



Questions and Answers

1. Define the Earth's revolution.....?
 - A. The Earth revolves around the Sun in an elliptical orbit. This is known as Earth's revolution.

2. Why does the amount of sunshine vary in different parts of the earth....?
 - A. The Earth's revolution and the tilt of the axis are the reasons for this variation.

3. What is the parallelism of the Earth's axis.....?
 - A. The Earth maintains its tilt of the axis throughout its revolution. This is known as the parallelism of the Earth's axis.

4. What is the apparent movement of the Sun.....?
 - A. Since the parallelism is maintained same throughout the revolution, the position of the Sun in relation to the Earth varies apparently between Tropic of Cancer ($23\frac{1}{2}^{\circ}$ North) and Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ South). This is known as the apparent movement of the Sun.

5.
 - a) Temperature will be over those places where the vertical rays of the Sun fall. (higher/low)
 - b) The temperature will be at places where the Sun's rays are slanting. (higher/low)

6. Why does the different seasons get repeated in a cyclic manner.....?
 - A. As a result of the apparent movement of the sun between Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) and Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S), the different seasons - Spring, Summer, Autumn and Winter - get repeated in a cyclic manner.

7. Why the Seasonal changes are not usually very obvious in the tropical regions.....?
 - A. Large amount of Sun's rays are getting at the tropical regions throughout the year. So the Seasonal changes are not very obvious there.

8. Define Equinoxes.....?

A. The apparent position of the Sun during the Earth's revolution will be over the Equator on **March 21** and **September 23**. Hence the **length of day and night will be equal** during these days on both the hemispheres. These days are called equinoxes.

9. Differentiate Summer Solstice and Winter Solstice of Northern hemisphere.....?

A. From **21 March onwards**, the Sun apparently shifts from the Equator northwards and reaches vertically over the Tropic of Cancer ($23\frac{1}{2}^{\circ}\text{N}$) on 21 June. This day is known as the **Summer Solstice**.

The Sun continues its southward apparent shift from the Equator **from 23 September** and reaches vertically above Tropic of Capricorn ($23\frac{1}{2}^{\circ}\text{S}$) on 22 December. This day is known as **Winter Solstice**

10. Fill the table suitably....

Months	The apparent movement of the sun	Seasons	
		Northern hemisphere	Southern hemisphere
A	From the Equator to Tropic of Cancer	Spring	Autumn
From June 21 to September 23	From Tropic of Cancer to the Equator	B	Winter
From September 23 to December 22	From the Equator to Tropic of Capricorn	Autumn	C
From December 22 to March 21	From Tropic of Capricorn to the Equator	D	Summer

11. What are the features of Earth's rotation.....?

- A.
- The Earth rotates from west to east
 - It takes 24 hours to complete one rotation.
 - As the Earth rotates from west to east, the Sun rises in the east.
 - Time advances towards the east and recedes towards the west

12. The time required for the Earth to complete the rotation of 1° longitude is 4 minutes....Can you prove it.....?

A. The time required to complete a 360° rotation is 24 hours.
 On converting 24 hours into minutes = $24 \times 60 = 1440$ minutes.
 So the time required for one rotation = 1440 minutes

The time required for the completion of 1° longitude is

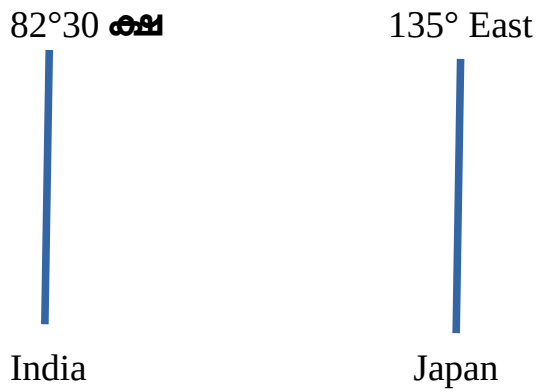
$$\frac{1440}{36} = 4 \text{ minutes}$$

The time required for the rotation of 15° longitudinal area is

$$15 \times 4 = 60 \text{ minutes (1 hour).}$$

13. Why is the Greenwich Line is known as the prime meridian.....?
 A. Time is calculated worldwide based on the Greenwich Line. Hence this line is also known as the prime meridian.
14. What is the Greenwich Mean Time(GMT).....?
 A. The local time at the prime meridian is known as the Greenwich Mean Time.
15. Define Time Zones.....?
 A. Based on the Greenwich Meridian, the world is divided into 24 zones, each with a time difference of one hour. These are known as time zones.
16. What would be the longitudinal extent of each time zone.....?
 A. 15 minutes.
17. What is Standard Meridian.....?
 A. The longitude that passes almost through the middle of a country is the standard meridian of that country.
18. Why does some countries have more than one local time.....?
 A. Because such countries are having large longitudinal extension.
19. Write a note on Indian Standard time(IST).....?
 A. The longitudinal extent of India is from 68°E to 97°E . The $82\frac{1}{2}^\circ\text{E}$ longitude which passes almost through the middle of these longitudes has been fixed as the standard meridian of India. The local time along this longitude is generally considered as the Standard Time of India.
20. Write a note on International Date Line.....?
 A. 180° longitude is considered as International Date Line. The travellers who cross this line from the West calculate the time by advancing it by one day and those who cross the line from the west deduct one day. This imaginary line is known as the International Date Line.
21. What will be the time in Japan (135° East) when it is 11 pm on Monday in India.....?

A.



The longitudinal difference between India and Japan

$$= 135^{\circ} - 82^{\circ}30'$$

$$= 52^{\circ}30'$$

Time difference for 1° longitude is 4 minutes.

Time difference for $52^{\circ}30'$ longitude = $52\frac{1}{2} \times 4$

$$= 210 \text{ minutes}$$

$$\text{ie } = 3 \text{ hours } 30 \text{ minutes}$$

As Japan is situated at the east of India, the time in Japan would be 3 hours and 30 minutes ahead of that time in India.

When it is 11 pm on Monday in India, the time in Japan = 11 pm Monday + 3 hours 30 minutes = 2.30 am Tuesday.