# Prelim Bits 29-05-2019

## Anthropocene Epoch

- Recently member panel of the Anthropocene Working Group (AWG) voted in favor of designating a new geological epoch.
- The vote signals the end of the Holocene Epoch, which began 11,700 years ago.
- An epoch is an instant in time chosen as the origin of a particular calendar era.
- The term 'Anthropocene' was coined in 2000 to denote the present geological time interval in which human activity has profoundly altered many conditions and processes on Earth.
- The International Commission on Stratigraphy (ICS) oversees the official geologic time chart.
- Researchers are focusing in identifying a definitive geologic marker or golden spike (technically called Global boundary Stratotype Section and Point) to signal the beginning of the Anthropocene Epoch.
- The golden spike must be present globally and should be a part of deposits for geological record.
- Many in the AWG believe that artificial radionuclides spread across the world by atomic bomb tests from the early 1950s would serve as the golden spike.
- The radionuclides are present almost everywhere from marine sediments to ice layers and even stalagmites and stalactites.

## Superconductivity

- A material is said to be a superconductor if it conducts electricity with nil resistance to the flow of electrons.
- Superconductors will help build very high efficient devices leading to huge energy savings.
- Till now, scientists have been able to make materials super conduct only at temperatures much below zero degree C and hence making practical utility very difficult.
- Indian scientists have invented a material using silver nanoparticles embedded in a gold matrix that exhibited superconductivity in room temperature.

- In general silver and gold independently do not exhibit superconductivity.

## Laxmi Basin

- The Laxmi Basin is a 300-kilometre-wide, marginal depression enclosed by the Indian continental shelf and the Laxmi Ridge on either side.
- The basin is believed to be formed by the extension of the Indian continental tectonic plate, while another theory held that the surface of the basin composed of an oceanic crust overlying an extinct spreading center formed due to drifting of two tectonic plates.
- Recently IODP scientists have concluded that a short-lived subduction event had occurred around 70 million years ago in Laxmi Basin.
- The finding provides glimpse of a convergent plate motion in the area which is otherwise dominated by divergent tectonics that had led to the breakup of super continent Gondwanaland into three parts: Madagascar, Seychelles, and India.
- The finding will help to determine precisely how the Indian plate moved away from Madagascar and Seychelles just prior to the Deccan volcanism.

## Subduction zones

- A subduction zone is the biggest crash scene on Earth, these boundaries mark the collision between two of the planet's tectonic plates.
- The plates are pieces of crust that slowly move across the planet's surface over millions of years.
- Where two tectonic plates meet at a subduction zone, one bends and slides underneath the other, curving down into the mantle. (The mantle is the hotter layer under the crust.)
- Tectonic plates can transport both continental crust and oceanic crust, or they may be made of only one kind of crust.
- Oceanic crust is denser than continental crust, at a subduction zone the oceanic crust usually sinks into the mantle beneath lighter continental crust.
- Sometimes, oceanic crust may grow so old and that dense that it collapses and spontaneously forms a subduction zone, scientists think.

## International Ocean Discovery Program (IODP)

- The International Ocean Discovery Program (IODP) is an international marine research collaboration.
- The program explores Earth's history and dynamics using ocean-going research platforms to recover data recorded in seafloor sediments and rocks and to monitor subsea floor environments.
- IODP depends on entities represent twenty-three nations whose scientists

are selected to staff IODP research expeditions conducted throughout the world's oceans.

**Sources: The Hindu, Down to Earth**

