

CHAPTER-1

THE EARTH AS A PLANET

The earth is the third planet revolving around the sun after mercury and Venus. It is the only planet among the eight planets which supports life on it. It lies 150 million kilometers away from the sun.

STATISTICAL DATA OF THE EARTH

(Refer from the textbook on page no.12)

SHAPE OF THE EARTH

The ancient scholars like Pythagoras, Aristotle, Ptolemy, Aryabhata and Copernicus believed that the earth is spherical in shape.

Contribution of some of the scholars:

- PYTHAGORAS- It is believed that Pythagoras was the first one to put forward his explanation about the spherical shape of the earth.
- ERATOSTHENES- He was the one who calculated the correct circumference of the earth.
- PTOLEMY- Ptolemy had a view that the earth is the centre of the universe and all the heavenly bodies revolves around it. This view is known as geocentric theory (geo means earth) which was later on rejected by the modern science.
- COPERNICUS (Polish Astronomer)- In his book, " On the Revolution of the heavenly bodies"(published in 1543), stated that the earth is round, it rotates on its axis and revolves around the sun on its orbit. He believed the sun to be the centre of the universe and hence this view is known as heliocentric theory (helio means sun).
- COLUMBUS - Columbus had suggested that by sailing from the western Europe one can reach to its eastern part.

INDIRECT EVIDENCES OF THE SPHERICAL SHAPE OF THE EARTH

- i. Time of sunset and sunrise is not same at every place.
- ii. Circumnavigation of the earth round the world by the Portuguese navigator Ferdinand Magellan.
- iii. The shadow of the earth on the moon during lunar eclipse is always circular in shape.

But our earth is not exactly a sphere because it has a slight bulge on the equator and slight flattening at its poles, hence the earth is said as a spheroid or an oblate sphere.

SIZE OF THE EARTH

The earth is the fifth largest among the planets. Eratosthenese was the first to attempt to measure the size of the earth by comparing the angle of sunrays at two different places Syene in Aswan and Alexandria of Egypt in third century B.C.. Modern scientists calculated the size of the earth to be 24860 miles.

THE EARTH AS A LIVING PLANET

The features which make the earth inhabitable and unique :

- The right distance from the sun enables the earth to be neither too hot nor too cold.
- Hydrosphere- The realm of water on the earth's surface is known as Hydrosphere.
- Atmosphere – Atmosphere protects us from the harmful radiation from the sun and balances the temperature of the earth. It also provides important gases like O₂, CO₂, nitrogen, etc.
- Lithosphere – The layer of rock and soil on the earth's surface is known as lithosphere.
- Biosphere – Biosphere is the narrow zone of contact amidst lithosphere, hydrosphere and atmosphere. This zones supports life on it as it holds all the required necessities of life.

QUESTIONS AND ANSWERS:

Q1 How can you prove that the earth is a sphere by looking at the pole star?

The Pole Star can be seen at an angle of 90° at the North Pole, as it lies directly at the line of axis of the earth, while its angle decreases towards the equator i.e. it is 0° at the equator. It is only possible in an quarter arc of a circle. It proves that the earth is a sphere with circular surface.

Q2 Why the earth is not a perfect sphere?

Earth's diameter varies at the Equator and at the poles. Its diameter at the equator is 12,756km while its polar diameter is 12,714km. This difference in diameter is due to centrifugal force of earth's rotation at the great speed which forms a bulge at the equator and compression at the poles.

Q3 Why does sunrise and sunset occurs at different times at different places?

Sunrise and sunset occurs at different times at different places because the earth rotates from west to east and therefore, people in the east can see the sun earlier those in the west.

Q4 Why is the earth called a watery planet?

The earth is called a watery planet, as its major part i.e. 70% is covered by water or hydrosphere. The earth is seen blue in the satellite pictures due to the majority of water.

Q5 Name the conditions necessary for life on earth.

The conditions necessary for life on earth, are ideal temperature range with an average between 10°C and 35°C, solar radiation, humidity, wind, water, land, etc.

Homework:

Self Assessment (page no.17-18)

Question no. A, C, D and E

[Write all the questions & answers and your homework in your note copy]