

Effect of the Tilted Axis on Day and Night

1. Rotation of the Earth on its tilted axis causes days and nights to be of different length in different parts of the Earth.
2. Since the Earth's axis is tilted in the same direction, the orientation of the Earth's axis to the Sun's rays is constantly changing as the Earth moves around the Sun. This results in a continuous change in the length of days and nights throughout the year.

Perihelion

1. The position of the earth or any other planet in its orbit when it is at its nearest point to the sun.
2. The earth reaches its perihelion about 3rd January at a distance of about 147 million kilometer near one extremity of the major axis of the earth's elliptical orbit, the axis being called Apsides line.

Aphelion

1. The position of the earth or any other planet in its orbit when it is at its distant point from the sun.
2. The earth reaches its aphelion on 4th July when the earth is at a distance of 152 million kilometer near the other extremity of the major axis.

Solstice

1. Solstice is one of the two dates in the year on which the sun reaches greatest altitude north or south of the equator and is directly overhead along one of the lines of the tropics.

Summer Solstice

1. On June 21, the earth is so located in its orbit that the sun is overhead on the Tropic of Cancer ($23\frac{1}{2}^{\circ}\text{N}$).
2. On this date the northern hemisphere is tipped towards the sun having the longest day, while the southern hemisphere is tipped away from the sun having the shortest day.

Winter Solstice

1. On December 22, the earth is in an equivalent position on the opposite points in its orbit, so the southern hemisphere is tipped towards the sun and the northern hemisphere away from it.
2. The sun is overhead on the Tropic of Capricorn ($23\frac{1}{2}^{\circ}\text{S}$), resulting in the shortest day in the northern hemisphere.

Equinoxes

1. Two days in a year when day and night are equal throughout the world are equinoxes.
2. Falling midway between the dates of solstices, on these dates, the earth's axis lies at 90° to the line joining the centres of the earth and the sun and neither the northern nor the southern hemisphere is inclined towards the sun.
3. The 'vernal equinox' occurs on March 21 and it is also called the spring equinox in the northern hemisphere.
4. The 'autumnal equinox' occurs on September 23.

Midnight Sun

1. This phenomenon is observed in the Arctic and Antarctic zones around mid-summer, when the sun does not sink below the horizon throughout 24 hours of the day and therefore, may be seen at midnight.
2. This is the direct consequence of the inclination of the axis of the earth to the plane of the orbit.
3. Norway is the place of midnight sun where the sun is continuously visible between May and July.
4. In the southern hemisphere, the phenomenon is seen in the Antarctica continent.

Eclipses

1. An Eclipse occurs when the sun, moon and earth are in a straight line.

2. A 'solar eclipse' occurs between sunrise and sunset on new moon when the moon passes directly in front of the sun so that its shadow lies on the earth. In other words, the moon lies between the sun and the earth.
3. The 'lunar eclipse' takes place when the earth comes in between the sun and the moon so that the shadow of the earth is cast on the moon.
4. A lunar eclipse takes place on a full moon.
5. Generally a total of seven eclipses, including solar and lunar eclipses, take place every year.

