UPSC Daily Current Affairs| Prelim Bits 07-05-2025

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

International Thermonuclear Experimental Reactor (ITER)

Prelims - *Current events of national and international importance | General Science.*

Why in news?

Recently scientists completed the main magnet system of the world's largest nuclear fusion project with India's significant contributions.

- **About ITER** – It is a collaborative effort involving 35 countries to build the world's largest tokamak.
- Tokamak is a magnetic fusion device that has been designed to prove the feasibility of *fusion as a large-scale and carbon-free source* ***of energy*** based on the same principle (Nuclear Fusion) that powers our Sun and stars.

  Nuclear fusion is a reaction in which two or more atomic nuclei combine to form a larger nuclei, nuclei/neutron by-products.

  The difference in mass between the reactants and products is manifested as either the release or absorption of energy.

- **Location –** Southern France.
- **Goals –** To demonstrate the feasibility of using fusion energy for power generation.
- At full power, ITER is expected to produce 500 megawatts of energy from just 50 megawatts of input.
- **Burning Plasma -** To achieve a state of "burning plasma," where the fusion *reactions themselves generate enough heat to sustain the plasma* without needing external energy input.
  - Nuclear fusion needs surrounding temperature of over 150 million degrees Celsius.
- **India's contributions –** India designed and manufactured the massive cryostat

chamber and other critical components for this international clean energy initiative.

The cryostat's chamber maintains extremely low temperatures, typically below -150°C.

- **Main member countries** – India, China, US, Russia, Japan, South Korea, European Union members.
- **Cost sharing –** Europe (host) pays 45%, other six main members contribute about 9% each.
- **Patent rights** - All members get full access to research results and patents.
- ITER will not produce electricity itself but will serve as a large research facility to test the fusion process at scale.
- The data generated helps to build future commercial fusion power plants.

About Fusion Energy

- Fusion is the energy source of the sun and stars.
- Unlike nuclear fission, fusion doesn't produce radioactive waste.
- Process involves heating hydrogen gas until atoms fuse, releasing energy.
- If successful, could provide nearly limitless, clean energy without long-lived waste or carbon emissions.

Reference

The Hindu| World's Largest Fusion Project

Indian Institute of Creative Technology (IICT)

Prelims - *Current events of national and international importance | Economic and Social Development*

Mains (GS-III) - *Achievements of Indians in science & technology; indigenization of technology and developing new technology.*

Why in news

Recently, central government has announced the establishment of the Indian Institute of Creative Technology (IICT) in Mumbai.

- **Premier Institution** - IICT is poised to become a premier institution for creative and its related technology in India.
- It is structured like IITs (Indian Institutes of Technology) and IIMs (Indian Institutes of Management).
- It will serve as a National Centre of Excellence for the AVGC-XR sector (Animation, Visual Effects, Gaming, Comics, and Extended Reality).
- **Funding** – It was allocated with Rs 400 crore by Central Government.

- **Mission –** To replicate India's successful IT model within creative and digital media.
- **Objectives** – To focus on training, incubation, innovation, research and policy-making.
- To create opportunities for creators, professionals, and entrepreneurs in creative technology.
- To boost education, research and development, and innovation in animation, visual effects, gaming, comics, films, and XR.
- To promote long-term growth of creative technologies in India through collaborative efforts.
- **Features** – The institute will feature state-of-the-art infrastructure, including virtual production setups, immersive studios, animation and gaming labs, editing and sound suites, and smart classrooms.
- **Decentralised access** - The second phase will be developed in Goregaon and government also plans to establish regional centres across India in subsequent phases.
- **Corporate partnerships – Ministry of Information and Broadcasting** signed a memorandum of understanding (MoU) with Global tech companies to help shape IICT into a world-class institution.
- **Initiative by IICT** – It launched the collaborative efforts to advance the AVGC-XR ecosystem in India.

The AVGC-XR ecosystem encompasses Animation, Visual Effects, Gaming, Comics, and Extended Reality.

Reference

The New Indian Express| Premier Institute for Creative Technology

One Liners 07-05-2025
History, Art and Culture
Mian Tansen Renowned North Indian classical musician and celebrated singer in Emperor Akbar's court, Mian Tansen, has passed away in Gwalior on 6th may 1589. **Tansen: A Musical Legend** • **Dhrupad Master & Raga Innovator -** Widely remembered for exceptional Dhrupad compositions and creating numerous new ragas. • **Author of Musical Texts:** - His contributions include the classic books "Sri Ganesh Stotra" and "Sangita Sara." • **Pivotal Figure -** A legendary and pivotal figure in Hindustani classical music. • **Enduring Legacy -** His work continues to inspire generations of musicians and enthusiasts.

Digha Jagannath Temple & Puri's Nabakalebara

The inauguration of the Digha Jagannath Temple in West Bengal is facing controversy due to its "Jagannath Dham" designation and accusations of using leftover sacred wood from Puri's Nabakalebara ritual for idol construction.

Nabakalebara: The Sacred Ritual

• **Meaning -** "New Body," a significant ritual for Lord Jagannath's idols in Puri, Odisha.
• **Process -** Replacement of the wooden idols of Jagannath, Balabhadra, Subhadra, and Sudarshana with new ones.
• **Timing** - Conducted every 12 or 19 years, based on the lunar calendar's occurrence of two Asadha months.
• **Digha Jagannath Temple** - Is a recently inaugurated Hindu temple dedicated to Lord Jagannath, located in the coastal town of Digha, in the Purba Medinipur district of West Bengal.
• **Deities-** The temple enshrines Lord Jagannath, a form of Vishnu, along with his siblings Balabhadra and Subhadra.
• **Inauguration -** It was inaugurated on **April 30, 2025**, following a *prana pratishtha* (consecration) ceremony.
• **Replica -** The temple is designed as a replica of the famous 12th-century Jagannath Temple in Puri, Odisha.

Geography

Baglihar Hydroelectric Power Project Dam & Salal Dam

India has reportedly closed the gates of the Baglihar Hydroelectric Power Project Dam and the Salal Dam on the Chenab River.

• **Baglihar Dam** - Is a run-of-the-river power project built on the Chenab River in the Ramban district of Jammu and Kashmir, India.
• **Located** - Ramban Town, Jammu and Kashmir.
• **Salal Dam** - Is a run-of-the-river hydropower project constructed on the Chenab River in the Reasi district of Jammu and Kashmir, India.
• It was the first hydropower project built by India in Jammu and Kashmir under the framework of the **Indus Waters Treaty**.

Climbing Everest to Be Limited: Nepal's New Law

Citing climber safety, environmental concerns, and overcrowding, Nepal's government will implement stricter rules for Mount Everest expeditions. Only climbers with prior ascents of peaks over 7,000 meters will be permitted to attempt the summit.

• **Aim is** - To reduce inexperienced Everest climbers and improve expedition safety while mitigating environmental damage from overcrowding and waste.
• **Mount Everest** - Also known as Sagarmatha in Nepali and Chomolungma in Tibetan, is the **world's highest mountain above sea level.**
• **Location -** Situated in the Mahalangur Himal sub-range of the Himalayas, its summit ridge forms part of the border between Nepal and the Tibet Autonomous Region of China.
• **First Ascent -** The first documented successful ascent was on May 29, 1953, by Sir Edmund Hillary from New Zealand and Tenzing Norgay Sherpa of Nepal.
• **Not the Tallest from Base to Peak -** While Everest is the highest above sea level, Mauna Kea in Hawaii is the tallest mountain when measured from its base on the ocean floor to its summit.

Polity & Governance

Andhra Pradesh Launches 'Creator Land'

Initiative - Andhra Pradesh's CM Naidu unveiled 'Creator Land', India's first transmedia entertainment city, at the WAVES Summit.

• **Investment & Job Creation** - The 10,000 crore project aims to create 25,000 direct jobs within six years.

• **Strategic Goals** - To establish Amaravati as a global hub for digital media, gaming, AI content, and virtual production.

• **Key Features** - Infrastructure for storytelling, filmmaking, music, and AI-driven content creation will be developed.

• **Creator Land Academy** - A dedicated academy will train youth in digital skills and content creation.

• **Economic Impact** - The initiative is expected to boost Andhra Pradesh's digital economy and foster global collaborations.

Member of the UPSC

Veteran IAS officer Ms. Sujata Chaturvedi has been appointed as a Member of the UPSC, India's top civil services recruitment organization.

• **UPSC is** – A constitutional body established under Article 315 of the Constitution of India as a permanent body. Articles 315 to 323 outline its functions, powers, and independence.

• **Article 316 -** Outlines the appointment and term of office of UPSC members.
- It states that the Chairman and other members of the UPSC are appointed by the President of India.

• **Term of Office -** A UPSC member holds office for a term of six years from the date they enter office, or until they reach the age of 65, whichever is earlier.

• **Eligibility** - There are certain provisions regarding the eligibility of UPSC members, including that a proportion of the members should have held office for a certain period under the Government of India or a state government.

International Relations and Issues

World Asthma Day: Global Awareness Initiative

Annual Observance - Celebrated every year on May 6th to increase understanding of asthma.

• **Theme 2025** : "Make inhaled treatments accessible for all.

• **Organizer & Support** - The Global Initiative for Asthma (GINA) organizes it, with support from the WHO.

• **Understanding Asthma** - A chronic respiratory illness marked by airway inflammation, narrowing, excess mucus, and breathing difficulties.

• **Incurable Yet Manageable** - While there's no cure, proper treatment helps manage the condition.

• **Global Impact** - Over 250 million people have asthma, causing 455,000 deaths in 2019.

• **Disparities** -Low-and middle-income countries face a higher burden due to limited access to care.

World Press Freedom Day 2025

World Press Freedom Day is being observed globally on May 3, with renewed calls to protect journalists from increasing threats and reaffirm the importance of independent journalism amid rising disinformation and digital surveillance.

• **Historical Roots -** Established by the UN in 1993, inspired by the 1991 Windhoek Declaration (Namibia).
• **Global Organizer** - Annually organized by UNESCO to promote press freedom worldwide.
• **Annual Observance** - Celebrated on May 3rd each year to highlight the importance of a free press.
• **2025 Theme** - Focuses on journalistic safety, access to accurate information, and countering misinformation.
• **Key Objectives** - To defend press freedom, honor journalists in danger, raise awareness of threats, and encourage ethical journalism.

Environment

Chhattisgarh's Tendu Leaf Smuggling Concerns

Chhattisgarh has raised concerns over tendu leaf smuggling from adjoining states due to its highest procurement price of 5,500 per standard bag, which has incentivized illegal trade during the peak collection season.

• **Tendu Leaves -** Green Gold" NTFP (Diospyros melanoxylon) primarily used for beedi wrapping.
• **Regional Production -** Predominantly found in central India, with significant growth in MP, Chhattisgarh, Odisha, and Maharashtra.
• **Key Characteristics -** Grows as a shrub with broad leaves; standard bag contains 50,000 leaves; best quality from southern Chhattisgarh.
• **Uses & Economic Impact -** Main use in beedi-making, supporting rural economies and generating substantial tribal employment.
• **Challenges -** Smuggling due to price differences, low collector wages, and declining demand for beedis.

Security

INS Tamal: Stealth Frigate for Indian Navy

To receive INS Tamal, its second advanced Krivak-III class stealth frigate from Russia.

• **Vessel Overview:** A 3,900-tonne stealth frigate, sister ship to INS Tushil, part of a 2016 India-Russia deal.
• **Built in Russia:** Constructed at Yantar Shipyard, Kaliningrad, under India-Russia defense collaboration.
• **Key Capabilities:** Features stealth technology, BrahMos and Shtil missiles, anti-submarine weapons, 30+ knots speed, and Kamov helicopter capacity.
• **Strategic Importance:** Enhances blue-water capabilities, crucial amid maritime tensions in the Arabian Sea and Indo-Pacific.
• **Predecessor & Local Production:** Follows INS Tushil; two more frigates being built in Goa with technology transfer.



SHANKAR
IAS PARLIAMENT
Information is Empowering