Hubble Space Telescope

Prelims - *Current events of national and international importance*

Mains (GS-III) - *Awareness in the fields of IT, Space.*

Why in news?

The Hubble telescope recently completed 35 Years of Cosmic Exploration.

- Hubble telescope is the first dedicated space based telescope system that is named after astronomer Edwin Hubble.
- **Launched on** – April 24, 1990.

  The US astronomer Lyman Spitzer first proposed the idea of the Large Space Telescope in the 1940s.

- **Joint mission** – Between NASA and European Space Agency (ESA).
- ESA contributed 15% of the cost in exchange for 15% of observation time.
- Launch was originally planned in 1986 but it delayed to 1990 due to technical difficulties and the Space Shuttle Challenger disaster.
- **Aim** - To observe and study the universe, particularly in visible, ultraviolet, and infrared wavelengths, from a vantage point above Earth's atmosphere.
- **Orbital location** - Hubble orbits Earth at an altitude of about 569 km (Low Earth Orbit).
- **Observational range** – This device can analyse frequencies of light from the ultraviolet to the infrared.
- **Renewable telescope –** One of the pioneering aspects of the Hubble Space Telescope is the fact that it was designed to be serviced in space.

Scientific Achievements

- It has observed approximately 52,000 stellar objects through 1.6 million observations.

  It helped to determine the universe's age (13.8 billion years) by identifying over 800 Cepheid variable stars in 24 galaxies.

- It contributed to creating a 3D map of ***dark matter***.
- Confirmed the existence of ***supermassive black holes*** at the centers of numerous galaxies.
- It discovered two additional moons of Pluto (Nix and Hydra).
- It is the first telescope to study the atmosphere of an exoplanet (HD 209458-b/Osiris).
- It observed seasonal changes on Pluto's surface.

- It helped to estimate the mass of Eris, the solar system's heaviest dwarf planet.

Current Status

- Originally expected to operate for 15 years, but has been functioning for 35 years.
- Transmits approximately 150 GB of data weekly.

Reference

The Hindu| Hubble’s 35-year journey

