Revision Notes

Chapter - 15

Motions of the Earth

The Earth has two types of motions namely, rotation and revolution.

Rotation is the movement of the earth on its axis. Days and Nights take place because of rotation.

Revolution is the movement of the earth around the Sun in a fixed path or orbit. Revolution causes the change of seasons.

Orbital Plane and Circle of Illumination:

The plane formed by the orbit is known as the orbital plane.

The axis of the earth which is an imaginary line, has an angle of $66\frac{1}{2}^{\circ}$ with its orbital plane.

• The spherical shape of the Earth allows only half of the sun light to come at a time.

• The portion facing the sun experiences day while the other half away from the sun experiences night

The circle that divides the day from night on the globe is called the circle of illumination.

• The earth takes about 24 hrs to complete one rotation around its axis.The period of rotation is known as the Earth-day.This is the daily motion of the earth.

Revolution:

(i) The second motion of the earth around the sun in its orbit is called revolution.

(ii) It takes 365 days and 6 hours (one year) to revolve around the sun.

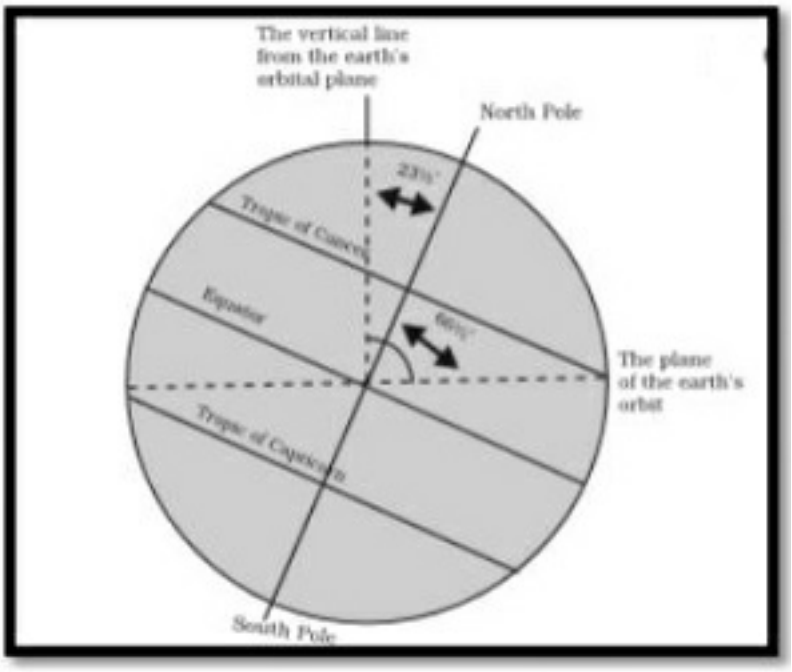
(iii) We consider a year as consisting of 365 days only and ignore six hours for the sake of convenience.

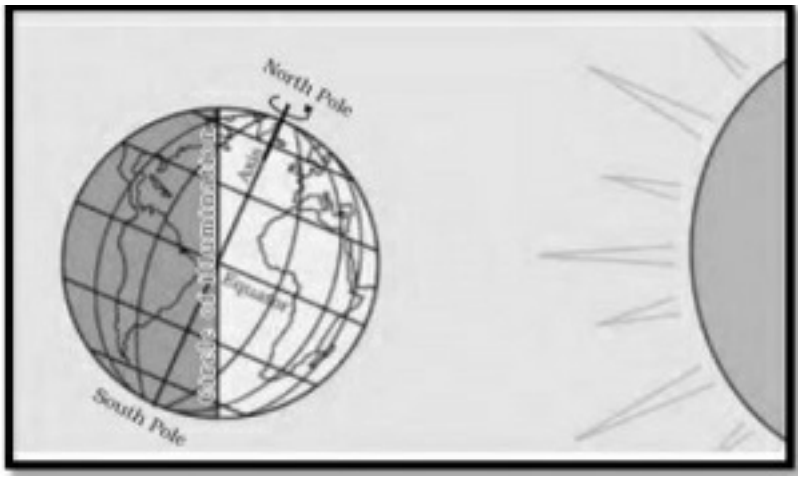
(iv) Six hours saved every year are likely to make one day (24 hours) over a span of four years.

(v) This surplus day is added to the month of February.

(vi) Every fourth year, February is of 29 days instead of 28 days. This year with 366 days is called a leap year.

(vii) The earth goes around the sun being inclined in the same direction throughout the year, in an elliptical orbit.





Seasons:

(i) Seasons change due to change in the position of the earth around the sun.On the basis of

change in the position of Earth,a year is divided into summer,winter,spring and autumn.

(ii) On21st June the Northern hemisphere is tilted towards the sun.These areas receive more heat because sun rays fall directly on the tropic of Cancer.

(iii) On the other hand ,areas near the poles receive less heat as the rays of the sun are slanting.

(iv) The places beyond the Arctic Circle experience continous daylightfor about six months.As the larger portion of Northern hemisphere gets light from sun,it is summer in Northern part of equator.

Summer Solstice:

In summer season ,the regions north of the equator experience the longest day and shortest night on 21st June.It is opposite in southern hemisphere and the nights are longer than the days and is winter season there. This position of the earth is called as summer solstice.

Winter Solstice:

On 22nd December the Tropic of Capricorn gets direct rays of the sun as the South Pole tilts towards it.The days are longer with shorter nights in Southern hemisphere and it is summer in Southern hemisphere and winter in Northern hemisphere. This is called winter solstice.

Equinox:

On 21st March and 23rd September, direct rays of the sun fall directly on the equator. During this period, the whole earth experiences equal days and equal nights because neither of the poles is tilted towards the sun. This is called an equinox.