6. Short News

India to bid for 2038 Asian Games

Context - Indian Olympic Association has submitted an Expression of Interest to the Olympic Council of Asia to host the 2038 Asian Games in Ahmedabad.

About India's Bid for Asian Games 2038

Host City - Ahmedabad is being positioned as India's multi-sport hub, also set to host the 2030 Commonwealth Games and bid for the 2036 Olympics.

Initial Response - OCA leadership has shown supportive intent, with an evaluation committee expected to visit India.

Historical Context - India previously hosted the Asian Games in 1951 and 1982 (New Delhi) and the Commonwealth Games in 2010.

About the Asian Games

Continental Multi-Sport Event - Asia's largest sporting event, bringing together athletes from across the continent.

Governing Body - Organised by the Olympic Council of Asia (OCA).

Frequency - Held every 4 years, similar to the Olympics.

Origins & History - First held in 1951 in New Delhi, marking Asia's post-colonial sporting unity.

Future Competition - Upcoming Asian Games hosts include Nagoya (2026), Doha (2030), and Riyadh (2034).

Cyborg Botany

Context - Researchers are developing cyborg botany to monitor stress signals in real time for smarter agriculture.

What is Cyborg Botany?

Cyborg botany refers to integration of living plants with electronic components, creating hybrid systems that can sense and communicate biological signals.

Concept Origin - Derived from the idea of a "cybernetic organism", where biology and technology merge to function together.

Interdisciplinary Field - Combines biology, materials science, nanotechnology, and engineering.

Working Mechanism -

Biochemical Signal Detection - Plants naturally generate internal signals in response to stress (water, pests, temperature), which are captured at the cellular level.

Embedded Electronics - Nanowires and conductive polymers (e.g., PEDOT) are integrated into plant tissues to act as biosensors and signal carriers.

Real-Time Communication - Detected signals are transmitted to external devices, enabling live monitoring of plant health and environmental conditions.

Significance - Enables early detection of plant stress (drought, disease) at the cellular level, allowing timely intervention and improving crop productivity and sustainability.

Applications - Used in precision agriculture and environmental monitoring, providing real-time alerts on crop health, soil conditions, and pollutants.

Mythos AI

Context - Anthropic has developed Claude Mythos, a highly advanced AI model but refused public release due to serious cybersecurity risks.

What is Mythos AI?

Developed by Anthropic, Mythos is a next-generation AI system designed to identify deep vulnerabilities across complex software ecosystems.

Vulnerability Detection - It can discover previously unknown ("zero-day") flaws in operating systems and applications, which developers have not yet identified or patched.

Dynamic Analysis - Unlike traditional tools, Mythos actively interacts with software, testing inputs and responses to uncover hidden weaknesses.
Multi-Step Attack Simulation - The model is capable of planning and executing multi-stage cyberattack simulations, mimicking real-world hacker behaviour.
Restricted Access - Due to its powerful capabilities and risks, Mythos is not publicly released and is limited to select organisations under controlled programmes.

Issues with Mythos AI

Unauthorised Access Risk - Even restricted systems like Anthropic's Mythos were accessed using leaked credentials, exposing weak security controls.
Weaponisation of Vulnerabilities - Ability to identify and chain flaws creates a ready-to-use map for cyberattacks if accessed by malicious actors.
Patch Backlog Problem - Less than 1% of discovered vulnerabilities are fixed, leaving a large pool of exploitable weaknesses.
Speed Asymmetry - AI reduces attack timelines from months to minutes, while defenders remain constrained by slow patch cycles.
Concentration of Power - Restricted access creates dependence on a few entities controlling critical cyber intelligence.
Democratisation of Threats - Similar capabilities may soon be available through cheaper/open models, widening access to offensive cyber tools.

Virli Khandar Megalithic Site

Context - A 2500-year-old megalithic burial site has been discovered at Virli Khandar in Pauni tehsil of Bhandara district Maharashtra. It was first reported in 2008 by Rashtrasant Tukadoji Maharaj Nagpur University.

Key Points about the Site

Unique Burial Architecture -

1. The site has composite structures with stone circles and menhirs (upright stones) along with boulder circles.
2. This indicates a combination of two burial types, that is distinct from nearby sites such as Pimpalgaon Nipani and Tirota Kheri

Artefacts Recovered -

3. Copper objects such as necklace and iron implements including axes, chisels, ladles and arrowheads.
4. Semi-precious stones like etched carnelian beads, gold earring and fragmentary bone remains.

Distinctive Pottery Arrangement -

5. Nearly 50 pots were found in one burial.
6. They were arranged systematically, along with red ware and black and red ware.

Unique Pottery Feature -

7. Almost all pots were placed in inverted position with one pot covering another.
8. None of the pots were found upright.

Burial Practices and Soil Context -

9. Pots likely contained food grains or liquids as grave goods.
10. Pots were laid over a prepared layer of black cotton soil above the lateritic base, which enhanced stability and preservation despite pressure from overlying soil

Dating - Charcoal remains will be dated using Accelerator Mass Spectrometry (AMS) to establish chronology
Accelerator Mass Spectrometry (AMS) - A highly sensitive technique that directly measures rare isotopes such as Carbon 14 in small samples to accurately determine the age of archaeological remains.

Significance - Provides key insights into megalithic funerary traditions, burial customs and regional cultural patterns in Vidarbha.

About Megalithic sites

These are archaeological locations characterised by the use of large stone structures mainly associated with burial and funerary practices, reflecting beliefs in after-life and commemorative traditions.

Chronology in India - Generally dated between the Iron Age period around 1500 BCE to 500 CE with regional variations.

Types of Megaliths in India

1. Polylithic Type - Structures made of multiple stones.
2. Monolithic Type - Structures made of a single stone.

Vela Supercluster

Context - Astronomers have discovered the Vela Supercluster, also called Vela Banzi, a massive supercluster hidden behind the dust of the Milky Way.

About Supercluster

It is the largest known structure in the universe, consisting of groups and clusters of galaxies bound together by gravity.

Example - The Laniakea Supercluster includes the Milky Way and about 100,000 neighbouring galaxies.

Key Points

Discovery Method - Identified using hybrid mapping—combining galaxy redshift data with radio observations (MeerKAT telescope) to penetrate dust-obscured regions.

1. Galaxy Redshift - The phenomenon where light from distant galaxies shifts toward the red end of the spectrum due to the expansion of the universe; used to measure distance and velocity.
2. MeerKAT - It is a connected array of radio telescopes located in the Northern Cape province of South Africa.

Location and Scale of the Vela Supercluster -

3. It is located about 800 million light years away from Earth.
4. It extends across nearly 300 million light years in size.
5. It lies in the Zone of Avoidance.
    1. It is a large region of the night sky obscured by thick interstellar dust and dense star fields in the Milky Way.
    2. It creates a significant blind spot for observations made using optical telescopes.
    3. It accounts for nearly 20 percent of the observable sky, limiting our view of distant cosmic structures.

Reason for Remaining Hidden Earlier - Thick interstellar dust and dense star fields in the Milky Way blocked optical observations, creating a cosmic "blind spot."

Significance - It acts as a major node in the cosmic web

6. Helps explain cosmic flows (large-scale movement of galaxies due to gravity)
7. Improves understanding of mass distribution in the local universe.
    1. Mass Distribution - The way matter (visible and dark matter) is spread across the universe, influencing gravitational interactions.

Scientific Impact - Refines models of galaxy evolution and gravitational forces

8. Fills a major gap in mapping the large-scale structure of the universe
9. Highlights the critical role of radio astronomy in uncovering hidden cosmic structures beyond the limits of optical observations.