

Q. What is a mirage? Describe in details the creation of Mirage

1. Introduction:

The term "mirage" refers to a visual phenomenon that occurs when light rays travelling through the Earth's atmosphere are bent or refracted, creating an optical illusion that distorts the appearances of distant objects. Mirages are often associated with the appearances of water or other objects on the ground especially in arid or desert environments, but they can also occur at sea or in various atmospheric conditions.

2. Formation of Mirage:

a. Atmospheric Refraction:

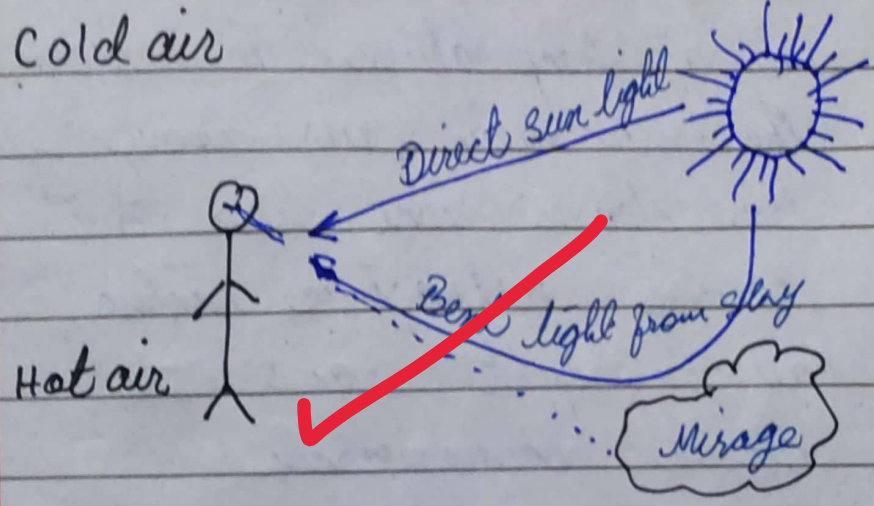
Mirages are

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primarily a result of the bending of light rays as they pass through layers of the Earth's atmosphere, where the density and temperature of the air vary. The atmosphere is composed of layers with different optical properties, which can cause light to change direction.

b. Temperature Inversion:

One of the key factors in the formation of mirages is a temperature inversion, where a layer of warmer air is trapped above a layer of cooler air near the ground. This inversion layer acts as a boundary where light rays are bent.



Hot surface

Mirage Formation

C. Bending of light:

When sun light from a distant objects enters the boundary between the warmer and cooler air layers, the light rays are refracted or bent. This bending occurs due to the difference in

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the speed of light in air at different temperatures.

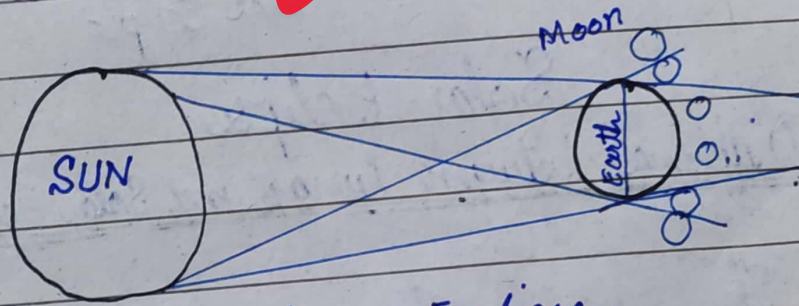
4 In a temperature inversion the warmer air above is less dense and has a lower refractive index, causing light rays to curve downwards.

Q Differentiate between the occurrence of Lunar and Solar Eclipse?

1. Lunar Eclipse:

A lunar eclipse occurs when the Earth passes between the Sun and the Moon, casting a shadow on the Moon. It only happens during a full moon. During a lunar eclipse, the Earth's shadow causes the Moon to appear to darken and sometimes take on

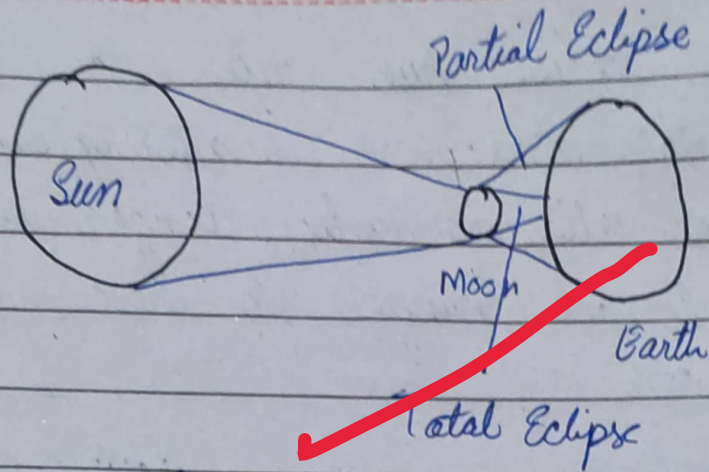
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a reddish hue due to the Earth's atmosphere scattering sunlight and allowing only longer-wavelength red and orange to reach the Moon.



Lunar Eclipse

2. Solar Eclipse:

A solar eclipse occurs when the Moon passes between the Earth and the Sun, blocking out the Sun's light. It can only happen during new moon. During a solar eclipse, the Moon's shadow can create either a total eclipse or a partial solar eclipse.



Solar Eclipse

3. Difference between Lunar and Solar Eclipse

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The key difference is the relative positions of the Earth, Moon, and Sun during each type of eclipse which results in different observable phenomena from perspective on Earth.

discuss the differences in detail by giving multiple points.