

## UPSC Civil Services Examination

### UPSC Notes [GS-I]

#### Topic: The Origin and the Evolution of the Earth [Geography Notes for UPSC]

##### 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.
- The first stage of the evolution of Lithosphere, Atmosphere, and Hydrosphere is marked by the loss of 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.

### Geological Scale

Eons	Era	Period	Epoch	Age/ Years Before Present	Life/ Major Events
	Cainozoic (From 65 million years to the present times)	Quaternary	Holocene Pleistocene	0 - 10,000 10,000 - 2 million	Modern Man Homo Sapiens
		Tertiary	Pliocene Miocene	2 - 5 million 5 - 24 million	Early Human Ancestor Ape: Flowering Plants and Trees
			Oligocene Eocene Palaeocene	24 - 37 million 37 - 58 Million 57 - 65 Million	Anthropoid Ape Rabbits and Hare Small Mammals : Rats - Mice
	Mesozoic 65 - 245 Million Mammals		Cretaceous Jurassic Triassic	65 - 144 Million 144 - 208 Million 208 - 245 Million	Extinction of Dinosaurs Age of Dinosaurs Frogs and turtles
	Palaeozoic 245 - 570 Million	Permian		245 - 286 Million	Reptile dominate-replace amphibians
		Carboniferous		286 - 360 Million	First Reptiles: Vertebrates: Coal beds
		Devonian Silurian		360 - 408 Million 408 - 438 Million	Amphibians First trace of life on land: Plants
		Ordovician Cambrian		438 - 505 Million 505 - 570 Million	First Fish No terrestrial Life : Marine Invertebrate
	Proterozoic Archean	Pre-Cambrian 570 Million - 4,800 Million		570 - 2,500 Million	Soft-bodied arthropods
	Hadean			2,500 - 3,800 Million 3,800 - 4,800 Million	Blue green Algae: Unicellular bacteria Oceans and Continents form - Ocean and Atmosphere are rich in Carbon dioxide
Origin of Stars	5,000 - 13,700 Million			5,000 Million	Origin of the sun
Supernova				12,000 Million	Origin of the universe
Big Bang				13,700 Million	