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NOVEMBER MONTH

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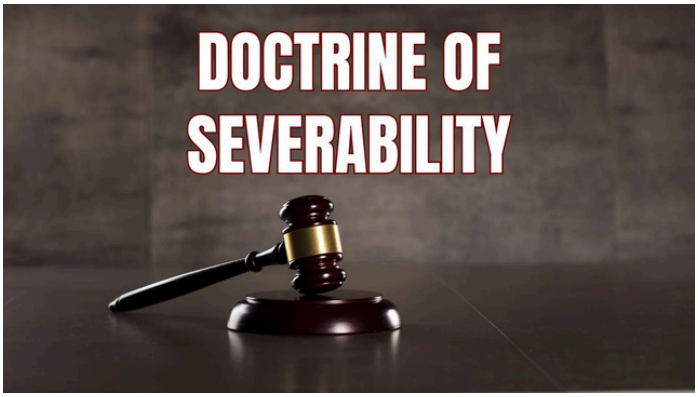
Doctrine of Party Autonomy

The Supreme Court recently held that the Doctrine of Party Autonomy is not limitless, and the same is the bedrock of arbitration.

About Doctrine of Party Autonomy

- The fundamental principle governing arbitration is party autonomy.
- The freedom of the parties to choose the process of resolving disputes is known as party autonomy.
- It confers on the parties the freedom to determine laws, place of arbitration, selection of arbitrators, etc.
- Almost all international arbitration laws, rules, and conventions recognize the principle of party autonomy.
- The concept is recognised under the New York Convention, the UNCITRAL Model Law, the Indian Arbitration and Conciliation Act, 1996, the International Chamber of Commerce (ICC) Arbitration Rules, etc.
- However, party autonomy is not unlimited, and it may be subject to certain legal or public policy constraints depending on the jurisdictions involved.
- The Supreme Court of India (SC), in the April 2021 judgment, ruled that “Party autonomy is the guiding spirit of arbitration”.
- The SC also held that such autonomy must be exercised on an equal footing, with both parties having a meaningful participation in the arbitrator appointment process.
- Any imbalance, where one party has disproportionate control, risks undermining the arbitrator’s independence and impartiality.

Doctrine of Severability



The Supreme Court clarified that the Doctrine of Severability is applicable in Suits for Specific Performance, but only in exceptional cases.

About Doctrine of Severability

- It is a fundamental legal principle that plays a crucial role in addressing the constitutionality of laws when some provisions are inconsistent with the Fundamental Rights guaranteed by the Constitution.
- In such cases, only the conflicting or repugnant part of the law will be considered void by the courts, not the entire statute.
- In simpler terms, if a specific part of a law violates the Constitution but can be separated from the rest of the law without affecting its functionality, only that problematic part will be removed, not the entire law.
- Another aspect of the doctrine of severability is that if a law combines good and bad provisions using words like 'and' or 'or,' and the enforcement of the good provision does not depend on the bad one, they are considered severable.
- The good provision will be upheld and enforced even if the bad one cannot or does not exist.
- On the other hand, if there's a provision that can be used for both legal and illegal purposes, it is invalid and cannot be allowed even for legal purposes.
- The court will declare the entire Act as void if the valid and invalid portions are so intertwined that they cannot be separated.
- It is also called the doctrine of separability.

Landmark Cases on Doctrine of Severability

- A.K Gopalan vs State of Madras: The court held that if the preventive detention provision (section 14) was removed, the rest of the Act would remain valid and effective. The violative part was separable from the valid part.
- Minerva Mills vs Union of India: The court struck down section 4 of 55 of the 42nd Amendment Act, 1976, as it exceeded the amending power of Parliament. However, the remaining provisions of the Act were upheld and considered valid.
- Kihoto Hollohan vs Zachillhu: The court declared paragraph 7 of the Tenth Schedule (inserted by the 52nd Amendment Act of 1985) unconstitutional. However, the rest of the Tenth Schedule, excluding paragraph 7, was upheld and considered constitutional.

India's $30 Trillion GDP Goal

At the Berlin Global Dialogue, Commerce Minister Piyush Goyal projected India to become a $30 trillion economy in 20–25 years, highlighting its rising confidence to pursue trade deals from a position of strength.

GDP Definition:

- Gross Domestic Product (GDP) = total value of goods & services produced within a country annually.
- Indicates a nation's economic strength and global influence.

India vs. US (2024 Data):

- US GDP: $29.2 trillion
- India GDP (2023–24): $3.9 trillion
- California's GDP alone: $4.1 trillion

GDP Comparison Method:

- Expressed in US dollars for global comparison.
- Formula: GDP in rupees ÷ exchange rate (₹ per USD).
- Example: ₹330 trillion GDP → $5 trillion at ₹65/$, but only $3.9 trillion at ₹84/$.

Growth & Currency Trends (2000–2024):

- Nominal GDP growth (CAGR): 11.9%
- Rupee depreciation: 2.7%
- → If trend continues, India could reach $30 trillion by ~2048.

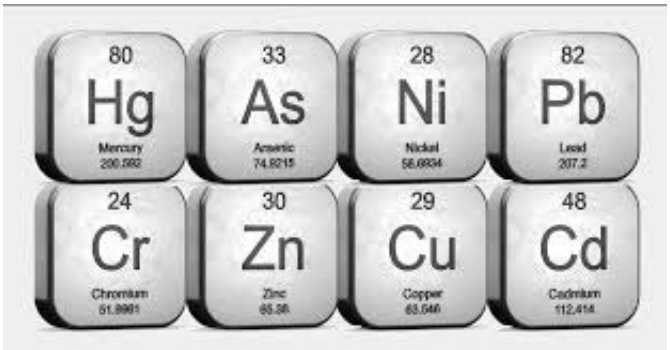
Recent Slowdown (2014–2024):

- GDP growth: 10.3%
- Rupee depreciation: 3.1%
- → At this pace, target delayed to ~2055.

Key Insight:

- Even a small dip in growth greatly impacts long-term GDP size.
- Sustained high growth and stable currency are vital to achieve the $30 trillion goal.

Heavy Metals



Heavy metals are polluting the Cauvery River and its fish, researchers from Tamil Nadu have reported.

About Heavy Metals

- The term ‘heavy metal' refers to any metallic chemical element that has a relatively high density and is toxic or poisonous at low concentrations.
- Examples of heavy metals include mercury (Hg), cadmium (Cd), arsenic (As), chromium (Cr), thallium (Tl), and lead (Pb).
- Heavy metals are natural components of the Earth's crust. They cannot be degraded or destroyed.
- To a small extent they enter our bodies via food, drinking water, and air.
- As trace elements, some heavy metals (e.g. copper, selenium, and zinc) are essential to maintain the metabolism of the human body.
- However, at higher concentrations they can lead to poisoning.
- Heavy metal poisoning could result, for instance, from drinking-water contamination (e.g. lead pipes), high ambient air concentrations near emission sources, or intake via the food chain.
- Heavy metals are dangerous because they tend to bioaccumulate.
    - Bioaccumulation means an increase in the concentration of a chemical in a biological organism over time, compared to the chemical's concentration in the environment.
    - Compounds accumulate in living things any time they are taken up and stored faster than they are broken down (metabolized) or excreted.
- Heavy metals can enter a water supply by industrial and consumer waste, or even from acidic rain breaking down soils and releasing heavy metals into streams, lakes, rivers, and groundwater.
- Mercury, lead, and cadmium are of greatest concern because of their ability to travel long distances in the atmosphere.

Ayni Air Base

India has rounded off its operation at the strategic Ayni Air Base in Tajikistan after helping it run since 2002.

About Ayni Air Base

- It is located in Tajikistan.
- It is the first overseas military facility operated by India.
- Located just west of Dushanbe, the capital of Tajikistan, the base had been a neglected Soviet-era facility before India stepped in to modernize it.
- India began developing the Ayni airbase in the early 2000s under an agreement with Tajikistan.
- India invested close to $100 million in the development and modernization of the airbase.
- It extended the runway to 3,200 metres and upgraded facilities for refuelling, repairs, and hangars.
- At times, India even stationed around 200 personnel from the army and air force at the site.
- India temporarily deployed Su-30MKI fighter jets and helicopters to the base roughly a decade ago.
- India withdrew from the airbase after a bilateral agreement on stationing Indian personnel at the location ended in 2022.

Why the Ayni Air BaseMattered for India?

- The base enabled India to maintain contact with anti-Taliban forces before 2001 and later provided a route for humanitarian aid to Afghanistan.
- Ayni's location gave India a unique advantage. The base is just about 20 kilometres from Afghanistan's Wakhan Corridor, which borders Pakistan-occupied Kashmir (PoK).
- From there, Indian forces could theoretically target key Pakistani cities such as Peshawar.
- Ayni served as a gateway for India to enhance its presence in Central Asia, a region traditionally dominated by Russia and increasingly influenced by China.
- The airbase was also used in 2021 to evacuate Indian nationals and officials from Afghanistan after the Taliban takeover.

India Signs 10-Year Defence Framework with the U.S

India and the U.S. have signed a 10-year Framework for the Major Defence Partnership, marking a new phase in their strategic ties. The pact was concluded during the 12th ADMM-Plus meeting in Kuala Lumpur.

Background

- India–U.S. defence ties have deepened over two decades, beginning with the 2005 Defence Framework Agreement (renewed in 2015).
- Major enabling pacts:
  - LEMOA (2016): Reciprocal logistics access.
  - COMCASA (2018): Secure military communications.
  - BECA (2020): Geospatial and mapping data sharing.
  - SOSA (2024): Defence supply chain security.
- The 2025 Framework for the Major Defence Partnership extends cooperation for another decade.

Key Highlights of the 10-Year Framework

- Policy Roadmap: Institutionalises collaboration in military, industrial, and technological sectors.
- Technology Partnership: Focus on co-production, co-development, and indigenous defence manufacturing under Make in India.
- Information Sharing: Enhanced coordination on intelligence, cyber, and maritime security.
- Joint Exercises: Expansion of exercises like Yudh Abhyas, Malabar, and Tiger Triumph.
- Indo-Pacific Focus: Promotes a free, open, and rules-based regional order.

Strategic Significance

- Strengthens India's role as a net security provider in the Indo-Pacific.
- Facilitates U.S. technology transfer and industrial tie-ups under iCET.
- Diversifies defence supply chains, reducing import dependence.
- Demonstrates strategic resilience despite ongoing trade frictions.
- Enhances Quad coordination and supports U.S. integrated deterrence in Asia.

UNESCO's Creative Cities Network

Recently, Lucknow has officially joined the UNESCO Creative Cities Network (UCCN) under the Gastronomy category during the 43rd Session of the UNESCO General Conference.

About UNESCO Creative Cities Network

- It was created in 2004 to promote cooperation among cities that have identified creativity as a strategic factor for sustainable urban development.
- It was launched to promote UNESCO's goals of cultural diversity and strengthen resilience to threats such as climate change, rising inequality, and rapid urbanisation.
- The network covers seven creative fields: crafts and folk arts, media arts, film, design, gastronomy, literature and music.
- Aim of UCCN: The network is aimed at leveraging the creative, social, and economic potential of cultural industries.
- Indian Cities in the UCCN: Kozhikode (Literature) and Gwalior (Music) Jaipur (Crafts and Folk Arts), Varanasi (Music), Chennai (Music), Mumbai (Film), Hyderabad (Gastronomy), Lucknow (Gastronomy), and Srinagar (Crafts and Folk Arts).

Objectives of the UCCN

- It allows member cities to recognise creativity as an essential component of urban development, notably through partnerships involving the public and private sectors and civil society.
- It envisages developing hubs of creativity, innovation and broadening opportunities for creators and professionals in the cultural sector.
- These cities have to achieve the UN agenda of sustainable development.

Key Facts about Nigeria

The US President has ordered the Department of War to prepare for possible military action in Nigeria.

About Nigeria

- Location: It is a country located on the western coast of Africa. It is often called the “Giant of Africa.”
- Boundaries: It is bordered to the north by Niger, to the east by Chad and Cameroon, and to the west by Benin. It also has a coastline on the Gulf of Guinea.
- It is also Africa’s most populous country.
- Capital: Abuja

Geographical Features of Nigeria

- Climate: Nigeria has a diverse geography, with climates ranging from arid to humid equatorial.
- Drainage: The major drainage areas in Nigeria are the Niger-Benue basin, the Lake Chad basin, and the Gulf of Guinea basin.
- River: The Niger River, for which the country is named, and the Benue, its largest tributary, are the principal rivers.
- Major Mountain Range: Cameroonian Highlands
- Natural Resources: It has abundant natural resources, notably large deposits of petroleum and natural gas.

Second World Summit for Social Development 2025

The Minister for Labour & Employment is representing India at the World Summit for Social Development (WSSD-2) held in Doha, Qatar.

About Second World Summit for Social Development 2025

- It is a United Nations convened summit which reaffirms to eradicate poverty, promote full and productive employment and decent work for all, and foster social inclusion.
- It is designed to align with other recent global processes, such as the 2023 SDG Summit Political Declaration, the Pact of the Future and the forthcoming Fourth International Conference on Financing for Development (FfD4).
- History: The first World Summit for Social Development was held in Copenhagen in March 1995.
- The second World Summit for Social Development is held in Doha, Qatar.

Main Objectives of Second World Summit for Social Development 2025

- Global solidarity and accelerate action on social development by assessing progress, addressing gaps.
- Strengthening implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.
- Reaffirm the 10 Commitments of the Copenhagen
- Declaration
- Promote equality, inclusion, and well-being for all
- Strengthen global solidarity and cooperation

Negros Island

An earthquake measuring 5.8 in magnitude struck Negros Island, Philippines, recently.

About Negros Island

- It is one of the Visayan Islands, central Philippines.
- It is the fourth largest and third most populous island in the Philippines.
- It is a boot-shaped island that is 217 km long and 35 to 79 km wide.
- It is separated from the island of Panay to the northwest by the Guimaras Strait and from Cebu Island to the east by the Tanon Strait.
- The island is bordered on the north and south by the Visayan and Sulu seas, respectively.
- A central mountain range runs through the entire island and is deeply dissected by erosion.
- The range contains Mount Canlaon, an active volcano that at 8,086 feet (2,465 metres) is the highest point in Negros.
- This island has a rugged mountain interior, underwater coral gardens, and beautiful beaches.
- The island's major rivers are the Binalbagan, Ilog, Tolong, and Tanjay.
- It is famed for its rich marine biodiversity and as the nation's "Sugar Capital."

National Marine Fisheries Census 2025

Recently, the union Minister of State, Ministry of Fisheries, Animal Husbandry and Dairying, launched the Marine Fisheries Census (MFC) 2025.

About National Marine Fisheries Census 2025

- It is the fifth edition of the Marine Fisheries Census.
- It is a coast-wide activity fully funded by the Department of Fisheries, Government of India.
- Nodal Agency: ICAR-Central Marine Fisheries Research Institute (CMFRI) as the nodal agency and Fishery Survey of India (FSI) as the operational partner.

Features of National Marine Fisheries Census 2025

- Coverage: 13 coastal States and Union Territories, including the Andaman & Nicobar Islands and Lakshadweep,
- Time Period: The core household data collection is scheduled for an extended period of 45 days.
- Digital Architecture: It is powered by a suite of custom-made, multilingual Android applications—VyAS–NAV (for validation of fishing villages and harbours), VyAS–BHARAT (household and infrastructure enumeration) and VyAS–SUTRA (for real-time supervision and monitoring of households and enumerators) developed by the the ICAR–Central Marine Fisheries Research Institute (CMFRI).
- Expanded Socio-economic Data: For the first time, census includes detailed information on crucial indicators like total family income, homeownership, outstanding liabilities, and sources of credit.
- Focus on Vulnerability: It covers data on insurance status, major losses or disabilities, the specific socio-economic impacts of the COVID-19 pandemic on fisher families, and the receipt of benefits from schemes like PMMSY/PM-MKSSY.
- Institutional Mapping: New schedules focusing on Fish Farmer Producer Organizations (FFPOs) and Self-Help Groups (SHGs) are introduced to facilitate collectivization and strengthen the value chain.

Kunming Biodiversity Fund

Recently, seven countries have secured $5.8 million from the Kunming Biodiversity Fund to enhance nature-friendly agriculture.

About Kunming Biodiversity Fund

- It is a Multi-Partner Trust Fund (MTPF) launched in 2021 during Part 1 of the COP 15 of Convention of Biological Diversity.
- It aims to facilitate the successful implementation of the Kunming-Montreal Global Biodiversity Framework (KMGBF) at regional, national, subnational and local level.
- Initial contribution: 1.5 billion yuan (about $200 million) from China.
- It was established under the leadership of the Ministry of Environment and Ecology (MEE) of China and the United Nations Environment Program (UNEP), with the Secretariat of the Convention on Biological Diversity (SCBD) and United Nations Development Programme (UNDP).
- Focus area: It supports developing countries to accelerate and upscale their actions for the National Biodiversity Strategies and Action Plans (NBSAPs).

What is Kunming-Montreal Global Biodiversity Framework?

- It was adopted during the 15th meeting of the Conference of the Parties to the UN Convention on Biological Diversity in December 2022.
- It aims to support the achievement of sustainable development goals and build on previous strategic plans.
- It sets a bold path towards global harmony with nature by 2050.
- Goals and targets: The GBF consists of 23 targets (set for 2030) and four global goals (set for 2050) to preserve biodiversity for current and future generations.

Nauradehi Wildlife Sanctuary

Recently, the Madhya Pradesh Chief Minister said that Nauradehi Wildlife Sanctuary will become the third home for cheetahs in the state.

About Nauradehi Wildlife Sanctuary

- Location: It is located in the state of Madhya Pradesh.
- It was declared a wildlife sanctuary in 1975.
- It is the largest wildlife sanctuary in Madhya Pradesh.
- The entire sanctuary is situated on a plateau, forming part of the upper Vindhyan range.
- It acts as a corridor for Panna Tiger Reserve and Satpura Tiger Reserve while indirectly connecting Bandhavgarh Tiger Reserve via Rani Durgawati Wildlife Sanctuary.
- It is classified under the Deccan peninsula biogeographic region and forms part of the Ganga and Narmada basins.
- Vegetation: The forest type of this sanctuary is classified as the Tropical Dry Deciduous forest which consists of the Central Indian monsoon forests.
- Drainage: Three fourth of Nauradehi Wildlife Sanctuary falls in the Yamuna [Ganges] basin and one fourth of the sanctuary falls in the Narmada basin.
- The north flowing Kopra River, Bamner River, Bearma River, which are tributaries of the Ken River, are the major rivers of this sanctuary.
- Flora: Teak, Saja, Dhaora, Bhirra, Ber, Bel, Mahua, Tendu, Gunja and Amla etc.
- Fauna: Tiger, Panther, Sloth-beer wild dog, blue bull, chinkara, spotted deer, sambhar etc.

Stabilimenta

A new study has revealed that the mysterious silk decorations in some spider webs known as stabilimenta may be sophisticated tuning devices that enhance the spider's ability to locate its next meal by controlling how vibrations travel through the web.

About Stabilimenta

- Stabilimenta are highly UV-reflective distinctive silk structures found in multiple spider species' webs.
- These "decorations" may look like zig-zagging threads spanning the gap between two adjacent "spokes," or threads arranged in a circular "platform" around the web center.
- The purpose of stabilimenta within the web is unclear.
- They could help collect water, regulate a spider's body temperature, or even deter predatory wasps or birds to help the arachnids collect more insects.
- They also may help the spiders pinpoint where their prey is located by helping vibrations move throughout the web.
- Not all spiders use stabilimenta, and members of the same species may decorate their webs in different ways.

Water Lettuce

El Salvador's Lake Suchitlan is overwhelmed by invasive water lettuce which is impacting thousands of families dependent on fishing and tourism.

About Water Lettuce

- Water lettuce is a free-floating aquatic weed found in tropical countries worldwide, including Asia, Africa and equatorial America.
- It is also known as water cabbage, Nile cabbage, or shellflower.
- Appearance: It is a floating aquatic herb that resembles a floating head of lettuce. It has white to tan, long and feathery roots that hang beneath the rosette of leaves.
- It grows best on still or slow moving bodies of fresh water such as farm dams, reservoirs, lakes, rivers and creeks.

Why is it an Invasive Species?

- It forms dense mats that clog waterways making boating, fishing, and other water activities impossible.
- These mats also degrade water quality by blocking the air-water interface and greatly reducing oxygen levels which can result in fish die-off and the overall reduction of aquatic fauna and flora diversity.
- Impact on Environment: It affects water flow, damages native ecosystems.

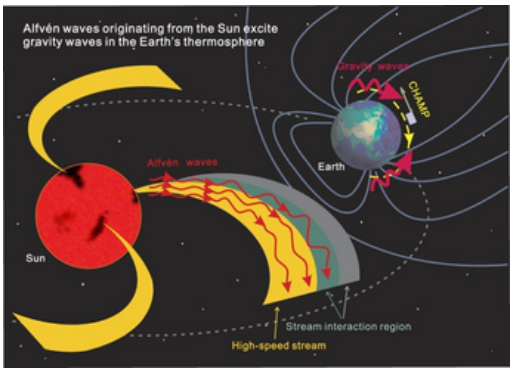
Pilia malenadu

A team of researchers exploring biodiversity in the Western Ghats recently discovered a new species of spider named Pilia malenadu.

About Pilia malenadu

- It is a new species of spider.
- It belongs to Pilia, a genus of jumping spiders.
- It was discovered in Madhugundi in the Mudigere taluk of Chikkamagaluru, Karnataka, at the foothills of the Western Ghats.
- The researchers named it “Pilia malenadu”, to give credit to the place it was found.
- The discovery is significant because the last time a species of spiders belonging to the pilia genus was discovered was about 123 years ago (1902) in Kerala.
- Further, the researchers, for the first time, have found both male and female spiders of the species.
- These spiders were found in only two plant species — Memecylon umbellatum and Memecylon malabaricum.
- In fact, the spiders were found concealed between the leaves of these plants.

Alfvén Waves



Researchers have made a major advance in solar physics by capturing the first direct evidence of small-scale torsional Alfvén waves in the Sun's outer atmosphere, known as the corona.

About Alfvén Waves

- Alfven waves are low-frequency, transverse electromagnetic waves that propagate along the Sun's magnetic field lines.
- It occurs in a plasma (or conducting fluid), resulting from the interaction of the magnetic fields and electric currents within it.
- These waves were first proposed in 1942 by Nobel Prize-winning physicist Hannes Alfvén, are magnetic fluctuations that transfer energy through plasma.
- Larger and more sporadic Alfven waves linked to solar flares have been detected before.
- What Researchers have found?
- The breakthrough was made possible by the unique capabilities of the Daniel K. Inouye Solar Telescope's Cryogenic Near Infrared Spectropolarimeter (Cryo-NIRSP).
- This is the first time the subtle, ever-present twisting waves, thought to be powerful enough to heat the corona, have been directly confirmed.
- The study suggests that Alfven waves may account for at least half of the energy needed to heat the corona.

Dhvani Missile

India's Defence Research and Development Organisation (DRDO) is on the verge of a historic breakthrough with the upcoming test of Dhvani, a cutting-edge hypersonic missile that promises to catapult the nation into an elite club of military superpowers

About Dhvani Missile

- It is an hypersonic missile being developed by India's Defence Research and Development Organisation (DRDO).
- The Dhvani is being developed as a Hypersonic Glide Vehicle (HGV), a revolutionary weapon system that combines blistering speed with unprecedented maneuverability.
- Unlike conventional cruise missiles that follow predictable flight paths, the Dhvani will be launched to extreme altitudes before gliding toward its target at hypersonic speeds.
- This unique capability makes it nearly impossible to detect and even harder to intercept, rendering most existing missile defense systems obsolete.
- It will be capable of striking both land-based and maritime targets with pinpoint precision.
- It can fly at speeds exceeding Mach 5 or 6, nearly 7,400 km per hour.
- It has estimated ranges between 6,000 to 10,000 kilometers.
- What sets Dhvani apart is its sophisticated design.
- The missile features a blended wing-body configuration measuring approximately 9 meters in length and 2.5 meters in width.
- Its advanced heat protection system, utilizing ultra-high-temperature ceramic composites, can withstand temperatures between 2,000-3,000°C generated during atmospheric reentry.
- The stealth-optimized geometry, including angled surfaces and smooth contours, dramatically reduces its radar cross-section, making it virtually invisible to enemy tracking systems.

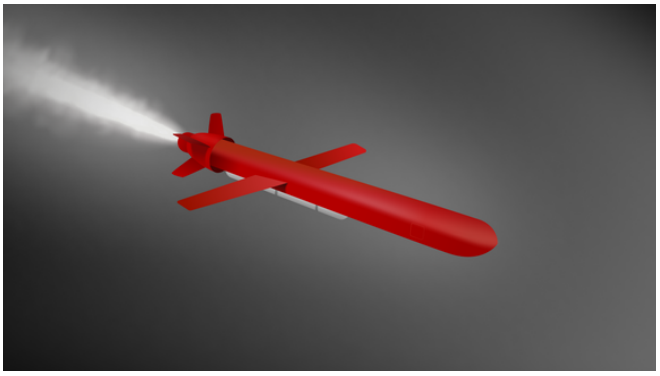
Enshittification

The now-viral term 'enshittification' helped put a name to a change that internet users are noticing: the feeling that many of your digital experiences, transactions, and services are not improving with time but are actually becoming worse because of their makers' updates.

About Enshittification

- It is an informal word used to criticize the degradation in the quality and experience of online platforms over time, often due to profit-seeking behavior or monopolistic control.
- In 2022, the Canada-born author, tech journalist, and activist Cory Doctorow coined the term "enshittification."
- It is a way of naming the process through which internet platforms are being made deliberately worse for customers, by their decision-makers, until they decay completely.
- It is also used to refer to a range of symptoms that degrade your experience as an internet user or customer.
- Some examples include the insertion of advertisements, self-preferencing by tech companies, unfair bias in search results, once-free features becoming paid, genuine products being replaced with lower-value dupes, and more.

Burevestnik Missile



The Russian President recently announced that Russia had tested its Burevestnik nuclear-powered cruise missile.

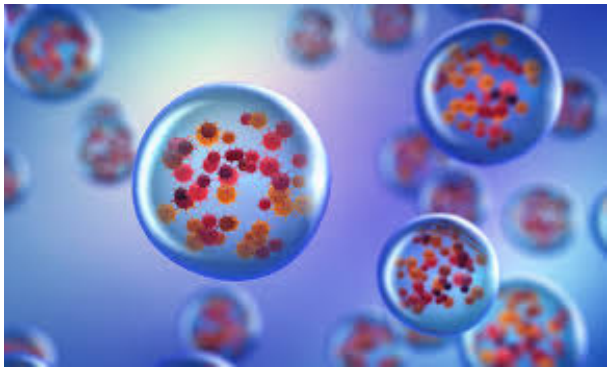
About Burevestnik Missile

- The Burevestnik, whose name translates as “storm petrel“, is a ground-launched, low-flying cruise missile that is not only capable of carrying a nuclear warhead but is also nuclear-powered.
- It was developed by Russia.
- It is one of six strategic weapons that the Russian President introduced in a 2018 speech.
- It is code-named ‘SSC-X-9 Skyfall’ by NATO.

Burevestnik Missile Features

- It is powered by a small nuclear reactor, which heats up air to propel the missile forward.
- Its nuclear propulsion gives the missile much longer range than traditional turbojet or turbofan engines that are limited by how much fuel they can carry.
- That propulsion gives it virtually unlimited range, allowing it to loiter for days, circling the enemy’s air defenses and attacking from an unexpected direction.
- The missile is also designed to fly at low altitudes, much lower than a conventionally powered cruise missile, which would make it harder for air-defence radar to detect.

Encephalomyocarditis Virus



Recently, an autopsy report from the Indian Veterinary Research Institute revealed that a lone African elephant at the National Zoological Park in Delhi died due to the rare rodent-borne virus — encephalomyocarditis virus (EMCV).

About Encephalomyocarditis Virus

- It is a non-enveloped, positive-sense, single-stranded RNA virus that is part of the Cardiovirus genus and Picornaviridae family.
- It is the causative agent of encephalomyocarditis (EMC) infection in swine and other mammals.
- African elephants are particularly susceptible to the virus, with outbreaks reported worldwide in captivity and in the wild.
- EMCV is a zoonotic disease, therefore humans are susceptible to infection. Most infections in humans are asymptomatic.
- Transmission: The virus can be transmitted by food or water contamination caused from feces or urine of a rodent species.
- Symptoms of Encephalomyocarditis Virus infection in humans: Symptoms of EMCV infection in humans can include fever, headache, muscle aches, nausea, vomiting, and in severe cases, neurological symptoms like confusion and seizures.
- Hosts: Pigs, non-human primates, zoo animals, and various wild species can be affected.
- Treatment: Supportive care to manage symptoms and complications, with no specific treatment available.

Silicon Carbide

Recently, the Chief Minister of Odisha performed the groundbreaking ceremony for the country's first end-to-end silicon carbide semiconductor production plant.

About Silicon Carbide

- It is a synthetically produced crystalline compound of silicon and carbon.
- Its chemical formula is SiC and it is the most widely used non-oxide ceramic.
- It was discovered by the American inventor Edward G. Acheson in 1891.

Properties of Silicon Carbide

- Hardness: It is the hardest ceramic material and has excellent thermal conductivity, low thermal expansion.
- Conductivity: It is also classed as a semiconductor, having an electrical conductivity between that of metals and insulating materials.
- It has excellent mechanical properties, and excellent resistance to wear and oxidation.

Applications of Silicon Carbide

- Abrasives: Its primary application is as an abrasive because of its high hardness, which is surpassed only by diamond, cubic boron nitride, and boron carbide.
- Refractory linings: It is used in refractory linings and heating elements for industrial furnaces, in wear-resistant parts for pumps and rocket engines.
- Semiconducting substrates: It is used in semiconducting substrates for light-emitting diodes.
- It is a promising ceramic material with excellent thermo mechanical characteristics.

Project Suncatcher

Recently, Google announced a new research initiative called Project Suncatcher.

About Project Suncatcher

- It is a research initiative exploring how constellations of solar-powered satellites could host data centres in space.
- It is an initiative of Google.
- Google aims to deploy high-performance AI accelerators in space and build a space-based infrastructure.

Features of Project Suncatcher

- Project Suncatcher will build modular satellite arrays linked by high-speed free-space optical communication, supporting data transfer at tens of terabits per second.
- It will send AI data centers into space by launching solar-powered satellites equipped with its Tensor Processing Units (TPUs), specialised AI chips.
- The plan includes launching two prototype satellites in partnership with Planet Labs by early 2027 to test the hardware's durability and performance in space.
- The proposed system consists of a constellation of networked satellites, likely operating in a dawn–dusk sun-synchronous low earth orbit.
- Early tests have shown Google's Trillium-generation TPUs withstand radiation at levels similar to those found in space.

Katkari Tribe

To highlight the plight of the Katkari Tribe, the Shramjeevi Organisation will hold a two-day protest featuring silent fasts and symbolic lamps, demanding land rights, unpaid wages, and dignity for the marginalised community.

About Katkari Tribe

- It is a primitive tribe found in Maharashtra (Pune, Raigad, and Thane districts) and parts of Gujarat.
- It is one of the 75 Particularly Vulnerable Tribal Groups (PVTGs) in India.
- They were historically forest dwellers.
- Katkaris are also known as Kathodis because of their old occupation of making Katha (Catechu), the thickened sap from wood of Khair (Acacia catechu).
- The Katkaris were also one of the few tribal communities of India that consumed rodents.
- Many of them still live in their traditional huts made of bamboo and anything they can find in the forest.
- Despite having a patriarchal system, does not follow the joint family structure, preferring the nuclear family model.
- Language:
  - They are bilingual, speaking the Katkari language amongst themselves and Marathi with others.
  - A few of them speak Hindi as well.
- Occupation:
  - They serve as agricultural labourers and sell firewood and some jungle fruits.
  - They also take up fishing for domestic consumption, coal making, and brick manufacturing.
- They have tremendous knowledge about uncultivated foods like fish, crabs, animals, birds, tubers/rhizomes, wild vegetables, fruits, nuts, etc.
- A majority of the Katkari families are landless. The landless rate of 87% among the Katkari is much higher than 48% for rural households in India as a whole.
- As a result of landlessness, migration is rampant, and livelihoods are seasonal.

Kendriya Grihmantri Dakshata Padak

Recently, the 'Kendriya Grihmantri Dakshata Padak' has been awarded for the year 2025.

About Kendriya Grihmantri Dakshata Padak

- It has been instituted by the Ministry of Home Affairs, Government of India in 2024.
- The award aims to encourage professional standards and boost the morale of officers and officials across the country.
- It is given to recognize excellent work, promote high professional standards and boost the morale of the concerned official/officer in the following four fields:
  - Special Operation
  - Investigation
  - Intelligence
  - Forensic Science
- It was created by merging the 4 previously existing MHA awards –
  - The Special Operation Medal,
  - The Medal for Excellence in Investigation,
  - The Exceptional Intelligence Efficiency Medal, and
  - The Union Home Minister's Award for Meritorious Service.
- Eligibility: It is conferred on members of the Police Forces, Security Organization, Intelligence Wing/Branch/Special Branch of State/Union Territories/Central Police Organizations (CPOs)/Central Armed Police Forces (CAPFs) and Forensic Science (Central / State / Union Territories) throughout the Indian Union.
- The medal is announced on 31st of October every year, on the occasion of the Birth Anniversary of Sardar Vallabhbhai Patel.

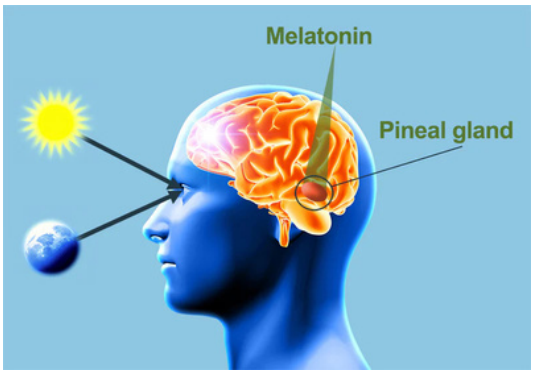
Exercise ‘Poorvi Prachand Prahar

India to hold tri-service exercise 'Poorvi Prachand Prahar in Mechuka, Arunachal Pradesh.

About Exercise 'Poorvi Prachand Prahar

- It is a tri-service military exercise conceived as a forward-looking exercise, which will validate multi-domain integration across land, air, and maritime fronts.
- It will be held in Mechuka, Arunachal Pradesh.
- Aim: It is aimed at enhancing warfighting capabilities, technological adaptation, and operational synergy among the Army, Navy, and Air.
- It refines interoperability, improves situational awareness, and validates command-and-control structures for joint missions.
- Focus: The exercise focuses on multi-domain integration — across land, air and maritime domains — to enhance operational synergy, technological adaptation, and readiness for future conflicts.
- The exercise involves coordinated employment of special forces, unmanned platforms, precision systems and networked operations centres operating in unison under realistic high-altitude conditions.
- Previous Exercises: ‘Poorvi Prachand Prahar’ follows previous tri-service drills — ‘Bhala Prahar’ (2023) and ‘Poorvi Prahar’ (2024).

Melatonin



Recently, concerns have been raised by doctors about melatonin supplements being taken by a large number of people with no medical supervision.

About Melatonin

- Melatonin is a naturally-occurring hormone in human beings that controls sleep and wake cycles in our daily lives.
- Its levels rise in the evening, helping to promote sleep.
- It is secreted by the pineal gland in the human body.
- Pineal gland releases the most melatonin when there's darkness and decreases melatonin production when you're exposed to light.
- Melatonin makes us sleepy at certain times of the day. It starts to secrete when our bodies are getting ready to go to sleep and usually takes about 30 to 45 minutes to take full effect.
- Its secretion is at its highest in the middle of the night and gradually starts to decrease until we are ready to wake up and start our day.
- Melatonin can also be made synthetically in a lab and sold as a dietary supplement. It's called exogenous melatonin.
- Those people whose sleep is not optimal and who travel frequently across time zones prefer melatonin supplements.
- Side Effects of Melatonin supplements
- Overuse of melatonin may cause headaches, hormonal changes, or mood swings, disturbing the very rhythm and sleep cycle.