THERMAL PROPERTIES OF MATTER

{111. Conversion of temperature from one scale to other.

{a) Frarn tc 5 —32), & $t_F = \frac{9}{5} t_c$ -F 32

(b) Fromm °C 4E4 ‹K $T = t_c + 273.15$, et $t_c = T - 273.15$

) From IT t_p = 5 – 459-67, & T = $\frac{5}{}$ t_F 255.37

Where T, t_c, #F r Stand far tern perature reading on Kelvin. Kale, Celsiv5 scale, Fa hrenheit wale respectivelv..

{211. = 241, = 3a (Relation between a,13, y

kA(T —12)t

Where Q is the amount of heat that flows in time t across the opposite faces of a rod of length x and cross-sectlori A. T] and Tz are the temperatu res of the faces in the steady state and k is the coefficient of thermal cDnductiyity of the material of the rod_

{14 Q = (IT it / dx Where $\frac{dT}{dx}$ represent the temperature gradient.

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H = dQ (cIT) H is called the heat current_

411. M Coefficient of refleetivinyr is r =

opencient 4;14 atiKirptiwity = =

transiitiwity t =

Where Q, Is the radiant energy reflected, Qa Is the radiant energy absorbed and Q. is the radiant energy transmitted through a surface on which (Lis the incident radiant energy

(5). !all In (T −To) Kt

T1 T2 T
2

The above two equations represents Newton's law of cooling. Here, t is the time taken by a body to cool from TL to T2 in a surrounding. at temperature To_