CHAPTER – 3

MOTIONS OF THE EARTH

Q. 1 A Answer the following questions briefly.

What is the angle of inclination of the earth's axis with its orbital plane?

Answer:

The tilted position of the earth's axis is called the inclination. The earth makes an angle of $66\frac{1}{2}°$ with the orbital plane.

Q. 1 B Answer the following questions briefly.

Define rotation and revolution.

Answer:

Rotation: Rotation can be defined as the movement of the earth on its axis.

Revolution: The movement of the earth around the sun in a fixed path or orbit is known as a Revolution.

Q. 1 C Answer the following questions briefly.

What is a leap year?

Answer:

A year with 366 days is called a leap year. It takes 365¼ days (one year) to revolve around the sun. Six hours saved every year are added to make one
day (24 hours) over a span of four years. This surplus day is added to the

month of February. Thus every fourth year, February is of 29 days instead of 28 days.

Q. 1 D Answer the following questions briefly.

Differentiate between the Summer and Winter Solstice.

Answer:

Summer Solstice: It occurs on 21st June and is also known as the longest day of the year in the Northern Hemisphere. This is due to the position of the earth when there is summer in the Northern Hemisphere and winter in the Southern Hemisphere.

Winter Solstice: Winter Solstice occurs on 22nd December, which is also known as the shortest day of the year. At this time, the earth's North Pole is tilted farthest from the sun. It is summer in the Southern Hemisphere and winter in the Northern Hemisphere.

Q. 1 E Answer the following questions briefly.

What is an equinox?

Answer:

Equinox is that time of the year when day time and night time are of equal length. The word Equinox is derived from the Latin; '*equi'* means *equal* and '*nox'* means '*night'*. It occurs on two such, 21st March and 23rd September.

Q. 1 F Answer the following questions briefly.

Why does the Southern Hemisphere Experience Winter and Summer Solstice in different times than that of the Northern Hemisphere?

Answer:

Due to the revolution of the earth on its axis, the Southern hemisphere receives direct sunlight in the month of December and the Northern Hemisphere is away and receives less sunlight. Since a large portion of the Southern Hemisphere faces the sun, it experiences Summer Solstice while the other half away from the sun experiences Winter Solstice.

Q. 1 G Answer the following questions briefly.

Why do the poles experience about six months' day and six months' night?

Answer:

Due to the angle of inclination of the earth, both the poles experience day for 6 months and night for 6 months. The pole that is tilted towards the sun receives sunlight continuously for 6 months and the pole away from the sun experiences night for 6 months.

Q. 2 A Tick the correct answer.

The movement of the earth around the sun is known as
A. Rotation

B. Revolution

C. Inclination

Answer:

The movement of the earth around the sun in a fixed path or orbit is known as a Revolution. It takes 365¼ days (one year) to revolve around the sun. We consider a year as consisting of 365 days only and ignore six hours for the sake of convenience.

Q. 2 B Tick the correct answer.

Direct rays of the sun fall on the equator on
A. 21 March

B. 21 June

C. 22 December

Answer:

On **21st March and September 23rd**, direct rays of the sun fall on the equator. At this position, neither of the poles is tilted towards the sun; so, the whole earth experiences equal days and equal nights. This is called an **equinox.**

Q. 2 C Tick the correct answer.

Christmas is celebrated in summer in

A. Japan

B. India

C. Australia

Answer:

Due to the revolution of the earth on its axis, the Southern hemisphere receives direct sunlight in the month of December and experiences Summer Solstice.

Q. 2 D Tick the correct answer.

Cycle of the seasons is caused due to
A. Rotation
B. Revolution
C. Gravitation

Answer:

Due to the revolution of the earth on its axis, the position of the earth around the sun changes. This causes seasons to change.

Q. 3 Fill in the blanks.

(a) A leap year has _____ number of days.

(b) The daily motion of the earth is _____.

(c) The earth travels around the sun in _____ orbit.

(d) The sun's rays fall vertically on the Tropic of _____ on 21st June.

(e) Days are shorter during _____ season.

Answer:

(a) A leap year has **366** number of days.

A year which has 366 days and not $365\frac{1}{4}$ days is called a leap year.

(b) The daily motion of the earth is **rotation.**

Rotation can be defined as the movement of the earth on its axis in 24 hours.

(c) The earth travels around the sun in an **elliptical** orbit.

The shape of the earth's orbit is not round but elliptical. The earth travels around the sun in an elliptical orbit.

(d) The sun's rays fall vertically on the Tropic of **Cancer** on 21st June.

21st June is the longest day, also known as the Summer Solstice. On this day the sun's rays fall directly over the Tropic of Cancer.

(e) Days are shorter during **winter** season.

The days are shorter in winter than in summer, because of the tilt of the earth's axis.