

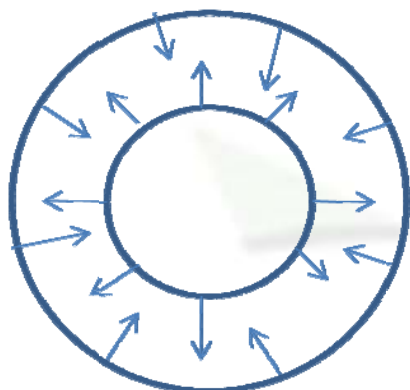


Prevost's Theory Of Heat Exchange

Prevost's theory of heat exchange:

Every substance at any temperature greater than absolute zero continuously emits radiation energy. The amount of radiation emitted per second increases with increase in temperature of the substance.

We now explain the thermal equilibrium between two bodies. Suppose the body A at a temperature T_A °K is surrounded completely by another body B at a temperature T_B °K (T_A °K > T_B °K).



According to Prevost's theory both A and B emit radiation the amount of radiation emitted by A is greater than that of B. The radiation emitted by A is absorbed by B. Since A emits more radiation than it absorbs hence A suffers a net loss in radiation and hence its temperature falls.

Since B emits less radiation then it absorbs it gains in radiation and hence its temperature rises.

When both A and B attain same temperature then both will emit same amount of radiation and hence both also absorb same amount of radiation. Thus both A & B neither loss nor gain any energy and hence the temperature of both remain constant. The two bodies are said to be in Thermal equilibrium.

Thus in thermal equilibrium heat exchange between the two bodies continues but since there is no loss or gain, temperature remains constant.