

DAILY CURRENT AFFAIRS (DCA)

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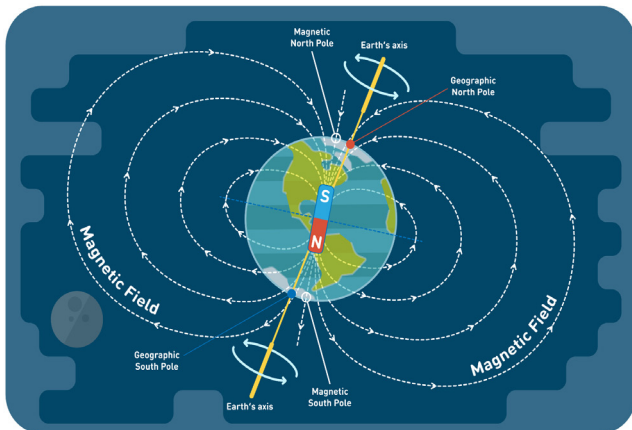
SHIFTING OF EARTH'S MAGNETIC NORTH POLE

Context

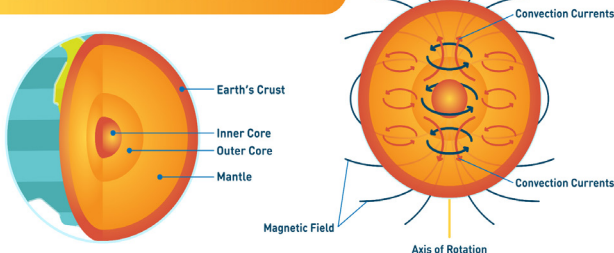
- Recently, scientists have released a **new model** tracking the **position of the magnetic north pole**, revealing it is now **closer to Siberia than it was five years ago** and is **continuing to drift toward Russia**.

About the Earth's Magnetic Poles

- These are dynamic features of earth's geomagnetic field, generated by forces at the Earth's core.
- These are the **points on Earth's surface** where the **planet's magnetic field** points **vertically downward**.



Earth's Inner Core Currents



Shift of the Magnetic North Pole

- Magnetic North Pole** was **first located in 1831** by explorer James Clark Ross. At that time, it was near Canada's Arctic islands.
 - It **constantly shifts** due to changes in **Earth's molten core**, unlike the **geographic North Pole**, which remains fixed.
- Over the past century, the **magnetic North Pole** has moved over 400 kilometers **from Canada towards Russia**.
- This movement is tracked using the **World Magnetic Model (WMM)**, which is **updated every five years** to ensure accurate navigation systems.

Causes of the Pole's Shift

- Core Fluid Dynamics:** The molten iron and nickel in the Earth's outer core move in turbulent patterns, driven by heat escaping from the planet's inner core.
 - These fluid motions generate the Earth's magnetic field and influence the pole's location.
- Geomagnetic Anomalies:** Variations in the magnetic field, such as the weakening of the South Atlantic Anomaly, suggest instability in the magnetic field, contributing to pole movement.
- Earth's Magnetic Reversal Cycle:** Though not directly indicative of an imminent reversal, the pole's movement may signal long-term changes in the geomagnetic field, which naturally undergoes reversals every few hundred thousand years.

Earth's Magnetic Field

- It is **generated by the movement of molten iron and nickel** in its outer core. It forms a protective shield (magnetosphere), which **deflects harmful solar radiation and cosmic rays** (high-energy particles).

Magnetosphere (Earth's Protective Shield):

- It is **Earth's first line of defense against solar wind and cosmic radiation**.
- It plays a vital role in protecting the planet by **trapping charged particles in the Van Allen Belts**, doughnut-shaped zones around Earth.
- Variations in the solar wind can lead to **geomagnetic storms**, influencing everything from satellite operations to power grids on Earth.

Do You Know?

- Magnetic Reversal (aka Geomagnetic Reversal):** It is when the Earth's magnetic field reverses polarity.
 - While reversals have occurred **approximately every 200,000 to 300,000 years** in Earth's history, the last one, the **Brunhes-Matuyama reversal**, occurred about 780,000 years ago.

Implications of the Pole's Shift

- Navigation Systems:** Magnetic navigation systems, such as those used in aviation and maritime operations, rely on precise magnetic models.
 - The accelerated shift necessitates frequent updates to the **World Magnetic Model (WMM)** to ensure accuracy.

- **Animal Migration:** Many migratory species, including birds and marine animals, rely on the Earth's magnetic field for navigation.
 - ♦ Changes in the field could disrupt their natural patterns.
- **Communication and Satellites:** The weakening of the magnetic field associated with pole movement increases the planet's vulnerability to solar storms, potentially disrupting communication, GPS systems, and power grids.
- **Scientific Research:** The shifting pole provides scientists with an opportunity to better understand the **geodynamo processes** and to predict long-term changes in the Earth's magnetic field.

Source: TOI

US SUSPENDS FOREIGN AID

In News

- The United States announced the suspension of foreign aid, following President Donald Trump's executive order.
 - ♦ The move is part of the **"America First" agenda**, aimed at ensuring American financial assistance aligns with national interests.
 - ♦ The U.S. has historically been one of the largest donors of foreign aid, distributing **\$45 billion in 2023** alone to 158 countries.

What is Foreign Aid?

- **Foreign aid** refers to the financial, technical, or material assistance provided by one country to another.
- It is typically extended to support economic development, humanitarian relief, or geopolitical objectives.
- Foreign aid can come in the form of grants, loans, or in-kind contributions, such as food, medicine, or infrastructure.

Significance of Foreign Aid

- **Promotes Development:** Helps recipient countries improve infrastructure, education, healthcare, and economic opportunities.
- **Humanitarian Relief:** Saves lives during crises, such as natural disasters or conflicts.
- **Fosters Diplomacy:** Strengthens relationships between donor and recipient countries.
- **Geopolitical Strategy:** Extends influence and secures alliances in key regions.
- **Global Stability:** Addresses global challenges like poverty, climate change, and pandemics, contributing to a more stable world order.

Global Implications

- **Impact on Recipients:** Countries heavily dependent on U.S. aid, such as Afghanistan, Pakistan, and Bangladesh, may face financial shortfalls and developmental setbacks.
- **Shift in Alliances:** The suspension could lead recipient countries to seek alternative sources of aid, potentially shifting geopolitical alliances.
- **Role of Other Donors:** Nations like China, through initiatives such as the Belt and Road, could fill the vacuum left by reduced U.S. aid.
 - ♦ Example: China's Debt Trap Diplomacy, where loans for infrastructure projects have led recipient countries into unsustainable debt, raising concerns about sovereignty.
- **Global Stability:** Aid often oscillates between genuine humanitarian motives and strategic objectives. For instance, some countries use aid as leverage for political or economic advantages.
- **Social Impact:** Reduced aid could exacerbate poverty, instability, and humanitarian crises in vulnerable regions.

Source: IE

LATERAL ENTRY IN CIVIL SERVICES

Context

- The government's lateral entry scheme was put on hold last year after the Opposition and allies objected to the absence of quotas.

About

- **63 appointments** have been made under it since 2019.
- In 2020 an Indian Forest Service officer challenged the Lateral Entry scheme on **the ground that it lacked legal sanctity and procedural rigour.**

Lateral Entry Scheme in Bureaucracy

- It is a practice that involves **recruiting individuals from outside the traditional government service cadres** to fill **mid and senior-level positions.**
- **Introduced:** First set of vacancies **announced in 2018.**
- **Eligibility:** These people would be **domain experts and help fill critical gaps.**
 - ♦ They could be from **private companies, public sector utilities and state governments.**
- **Aim:** To address complex governance and policy implementation challenges by tapping into external expertise.
- **Tenure:** Candidates are typically hired on contracts ranging from three to five years, with potential extensions based on performance.

- **Background:** It was initially recommended by the **Second Administrative Reforms Commission (ARC) established in 2005.**
 - ♦ These recommendations emphasised recruiting professionals from the private sector, academia and PSUs to improve policy implementation and governance.
 - ♦ In 2017, NITI Aayog, recommended the recruitment of personnel from outside the All India Services for the central government's bureaucracy.
- ♦ For instance, the 13-point roster system of reservation is not implemented in lateral entry.
- **Lack of Familiarity with Bureaucratic Processes:** Civil servants spend decades mastering the bureaucratic system and protocols. Lateral entrants often lack practical experience and understanding of these processes, leading to inefficiencies.
- **Short Tenure and Limited Impact:** Contracts are typically for 3–5 years, giving lateral entrants little time to adapt and deliver impactful results. Their integration into the bureaucratic structure is often incomplete.

Arguments in Favour

- **Deputation Posts:** There are no mandatory reservations for appointments on deputation, and the current process of filling posts through lateral entry is considered a close approximation of deputation.
- **Addressing Personnel Shortages:** The Baswan Committee (2016) highlighted the reluctance of large states (e.g., Bihar, Madhya Pradesh, Rajasthan) to send officers for central deputation due to shortages at the state level. Lateral entry helps fill these critical gaps at the central level.
- **Short Duration:** The lateral-entry officers are a small pool for a short duration (up to 5 years), so, reservation doesn't make much sense.
- **Expertise in the Governance:** The government introduced it as a means to bring in specialised talent and expertise in governance and policy making.
- **Efficiency:** Professionals with private sector experience may bring in better management practices, technological know-how, and strategic decision-making skills.
- **Strengthening Participatory Governance:** Provides the private sector and NGOs an opportunity to contribute directly to governance, making it more inclusive and participatory.

Arguments Against the Scheme

- **Constitutionality : Under Article 309** recruitment to Central government jobs can only be through an Act of Parliament or a statutory Rule framed under the authority of the President.
- **Ambiguities in Recruitment:** Lack of transparency in determining vacancies, shortlisting candidates, and evaluation criteria creates distrust in the process.
- **Sidelining Reservation Policies:** The absence of reservations for SCs, STs, OBCs, and other vulnerable sections has drawn criticism for neglecting inclusivity.

- **Potential Conflict of Interest:** Entrants from private sectors may prioritize profit maximization over public welfare, raising concerns about policy bias.

Way Ahead

- **Establishing a Public Administration University:** Train aspiring civil servants and improve knowledge in governance, economics, and management.
 - ♦ Enable serving bureaucrats to gain domain expertise and advanced managerial skills.
- **Deputation to Private Sector:** Allow IAS and IPS officers to work in private sector organizations.
 - ♦ Promote cross-sectoral learning, enhance expertise, and foster competition.
- **Institutionalizing Goal Setting and Tracking:** Regular monitoring and evaluation to ensure accountability and progress.
- **Utilizing Capacity Building Commission and Mission Karmayogi:** Provide mid-career training to officers and lateral entrants for skill enhancement.
 - ♦ Focus on modern governance practices, policy implementation, and leadership development.

Source: IE

INDIA - OMAN FTA AGREEMENT TALKS

Context

- The Commerce and Industry Minister will travel to Oman, to give "further impetus" to the **free trade agreement (FTA)** talks between India and Oman.

About

- The talks focused on advancing negotiations on the **Comprehensive Economic Partnership**

Agreement (CEPA), strengthening trade and investment ties, and exploring avenues to further deepen bilateral partnership.

- **FTA:** In such agreements, two trading partners either significantly reduce or eliminate customs duties on a maximum number of goods traded between them.
 - ♦ They also ease norms to promote trade in services and attract investments.
- This visit underscores the importance that India attaches to its trade and investment ties with Oman, one of the important trading partners in the **Gulf Cooperation Council (GCC)**.
 - ♦ India already has a similar agreement with another GCC member **UAE** which came into effect in **2022**.

India-Oman Ties

- **Trade Relations:** Oman is India's 30th largest trading partner in FY 2023-2024 with total trade of US\$ 8.947 billion.
 - ♦ India is among Oman's top trading partners.
 - ♦ India is the 4th largest market for Oman's crude oil exports for the year 2023.
- **Defence Cooperation:** India and Oman conduct regular biennial bilateral exercises between all three services.
 - ♦ Army exercise: Al Najah
 - ♦ Air Force exercise: Eastern Bridge
 - ♦ Naval Exercise: Naseem Al Bahr
- **Maritime Cooperation:** Oman is at the gateway of Strait of Hormuz through which India imports one-fifth of its oil imports.
 - ♦ India signed a pact with the country in 2018 to access the Duqm port of Oman.
 - ♦ The Port of Duqm is situated on the southeastern seaboard of Oman, overlooking the Arabian Sea and the Indian Ocean. It is strategically located, in close proximity to the Chabahar port in Iran.

About GCC

- It is a **political and economic alliance** of **six Middle Eastern countries**—Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman.
- It was established in **1981**.
- It aims to achieve unity among its members based on their common objectives and their similar political and cultural identities, which are rooted in Arab and Islamic cultures.
- The presidency of the council rotates **annually**.



Way Ahead

- Realpolitik and strategic interests have been instrumental in bringing India closer to the Gulf countries, with both sides willing to overlook some of their ideological differences lately.
- In the long run, defense industrial cooperation and technology transfers will likely come to form a pivotal component of their strategic cooperation.
- The convergences of interests – political, economic, technological and military-security – therefore, could pave the way for the furtherance of India's military diplomacy with the Gulf states.

Source: BS

EXTERNAL COMMERCIAL BORROWINGS (ECB) LANDSCAPE

In News

- India's investment ecosystem and External Commercial Borrowings (ECBs) have witnessed significant developments over the past few years.

About

- The recent report by the State Bank of India (SBI) has highlighted trends in investment announcements, private sector's contribution, and role of ECBs in corporate financing.
- Household Net Financial Savings (HNFS) in India improved to 5.3% of GDP in FY24 from 5.0% in FY23.
- Investment as a share of GDP has improved in recent years, led by both government and private sector contributions.

External Commercial Borrowings

- External Commercial Borrowings are commercial loans raised by eligible resident entities from recognised non-resident entities.

- These borrowings have to conform to parameters such as minimum maturity, permitted and non-permitted end-uses, maximum all-in-cost ceiling, etc.

Framework and Guidelines

EXTERNAL COMMERCIAL BORROWINGS FRAMEWORK		
Parameters	FCY denominated ECB	INR denominated ECB
Currency of borrowing	Any freely convertible Foreign Currency	Indian Rupee (INR)
Forms of ECB	Loans including bank loans; floating/ fixed rate notes/ bonds/debentures (other than fully and compulsorily convertible instruments); Trade credits beyond 3 years; FCCBs; FCEBs and Financial Lease.	Loans including bank loans; floating/ fixed rate notes/bonds/ debentures/ preference shares (other than fully and compulsorily convertible instruments); Trade credits beyond 3 years; and Financial Lease. Also, plain vanilla Rupee denominated bonds issued overseas, which can be either placed privately or listed on exchanges as per host country regulations.
Eligible borrowers	All entities eligible to receive FDI. Further, the following entities are also eligible to raise ECB: i. Port Trusts; ii. Units in SEZ; iii. SIDBI; and iv. EXIM Bank of India	a) All entities eligible to raise FCY ECB; and b) Registered entities engaged in micro-finance activities, viz., registered Not for Profit companies, registered societies/trusts/ cooperatives and Non-Government Organisations
Minimum Average Maturity Period (MAMP)	MAMP for ECB will be 3 years. Call and put options, if any, shall not be exercisable prior to completion of minimum average maturity. However, for the specific categories mentioned below, the MAMP will be as prescribed therein ECB raised by manufacturing companies up to USD 50 million or its equivalent per financial year - 1 Year ECB raised from foreign equity holder for working capital purposes, general corporate purposes or for repayment of Rupee loans - 5 year ECB raised for (i) working capital purposes or general corporate purposes (ii) on-lending by NBFCs for working capital purposes or general corporate purposes - 10 years ECB raised for (i) repayment of Rupee loans availed domestically for capital expenditure (ii) on-lending by NBFCs for the same purpose - 7 years ECB raised for (i) repayment of Rupee loans availed domestically for purposes other than capital expenditure (ii) on-lending by NBFCs for the same purpose - 10 years	

Data Analysis of SBI's recent report

- **External Commercial Borrowings (ECBs)** (as of September 2024) have emerged as a key source of funding for Indian corporates, enabling capital expansion and modernization.
 - ♦ The total outstanding ECBs stood at \$190.4 billion as of September 2024.
 - ♦ Of this, the non-Rupee and non-FDI components accounted for approximately \$154.9 billion.
 - ♦ The private sector held 63% (\$97.58 billion), while the public sector accounted for 37% (\$55.5 billion).
 - ♦ Hedging remains a critical aspect, with private companies hedging approximately 74% of the total hedged corpus.
 - ♦ ECBs in FY25 (Up to November 2024) : The ECB pipeline remains strong, reflecting sustained demand for overseas funding.

The Need for ECBs in India

- **Capital Shortage:** Domestic financial markets may not meet the needs of large corporations.
- **Lower Interest Rates:** ECBs often offer lower rates than domestic loans, reducing the cost of capital.
- **Filling Infrastructure Gap:** India's infrastructure sector requires significant investments.

- **Diversification of Funding:** Access to global markets reduces reliance on domestic banks.
- **Support for Export-Oriented Sectors:** Helps businesses modernize and stay competitive internationally.
- **Boost to Corporate Growth:** Enables expansion, technology upgrades, and enhanced market position.

Limitations and Risks of ECBs

- **Currency Risk:** Exchange rate fluctuations can increase repayment costs if the domestic currency depreciates.
- **Interest Rate Risk:** Variable interest rates tied to global benchmarks (e.g., LIBOR) can make loans expensive as rates rise.
- **Repayment Risk:** Short maturities may lead to refinancing challenges, especially if funds are not readily available.
- **Regulatory Constraints:** Strict RBI regulations on borrowing limits, end-use, and compliance can limit flexibility.
- **Macroeconomic Risks:** Excessive reliance on ECBs can increase national external debt and strain foreign exchange reserves.

Conclusion and Way Forward

- External Commercial Borrowings have become an essential tool for Indian companies looking to access global capital and finance large-scale projects.

- ECBs offer significant potential to fuel India's growth, particularly in sectors like infrastructure, technology, and exports.
- However, companies must carefully evaluate their financial position and risk appetite before opting for external borrowings to ensure they are leveraging this financial instrument effectively and sustainably.

Source :PIB

NEWS IN SHORT

LEZIM

Context

- The Hindi film 'Chhaava' based on Chhatrapati Sambhaji Maharaj landed in a controversy with people objecting to a **Lezim dance sequence**.

About

- **Lezim or lazium** is a folk dance form, from the **state of Maharashtra**.
- It gets its name after a **musical instrument- a unique wooden stick, with jingling cymbals attached to it that the dancers carry while performing the dance**.
 - ♦ Lizem was earlier traditionally used as an instrument in all folk dances but today it is **primarily used in Ganesha procession**.



- Traditionally, it was performed as a **sport by Maratha warriors** to build their **muscles and fitness drills in Maharashtra**.
 - ♦ Lezim folk dance originated in the year **1986**, when some of the communities started performing it.

Chhatrapati Sambhaji Maharaj

- Chhatrapati Sambhaji Maharaj was the eldest son of Chhatrapati Shivaji Maharaj.

- He came to power following a bloody succession battle with his half-brother Rajaram in 1681.
- The Mughal emperor Aurangzeb (1618-1707) was a contemporary and his plan to extend his empire towards the Deccan often resulted in clashes with the Marathas.

Source: IE

LALA LAJPAT RAI

In News

- India is remembering Lala Lajpat Rai on his 160th Birth Anniversary.

Birth and Early Life:

- Born on 28th January 1865 in Dhudike, Ludhiana district, Punjab.
- He was one of the "**Lal Bal Pal**" trio, along with **Bal Gangadhar Tilak and Bipin Chandra Pal**.
 - ♦ He supported the Shuddhi movement.
- **Contributions** : Joined Arya Samaj in 1882 and became one of its prominent leaders.
 - ♦ Played a key role in social welfare, famine relief, and abolition of untouchability.
 - Founded the Hindu Relief Movement in 1897 to help famine-stricken people and prevent missionary influence.
 - He founded **Punjab National Bank, Lakshmi Insurance Company, and the Servants of the People Society**.
 - He was associated with the establishment of DAV College for educational purposes.
- **Writing and Advocacy:** Wrote biographies on Mazzini, Garibaldi, Shivaji, and Swami Dayanand.
 - ♦ Authored "Unhappy India" in response to Katherine Mayo's "Mother India." and Young India: An Interpretation.
 - Used his writings to advocate for India's freedom and culture.
- **Political Activities and Nationalism:** Opposed British colonial policies, became a prominent leader in Indian National Congress.
 - ♦ Advocated for Swadeshi and opposed British repression after the partition of Bengal in 1905.
 - ♦ Criticized "Moderate" politics, advocating for more direct action and self-reliance.
 - ♦ He was widely recognized as **Punjab Kesari**.
- **Exile and International Efforts:** Went into exile in 1907, toured England and the USA, speaking against British colonialism.

- ♦ Started “**Indian Home Rule League of America**” to support India’s independence movement.
- **Return to India and Later Contributions:** In the special session of the Congress held in Calcutta (1920) Lala Lajpat Rai was elected President by the All India Congress Committee.
 - ♦ It was under his leadership that the Congress adopted the resolution of Non-cooperation with the British Government after the Jallianwala Bagh tragedy.
- **Final Struggle and Death:** Led the boycott procession against the Simon Commission in 1928.
 - ♦ Received fatal injuries from police lathi charges on 30th October 1928, dying on 17th November 1928.
- **Legacy:** Lala Lajpat Rai’s contributions to the freedom movement, social reforms, and education continue to inspire generations.
 - ♦ Left a legacy of patriotism, sacrifice, and inspiration for India’s freedom struggle.

Source :Air

LAKE VICTORIA

Context

- An international team of researchers from North America and Kenya has completed a **genetic survey of cyanobacteria** in the **Winam Gulf of Lake Victoria, Kenya**.

About

- **Cyanobacteria**, formerly known as blue-green algae, form dense and sometimes toxic blooms in freshwater and marine environments.
 - ♦ These blooms disrupt ecosystems, degrade water quality, and pose serious risks to humans, livestock, and aquatic life.
- **The Winam Gulf**, known for its prolific year-round cyanoHABs, is one of Lake Victoria’s most productive fishing basins.
 - ♦ The study investigated cyanobacterial assemblage, function, and biosynthetic potential across different regions of the gulf.

Victoria Lake

- It is the **world’s largest tropical lake**. It’s also the **largest lake in Africa**, and the **second-largest freshwater lake** in the world by surface area (after Lake Superior in North America).
- The lake was named in honour of **Queen Victoria of England**.

- It is located in **East Africa**, spanning towards the borders of **three countries: Tanzania, Uganda, and Kenya**.



- The lake serves as the **chief reservoir of the River Nile**.
- The lake is a vital resource for millions of people who rely on fishing as their primary livelihood.

Source: DTE

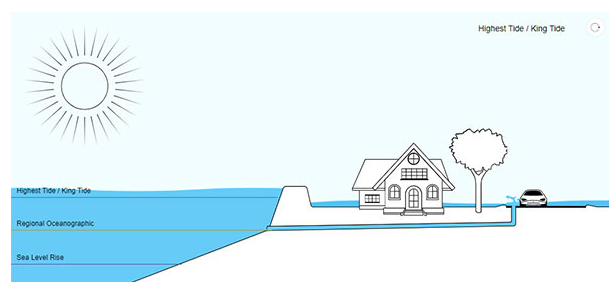
TIDAL FLOODING

Context

- Tidal flooding has become frequent in Ernakulam district of Kerala lately.

Tidal Flooding

- Tidal flooding, also known as “nuisance flooding” or “sunny day flooding,” happens when **high tides cause water levels to rise and flood low-lying coastal areas**.
- **Causes:** Changes in prevailing winds, shifts in ocean currents, and strong tidal forces (which occur during full or new moon) can all cause high tide flooding.
- **High tide flooding falls into three levels of severity:** minor, moderate, and major.



Concerns:

- ♦ Tidal flooding disrupts daily life by flooding roads and services, damages infrastructure, and causes economic losses for businesses.

- ◆ It accelerates coastal erosion, harms habitats, and contaminates freshwater supplies with saltwater.
- ◆ Repeated flooding forces communities to relocate.
- ◆ Over time, rising sea levels due to climate change will make tidal flooding more frequent and severe.

Source: TH

UNIFIED PENSION SCHEME

In News

- The Finance Ministry notified the Unified Pension Scheme (UPS) for workers covered by the National Pension System (NPS), effective from April 1, 2025.

Unified Pension Scheme(UPS)

- The UPS was recommended as an alternative to the NPS by a panel led by former Finance Secretary **T.V. Somanathan**.
- The Pension Fund Regulatory and Development Authority (PFRDA) will determine the mechanism for retirees opting for the UPS, addressing top-up amounts relative to their NPS payouts.
- It will offer employees an assured pension of **50% of their average basic pay** over the last 12 months before retirement, for a minimum service of 25 years.
- **Additional Benefits:** The UPS includes a family pension of 60% of the government worker's pension upon their death, a lumpsum superannuation payout, and gratuity benefits.
 - ◆ A minimum pension of ₹10,000/month is promised for those with at least 10 years of Union government service.

NPS vs. UPS:

- NPS, introduced in 2004, did not offer assured pensions. The UPS, however, restores a guaranteed pension of 50% of the last drawn salary, with periodic dearness relief tied to inflation.
- Union government employees already covered under NPS can choose the UPS option. Those who don't opt for UPS will remain in NPS, with no guaranteed pension.
- Employees opting for UPS cannot claim other financial benefits, policy changes, or parity with future retirees after they make the choice.

Source :TH

PIEZOELECTRICITY

In News

- Recently, the author at IIT Kanpur, explained the role of piezoelectric materials in the functioning of stove lighters and their ability to create sparks.

About Stove-Lighter

- The stove-lighter creates a small spark when clicked. This spark, though seemingly harmless, is a result of electrical charges.
 - ◆ An electric spark occurs when there is a difference in electron quantity between two points.
 - ◆ One point has a surplus of electrons (negative), and the other a deficiency (positive), causing electrons to move and create a spark.
- Lightning is essentially a large-scale electric spark caused by extreme electron imbalances between charged clouds in the sky, creating a spark through the air after breaking molecules.

Piezoelectricity

- Piezoelectricity is the generation of electrical charge in a solid material by an applied mechanical stress and vice versa.
- The piezoelectric effect is exhibited in materials that develop a net electric dipole moment.
 - ◆ In such materials, the dipole density or polarization changes in response to mechanical strain resulting in a net accumulation of charge.
- **How Piezoelectric Materials Work:** In their natural state, piezoelectric materials have alternating positive and negative ions. When pressure is applied, the ions shift, creating a charge imbalance and generating a high voltage, which causes a spark.
- **Applications:** Piezoelectronics are crucial for energy conversion, sensing, and applications in energy harvesting, health monitoring, and more.
 - ◆ Lighters use piezoelectric materials that generate a surplus and deficiency of electrons when pressure is applied. These materials have a specific atomic structure that allows them to generate electric charge under pressure.

Source :TH

