

Q Describe different method to estimate the age of the universe.

1. Cosmic Microwave Background (CMB):

Scientists study the CMB, which is the remnant radiation from the Big Bang. By analyzing its temperature fluctuations, they can estimate the age of the universe.

2. Hubble Constant:

Observations of the rate at which galaxies are moving away from us (Hubble constant) help determine the expansion rate of the universe. Inverting this rate gives an estimate of the universe age.

3. Age of Oldest Stars:

Astronomers can estimate the age of

the universe by studying the oldest known stars. The ages of these stars set a lower limit on the universe's age.

### Supernova Observation:

The study of distant supernova helps gauge cosmic expansion. Comparing their observed and intrinsic brightness provides insights into the universe's age.

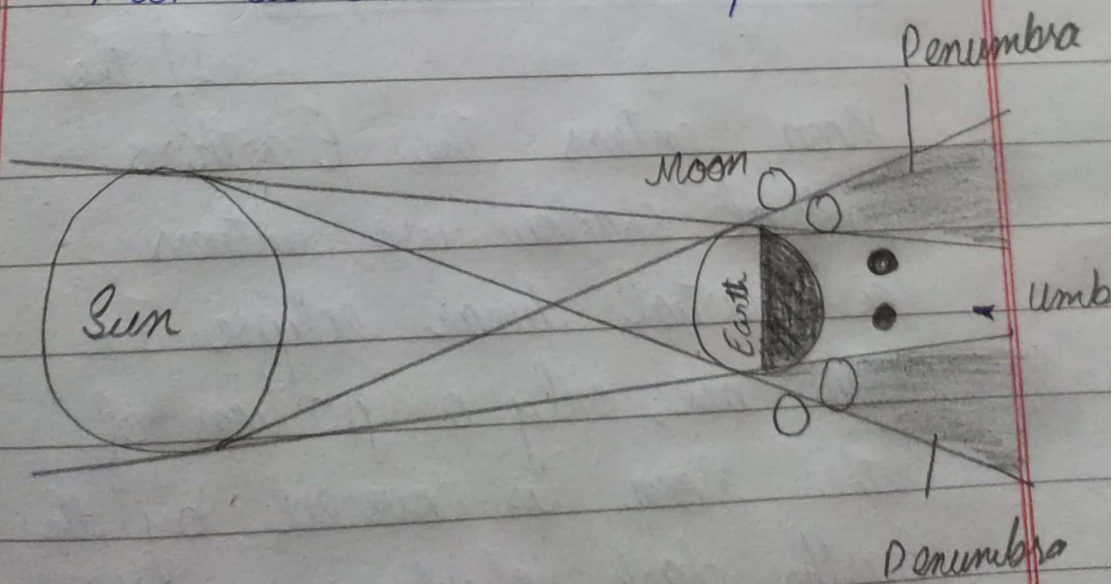
### Baryon Acoustic Oscillations:

The imprints of acoustic waves in the early universe, seen in the distribution of galaxies, can be used to estimate cosmological parameters, including the age of the universe.

Explain the formation of Lunar Eclipse.

Lunar Eclipse:

The moon moves in an orbit around Earth, and at the same time, Earth orbits the sun. Sometimes Earth moves between the sun and the moon. When this happens, Earth blocks the sun light that normally is reflected by the moon. Instead of light hitting the moon's surface, Earth's shadow fall on it. This is an eclipse of the moon called lunar eclipse



## Types of Lunar Eclipse:

There are three types of Lunar eclipse.

### a. Penumbral Lunar Eclipse:

When the Moon passes through Earth's penumbral shadow, we observe a penumbral lunar eclipse. However, this type is subtle, and the Moon only slightly darkens.

### b. Partial Lunar Eclipse:

If the Moon enters the Earth's umbral shadow, we witness a partial lunar eclipse. In this case, only a portion of the Moon is covered by the Earth's dark shadow, resulting in the partial darkening of

the lunar surface.

### c. Total Lunar Eclipse:

When the Moon moves completely into the Earth's umbra, a total lunar eclipse occurs.

During this event, the Moon can take on a reddish tint.

This happens because some sunlight is refracted by Earth's atmosphere, and the longer wavelengths are scattered less, allowing them to reach the Moon and give it a reddish appearance.