equilibrium with each other.

If $Temp. A = Temp. C$ — ①

$Temp. C = Temp. B$ — ②

then $Temp. A = Temp. B \rightarrow$ thermal equilibrium

P.T.O \rightarrow

In another words we can say that
"If ~~the~~ temp. of system A & B is equal to temp of system C, then temp. of A & B will also be equal." → zeroth law of thermodynamics.

The name 'zeroth law' was invented by Ralph H. Fowler in the 1930s, long after First, Second & Third laws were widely recognized. Then the scientists realized that one more law is required to complete the set. However the zeroth law is the formal definition of temperature and it is considered as a more fundamental law when compared to the other three laws, that is why it is known as zeroth law of thermodynamics.

* The zeroth law of thermodynamics is the working principle of a thermometer.

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