MAHESH PUBLIC SCHOOL,JODHPUR

CLASS – XI (GEOGRAPHY)

CH - 2. Origin And The Evolution of the Earth.

Early Theories

Nebular Hypothesis

- Immanuel Kant, a German philosopher gave this theory.
- In 1796, a mathematician Pierre-Simon Laplace reexamined it.
- According to this hypothesis, the planets were moulded out of a cloud of material associated with a young Sun, which was rotating slowly.

Binary theories

- As per these theories, the sun had a companion.

Revised Nebular Hypothesis

- Revised Nebular Hypothesis was propounded by Carl Weizascar in Germany and Otto Schmidt in Russia.
- They regarded that a solar nebula surrounded the sun and that the nebula comprised of chiefly hydrogen, helium and something called dust.
- The collision of particles and the friction caused a disk-shaped cloud to be formed and then the planets were created via the accretion process.

Modern theories

Big Bang Theory

- Alternatively called the expanding universe hypothesis.
- As per this theory, in the beginning, all matter or substance forming this universe existed at one place as a tiny ball. This tiny ball had an extremely small volume, infinite density and temperature.
- At the Big Bang, this ball blasted fiercely and forcefully and started a substantial process of expansion which continues to this day.
- Now it is accepted that this event took place 13.7 billion years ago.

Origin of Earth

Formation of Planets

The following are regarded as the stages in the planets' development:

- The stars are localised gas lumps inside a nebula.

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- A core to the gas cloud as well as a spinning disc of dust and gas are created because of the gravitational force within the lumps.
- After this, the cloud of gas condenses and the matter over the core is changed into tiny rounded objects.
- These small round objects develop into what are called planetesimals by a cohesion process.
- The smaller objects start forming larger bodies by colliding with one another and they stick together because of gravitational force.
- In the last stage, these large number of small planetesimals aggregate to develop into a smaller number of large bodies called planets.

Lightyear

- It is a unit of astronomical distance which is equal to the distance light travels in one year.
- A light-year is a measure of distance and not of time.
- Light travels at a speed of 300,000 km/second.

Solar system

- Solar system consists of eight planets.
- Mercury, Venus, Earth, Mars, Jupiter, Uranus, Saturn and Neptune.
- The inner planets are Mercury, Venus, Earth, and Mars.
- After an asteroid belt come the outer planets, Jupiter, Saturn, Uranus, and Neptune.

The Moon

- The moon is the only natural satellite of the earth.

Evolution of the Earth

- The age of Earth is approximately one-third of the age of the universe.
- Earth formed around 4.54 billion years ago by accretion from the solar nebula.

Lithosphere, Atmosphere, and Hydrosphere of the Earth

- **Lithosphere:** The firm outer part of the earth, comprising of the crust and upper mantle.
- **Atmosphere:** A layer of gases encircling a planet that is seized in place by the gravity of that body.
- **Hydrosphere:** It is the collective mass of water found on, under, and above the surface of the earth.

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- The first stage of the evolution of Lithosphere, Atmosphere, and Hydrosphere is marked by the loss of the primordial atmosphere.
- In the second stage, the hot interior of the earth contributed to the evolution of the atmosphere.
- Finally, the composition of the atmosphere was modified by the living world through the process of photosynthesis.

The present composition of earth's atmosphere is chiefly contributed by nitrogen and oxygen

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