

Geography – Std 9

Fourth Assignment

Chapter 3 : Motions of the Earth

Rotation and Revolution

(The following questions are for you to guide you to understand the Chapter)

1. What is Rotation? Learn about its features. (pg 22)
2. What do you know about the Earth's Axis? (pg 23)
3. What is Circle of Illumination? Draw a diagram. (pg 23)
4. What are the Effects of the Earth's Rotation? (pg 24)

HOMEWORK :

Write down in your Geography Homework Copy both the questions and the answers of the following questions:-

- I. What do you know about Rotation and its effects?
- II. What do know about the Earth's Axis and its features?
- III. Mention clearly the features of the Circle of Illumination?

NOTE :- *These questions are only for HOMEWORK. You are expected to answer any question asked from this chapter. So, learn thoroughly.*

(Please see the next pages)

Chapter 3 : *Motions of the Earth* (Rotation and Revolution)

The *Sun* seems to be moving apparently although it is the *Earth* that moves – on its own

axis as well as around the *Sun*. Actually the *Sun* is stationary and it is *Earth* that moves around it.

On the basis of the Earth's two ways of movement

We come across to two kinds of Geographical Terms – *Rotation* and *Revolution*.

What is Rotation?

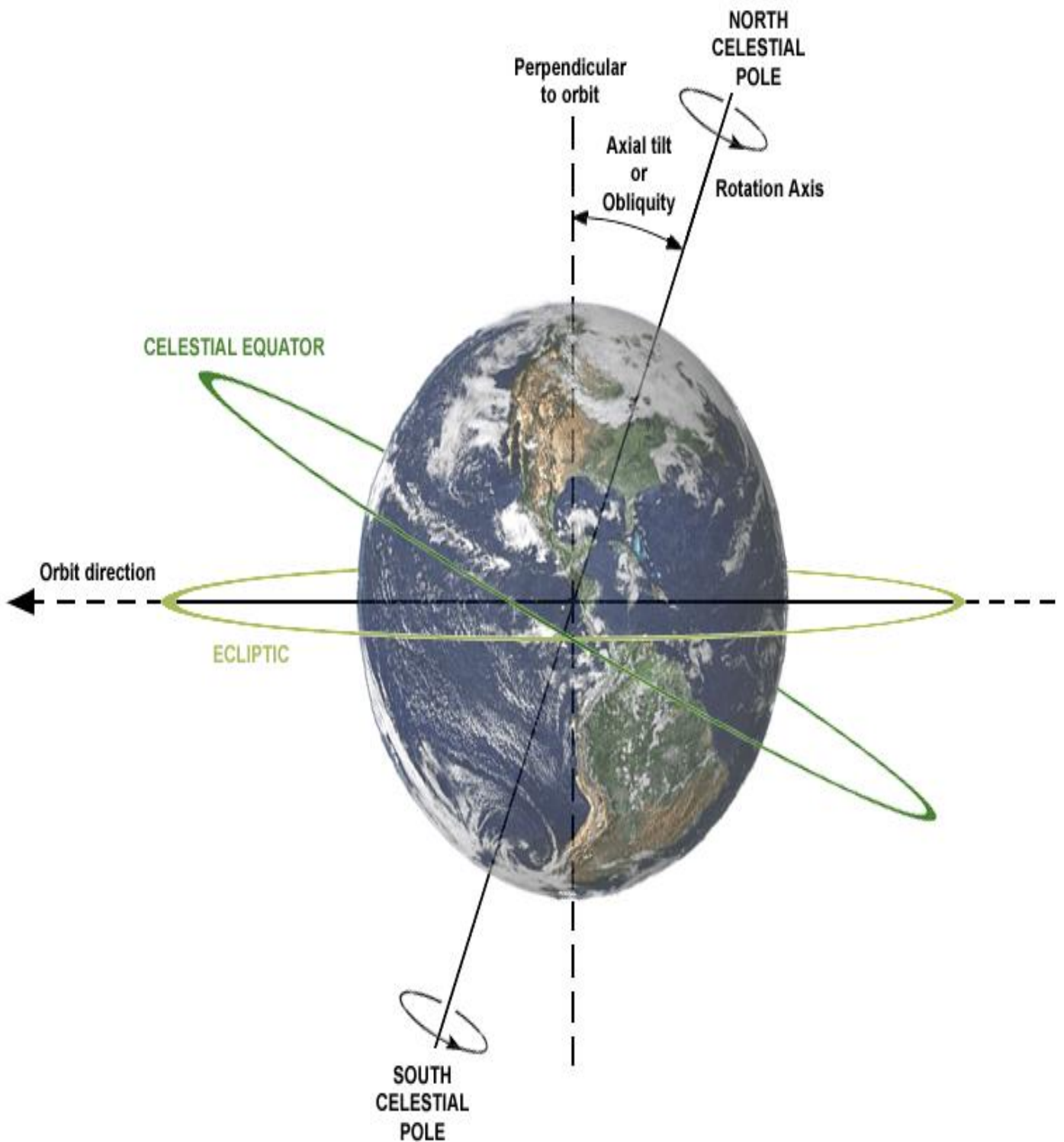
The spinning of the Earth around its own axis is called *Rotation*. The axis has an angle of $23\frac{1}{2}^{\circ}$ and is perpendicular to the plane of the Earth's orbit. It means that the Earth is tilted on its axis and because of this tilt, the northern and southern hemispheres lean in a direction either away from or near to the Sun. The rotation of the Earth divides it into a lit-up half and a dark half which gives rise to day and night.

What are the Features of the Rotation

- ✚ It is the spinning of the Earth around the Sun.
- ✚ It takes 23 hrs 56 minutes and 4 seconds to complete one Rotation.
- ✚ It is referred to “*sidereal day*” (‘sidus’ is a Latin words which means a star).
- ✚ But considering the mid day Sun as a point of reference for a given meridian the time of the solar day is 24 hrs.
- ✚ The difference of nearly 4 minutes between the sidereal day and solar day is due to the Revolution of the Earth.

What is the Earth’s Axis

- The axis of the Earth is an imaginary line drawn from the North Pole to the South Pole through the center of the Earth.
- Although we can't feel the Earth spinning, it makes one complete turn, each day, around its own axis.
- The Earth takes 24 hrs to complete one rotation on its axis.



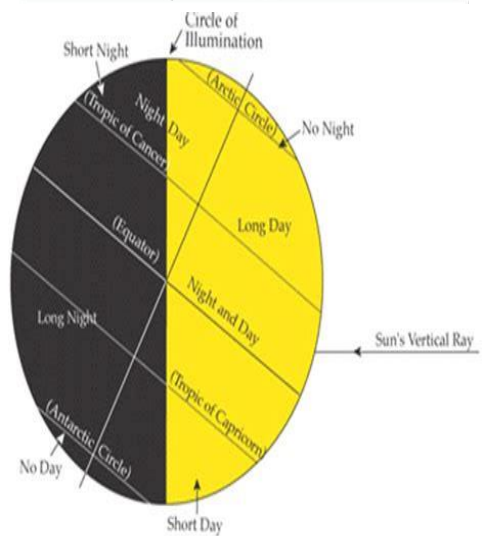
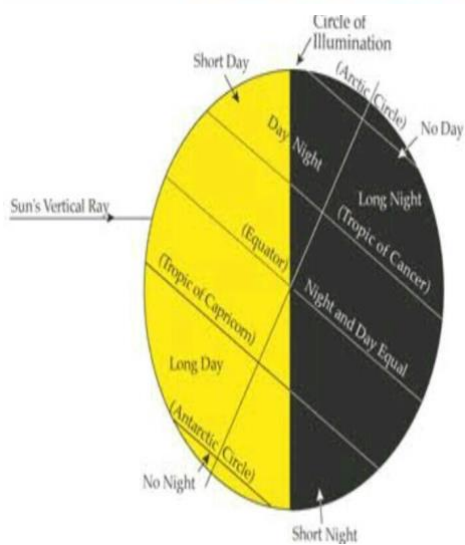
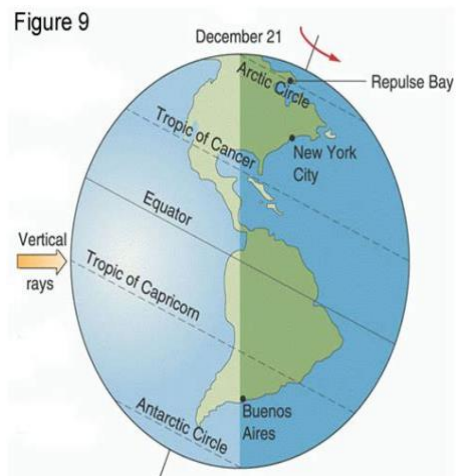
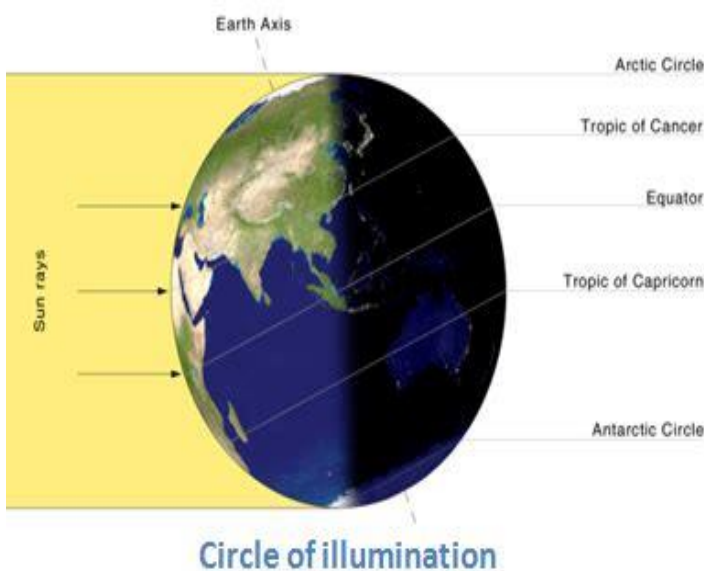
- **The Earth is tilted at an angle of $23\frac{1}{2}^{\circ}$ from its perpendicular to the elliptical plane.**

- Or $66\frac{1}{2}^{\circ}$ degrees from a line parallel to its elliptical plane.
- The tilt of the Earth is called the inclination of the Earth's axis.
- If the Earth was not tilted there would have always been one kind of season and temperature with constant duration of night and day.
- The tilt causes seasons like summer, winter, autumn and spring.
- The tilt or the inclination of the Earth's axis always remains pointed in the same direction towards the pole Star during revolution.

1. What is Circle of Illumination?

- ✚ The imaginary line that separates light from the darkness and day from the night is known as the circle of illumination.
- ✚ The circle of illumination divides the Earth in exactly two equal halves.
- ✚ The way that the Earth turns in relation to the circle of illumination determines the factor behind how many hours it is light or dark out.
- ✚ The circle of illumination also plays a small part on determining the seasons.

- ✚ The speed of Rotation decreases as one goes away from the equator due to the spherical shape of the earth.
- ✚ We do not feel or realize this fast movement of the Earth because everything on Earth including us is also moving along with it.



What are the Effects of the Earth's Rotation

- **Due to this apparent movement of the Sun, the Sun appears to rise in the East and set in the West everyday.**
- **Occurrence of Day and Night in every 24 hrs.**
- **The time difference of 4 minutes for 1⁰ Longitude is due to the Rotation of the Earth.**
- **Rotation of the Earth creates Coriolis Force due to which winds get deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.**
- **The occurrence of tides in the oceans also take place twice a day due to Rotation.**
- **The Earth got its shape as “Geiod” due to the Rotation.**