

2019



drishti

# CURRENT AFFAIRS

**SCIENCE & TECHNOLOGY**

2<sup>nd</sup> December- 7<sup>th</sup> December



BusinessLine



## 1. India-based Neutrino Observatory (INO)

### Why in News?

In a reply in Rajya Sabha, the Minister of State for Personnel, Public Grievances and Pensions briefed the house that all the statutory norms and regulations are being followed in implementing the INO project planned in Theni district of Tamil Nadu.

### India-based Neutrino Observatory

- It is being built jointly by the Department of Atomic Energy and the Department of Science and Technology.
- Its primary goal is to study the properties and interactions of weakly interacting, naturally occurring particles, called neutrinos.
- The observatory will be **located underground** so as to provide adequate **shielding to the neutrino detector from cosmic background radiation.**
- The Tata Institute of Fundamental Research is the nodal institution.
- It is located in South India due to proximity to the Equator which permits:
  - Neutrino astronomy searches covering the whole celestial sky;
  - Study of solar neutrinos passing through the Earth's core.

### Neutrino

- Neutrinos are the smallest particles that form the universe.
- Neutrinos are fundamental particles belonging to the lepton family.
- Neutrinos are of three types:
  - Electron Neutrino
  - Tau Neutrino
  - Muon Neutrino
- They can change from one type to another as they travel. This process is called **neutrino oscillation.**
- According to standard model of particle physics, they are mass less. However recent experiments indicate that these charge-neutral fundamental particles, have finite but small mass which is unknown. Determination of neutrino masses and mixing parameters is one of the most important open problems in physics today.
- Neutrinos come from the sun and other stars, cosmic rays. They can also be produced in the lab.
- **Applications of Neutrino**
  - To study the interior of the sun.
  - To study the universe.
  - In medical imaging.

## 2. White Dwarf

### Why in News?

Astronomers have reported the first indirect evidence of a giant planet orbiting a white dwarf star (WDJ0914+1914).

The white dwarf star lies about 2,040 light-years away from Earth.

The Neptune-like planet orbits the white dwarf every ten days, and cannot be seen directly.

### White Dwarf Stars

- The name white dwarf was coined by Willem Luyten in 1922.
- A white dwarf is a star which is formed after stars such as the Sun exhaust their nuclear fuel (hydrogen).
- Near the end of its nuclear burning stage, it expels most of its outer material, creating a planetary nebula - only the hot core of the star remains.
- This core becomes a very hot white dwarf, with a temperature exceeding 100,000 Kelvin.
- The nearest known white dwarf is Sirius B.

## 3. Typhoon Kammuri

### Why in News?

Typhoon Kammuri, locally known as Tisoy, hit the Philippines - bringing heavy rain and strong winds.

- It is a powerful Category 4 typhoon.
- The typhoon originated in the Pacific ocean south of Mariana Island.
- **Cyclones** are called:
  - **'Hurricanes'** in the **North Atlantic** and **Eastern Pacific**.
  - **'Typhoons'** in South-East Asia and **China**.
  - **'Tropical Cyclones'** in the **South West Pacific** and **Indian Ocean Region**.



To Watch the Video on YouTube,

[Click Here](#)