Solar Radiation Data

It provides information on how much of Sun's energy strike a location on the earth's Surface during a particular time period.

These data are needed for effective research into Solar energy utilisation.

How to Calculate average Solar radiation:-

To get the annual Sum of radiation you have to take the annual average $\frac{kwh}{m^2}$ Perday

Example:

Annual horizontal global Solar radiation is $= 2.79 \frac{kwh}{m^2}$ Per day

" per year $= 2.79 \times 365$

$= 1018 \frac{kwh}{m^2}$ Per year

Depletion of Solar radiation :-

The loss of Solar energy in passing through the atmospheric Layer is called the atmospheric depletion.

The longer the path traversed, the greater the amount of radiant energy depleted.

Various processes whereby heat energy is lost through the atmosphere are known as scattering, diffusion absorption, and reflection.

Solar Time:

Is the time used in all of the Sun-angle relationship; it does not coincide with local clock time.

It is necessary to convert standard time to solar time by applying two corrections. There is a constant correction for the difference in longitude between the observers meridian and the meridian on which the local standard time is based.

The Sun takes 4 minutes to transverse $1°$ of longitude.
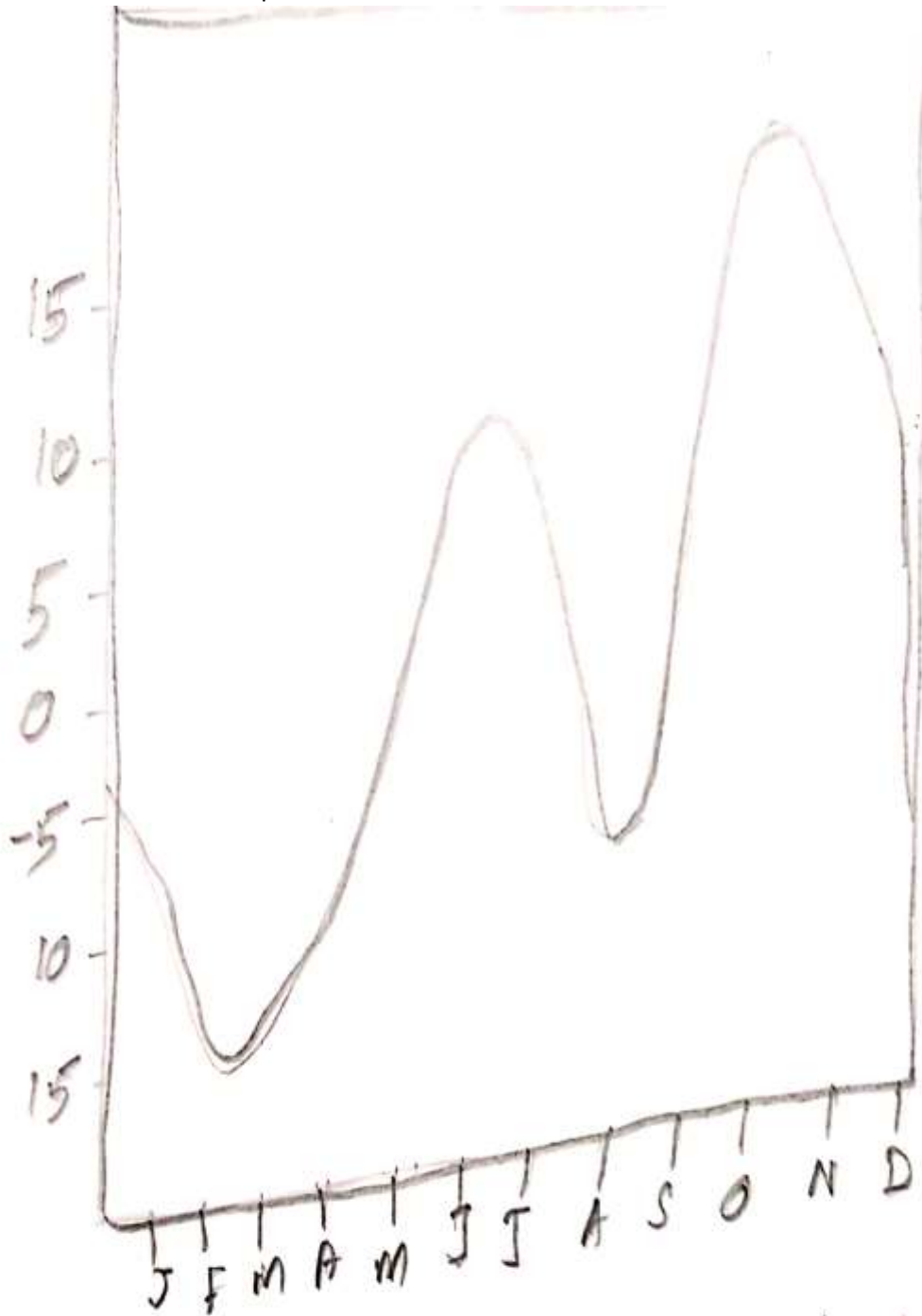
In Equation

$$\text{Solar Time} - \text{Standard time} = 4 \left(L_{st} - L_{loc} \right) + E$$

where:
L_{st} - Standard meridians for the time zone
L_{loc} Longitude of the location $\quad 0° < L < 360°$
E - Time in minute.

Equation of Time E in minutes, as a function of time of Year.