Ten Most Powerful Space Telescopes

Prelims: Current events of National and International Importance | science and technology.

Why in news?

Space telescopes are frequently in news due to ongoing discoveries and advancements in space exploration.

- **Space telescopes** — Telescopes that orbit above the Earth's atmosphere to observe the Universe (planets, stars, galaxies) closely with significant clarity.
- **Advantages** - They *can* access to a wider electromagnetic spectrum, enabling them to detect the wavelengths of light (such as X-rays, gamma rays, infrared).
    - Unaffected by weather, day-night cycles, they enable long-duration exposures uninterrupted cosmic observation.
    - Bypassing atmospheric blurriness can capture clear images.

The first ever space telescope, the Orbiting Astronomical Observatory 2 (OAO-2), was launched into the low Earth orbit in 1968 aboard an Atlas-Centaur rocket, as per the National Space Centre.

s.no	Telescope	Description
1.	James Webb Space Telescope	• Launched in - **2021**. • largest and the most powerful observatory. • designed to conduct infrared astronomy. • Agencies overlooking - **NASA, ESA, CSA.**
2.	Hubble Space Telescope	• Launched in - **1990**. • Discovering dark energy, observes the cosmos in ultraviolet, visible and near infrared, from the low Earth orbit. • Operated by - **NASA and ESA**.
3.	Chandra X-ray observatory	• Launched in - **1999**. **NASA's** flagship mission for *X-ray astronomy, detects X-ray emissions*. • The electrical power required to cooperate the Chandra spacecraft and instruments is very less (2KW).
4.	Spitzer Space Telescope	• Launched in - **2003**, **NASA's**, retired in 2020. • Spitzer made the first exoplanet weather map of temperature variations over the surface of a gas exoplanet.
5.	Planck Space Observatory	• Launched in - **2009**. • **ESA's** first mission to study the *Cosmic Microwave Background (CMB)*, the relic radiation from the Big Bang.

6.	Gaia	• Launched in - **2013**. • The telescope's extraordinarily precise three-dimensional map will provide the data needed to tackle history of our galaxy.
7.	Fermi Gamma-ray Space Telescope	• Launched in - **2008**. • **NASA's** telescope detects gamma rays, the most energetic form of light. • to address questions revolving around "crushed stellar remnants like pulsars.
8.	TESS (Transiting Exoplant Survey Satellite)	• Launched in - **2018** as a follow-up to Kepler, **NASA's** TESS is responsible for discovering exoplanets.
9.	Euclid Space Telescope	• **ESA** mission with critical contributions from NASA that aims to explore dark matter and dark energy.
10.	XRISM (X-ray Imaging and Spectroscopy Mission)	• Launched in - 2023, **NASA** has partnering with **JAXA** on the XRISM mission to study celestial objects that emit X-rays.

Reference

Indian express| 10 most powerful space telescopes