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Table of Content

Assam's Uniform Civil Code Bill, 2026

Kerala's Dedicated Senior Citizens Welfare Department

Global Tension, Funding woes Threaten Peacekeeping Missions: SIPRI

Union Finance Minister flags '3F' Concerns: Fuel, Fertiliser, Foreign Exchange

News In Short

President Confers Padma Awards

Pratas Islands

Launch of JEEVAN App and SHATAYU Geriatric Caregiver Dashboard

Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) Scheme

Fractional Quantum Hall Effect (FQHE)

Carbon-Free Ferrocene Breakthrough

Oreshnik Missile

Deaths Caused by Lightning have been Consistently Rising

ASSAM'S UNIFORM CIVIL CODE BILL, 2026

Context

- **The Government of Assam** has introduced the **Uniform Civil Code (UCC) Bill, 2026** in the State Assembly.
 - ♦ Assam became the third state in India to table a Uniform Civil Code (UCC) bill, following **Uttarakhand and Gujarat**.

What is Uniform Civil Code (UCC)?

- **A Uniform Civil Code refers** to the provision of one law for the entire country, applicable to all religious communities, in their personal matters such as marriage, divorce, inheritance, adoption, etc.
- **Aim:** To replace the existing diverse personal laws that vary based on religious affiliations.

Constitutional Provisions

- **Article 44** contained in **part IV** of the Constitution says that the state "shall endeavor to secure for the citizens a uniform civil code throughout the territory of India".
- **Part IV of the Constitution** outlines the **Directive Principles of State Policy**, which, while not enforceable or justiciable in a court of law, are fundamental to the country's governance.

UCC in India

- **UCC in Goa:** It follows the **Portuguese Civil Code of 1867**, which means that people of all religions in Goa are subject to the same laws on marriage, divorce, and succession.
 - ♦ **The Goa Daman and Diu Administration Act of 1962**, which was passed after Goa joined the union as a territory in **1961**, gave Goa permission to apply the Civil Code.
- In 2024, The Uttarakhand Legislative Assembly passed The **Uniform Civil Code of Uttarakhand Act, 2024**, becoming the first Indian State to adopt a UCC post-independence.

Key Provisions of the Assam UCC Bill, 2026

- **Ban on Polygamy and Bigamy:** The Bill mandates monogamy for all residents under its ambit. Bigamy and polygamy **would attract punishment** under the **Bharatiya Nyaya Sanhita (BNS), 2023**.
 - ♦ Existing polygamous marriages solemnised before enforcement of the law would remain legally protected.

- **Uniform Marriage Age:** The minimum legal age is fixed at 21 years for men and 18 years for women.
- **Mandatory Registration:** Registration of all marriages and divorces would become compulsory and couples must submit a marriage memorandum **within 60 days** of marriage.
 - ♦ Non-registration may attract penalties and fines.
- **Regulation of Live-in Relationships:** Registration of live-in relationships **within one month** has been made **mandatory** and **children** born from such relationships would be **considered legitimate**.
 - ♦ Deserted partners would have legal rights to claim maintenance.
- **Uniform Grounds for Divorce:** The Bill standardises divorce grounds such as; cruelty, desertion, mutual consent.
 - ♦ The Bill also penalises illegal dissolution of marriage and unlawful conditions imposed before remarriage.
- **Gender-Equal Inheritance:** The Bill establishes equal inheritance rights for spouses, children, and parents. It creates a uniform succession framework irrespective of religion.
 - ♦ **Testamentary succession** through written wills is legally recognised.
- **Child and Fraudulent Marriages:** The Bill prescribes punishment for child marriage and marriages conducted without valid consent.
 - ♦ The Bill also provides imprisonment and fines for fraudulent or deceptive marriages conducted through force, coercion, concealment, or misrepresentation.
- **Exemption for Scheduled Tribes:** The Bill excludes Scheduled Tribes (STs) from its purview in order to protect customary practices and constitutional safeguards available to tribal communities.

Arguments in favor of UCC

- **Uniformity in Governance:** Having a common set of laws would streamline governance and administrative processes, making it easier for the state to administer justice and ensure the rights of its citizens.
- **Women's Rights:** Personal laws in different religions may have discriminatory provisions, particularly against women, and a uniform code will provide a more egalitarian legal framework.

- **Secularism:** A Uniform Civil Code is seen as a way to reinforce the secular fabric of the country by treating all citizens equally irrespective of their religious affiliations.
- **Promote national Spirit:** The implementation of a UCC will promote the integration of India by establishing a shared platform for diverse communities.
- **The Supreme Court** in various judgments including **Mohd. Ahmed Khan vs Shah Bano Begum judgment of 1985**, has called for the implementation of the Uniform Civil Code.
 - ♦ **The Sarla Mudgal v. The Union of India (1995)** judgment of the Supreme Court highlighted the urgent need for a Uniform Civil Code to prevent the exploitation of personal laws.

Arguments against UCC

- **Against Constitutional provisions:** UCC is perceived as an infringement upon the constitutional right to freely exercise one's chosen religion found in **Article 25 and 26** and the **Sixth Schedule** of the Constitution
- **Fear of Majoritarianism:** Some minority groups fear that the Uniform Civil Code may reflect the customs and practices of the majority community rather than a genuinely neutral framework.
- **The Law Commission of India** stated that a UCC "is neither necessary nor desirable at this stage".

Way Ahead

- The authorities should **consult with different sections of society** before implementing the UCC to foster an environment of inclusivity, transparency, and respect for **diverse perspectives** throughout the process.
- **Incremental reforms in personal laws** may be more effective and socially acceptable than abrupt uniformity.
- Legal reforms should ensure that the **cultural and customary rights of vulnerable communities remain safeguarded**.

Source: TH

KERALA'S DEDICATED SENIOR CITIZENS WELFARE DEPARTMENT

Context

- The government in Kerala has decided to establish a separate Department for Senior Citizens' Welfare to address the growing challenges

associated with population ageing, and social isolation among elderly citizens.

Elderly Population in India

- India's senior citizen population is projected to surge to around **230 million by 2036**, making up about 15% of the total population.
- Women constitute a larger share of the elderly population due to higher life expectancy, leading to the **feminisation of ageing**.
 - ♦ The sex ratio among the elderly stands at **1,065 females per 1,000 males**, with women accounting for **58%** of the elderly population, out of which **54%** are widows.
- **Southern states**, along with **Himachal Pradesh and Punjab**, have higher elderly populations, with regional disparities expected to widen by 2036.

Kerala is Ageing Faster than Other States

- Kerala has the highest proportion of elderly population in India. Around **18.7%** of Kerala's population is above 60 years of age, compared to the national average of nearly 11–12%.
 - ♦ By 2036, the elderly population in the State is projected to exceed 22%.
- **The Economic Review 2025** by the Kerala State Planning Board said that the **old-age dependency ratio** (defined as the number of old people per 100 working population in the 15-59 year group) is currently at **26.1%**, against a national average of 15.7%.

Major Challenges Faced by Senior Citizens in India

- **Burden of Non-Communicable Diseases (NCDs):** Elderly citizens are highly vulnerable to non-communicable diseases such as, **diabetes, hypertension, cardiovascular diseases, cancer etc.**, requiring continuous treatment and long-term healthcare support.
- **Increasing Multimorbidity:** Multimorbidity refers to the presence of **two or more chronic diseases** in the same individual.
 - ♦ Elderly individuals suffering from multiple diseases face; **frequent hospitalisation, high treatment costs, reduced quality of life and increased dependency** on caregivers.
- **Social Isolation:** Rapid urbanisation and migration have weakened traditional joint family systems in India.
 - ♦ Many elderly citizens experience **loneliness, depression, anxiety and emotional neglect**.

- **Inadequate Geriatric Healthcare Infrastructure:** India has fewer than **1,000 certified geriatricians** for a senior population exceeding **150 million**.
 - ♦ Healthcare systems remain more **focused on curative care** rather than elderly-friendly preventive and supportive care.
 - ♦ **Tier-2 and Tier-3 cities** often face shortages of medicines, assistive devices, rehabilitation equipment, medical consumables etc.
- **High Out-of-Pocket Healthcare Expenditure:** Continuous medication and repeated hospitalisation creates financial burdens for families caring for elderly members.

Government Initiatives for Elderly in India

- **Atal Pension Yojana (APY):** Launched in 2015 to ensure old-age income security for unorganised sector workers. It provides a guaranteed monthly pension (₹1,000–₹5,000) post-60 years.
- **Rashtriya Vayoshri Yojana (RVY):** Launched in 2017 to distribute assistive living devices (hearing aids, walking sticks, wheelchairs, etc.) to BPL senior citizens or those with income below ₹15,000/month.
- **Senior Care Ageing Growth Engine (SAGE) Portal:** Promotes start-ups and innovation in elderly care services, encouraging the growth of the silver economy.
- **Ayushman Bharat – PMJAY:** It Extends ₹5 lakh annual health coverage to around 6 crore senior citizens aged **70 years and above**, across 4.5 crore families.
- **Maintenance and Welfare of Parents and Senior Citizens Act, 2007:** Makes it a legal obligation for children and heirs to provide maintenance to their parents.
 - ♦ Mandates state governments to establish old-age homes and ensure senior welfare services.

Way Ahead

- **Promote Digital Literacy for Seniors:** Launch targeted training programmes through community centres, NGOs, and Panchayati Raj Institutions to familiarise elderly citizens with smartphones, telemedicine, and digital banking platforms.
- **National Elderly Care Policy:** India should create an integrated elderly welfare framework combining healthcare, nutrition, mental health, and social security services.
- **Encourage Innovation in the Silver Economy:** Support start-ups and enterprises developing

assistive technologies, AI-based health monitoring tools, and user-friendly applications tailored for elderly needs.

Source: TH

GLOBAL TENSION, FUNDING WOES THREATEN PEACEKEEPING MISSIONS: SIPRI

Context

- **Geopolitical tensions and a funding crisis** are jeopardising peacekeeping missions, particularly those under the auspices of the United Nations, the Stockholm International Peace Research Institute warned.

Major Findings of the Report

- **Sharp Decline in Peacekeeping Personnel:** As of December 2025, only 78,633 international personnel were deployed in peacekeeping missions worldwide. This is the lowest level in at least 25 years, personnel strength has declined by nearly 49% since 2016.
- **Decline in Number of Peace Operations:** Only 58 multilateral peace operations were active in 2025 across 34 countries and territories.
 - ♦ This was fewer than the previous year, indicating shrinking international engagement in conflict management.
- **Concentration of Missions in Conflict Zones:** Most personnel were concentrated in a few highly unstable regions: Central African Republic, South Sudan, Somalia, Democratic Republic of Congo and Lebanon.
 - ♦ Sub-Saharan Africa alone hosted nearly 70% of deployed peacekeeping personnel.

Major Challenges Faced by Peacekeeping Operations

- **Funding Crisis:** One of the most serious challenges identified by SIPRI is the financial crisis affecting UN peacekeeping. It faced a funding shortfall of nearly USD 2 billion in 2025.
 - ♦ Several member states failed to pay assessed contributions on time and budget cuts forced reductions in troop deployments and operational capabilities.
- **Geopolitical Deadlock in the UNSC:** The United Nations Security Council increasingly faces divisions among permanent members which leads to difficulty in launching new missions.

- **Declining Political Support for Multilateralism:** Major powers are increasingly prioritizing national interests, bilateral arrangements, ad hoc military coalitions, instead of supporting UN-led collective security frameworks.
 - ♦ It reduces the legitimacy of international peace efforts and raises fragmented security responses.
- **Changing Nature of Modern Conflicts:** Modern conflicts are intra-state rather than inter-state, driven by terrorism and insurgencies, linked to ethnic and sectarian violence.
 - ♦ Peacekeepers now face non-state armed groups, terrorist organizations, and hybrid warfare tactics.
- ♦ Traditional peacekeeping methods are often inadequate in such environments.
- **Host-State Resistance:** Many governments resist external intervention and limit operational freedom of peacekeepers. This reduces the effectiveness of missions on the ground.
- **Weakness of Regional Alternatives:** Since no major new UN-led peacekeeping mission has been established since 2014, regional organizations have attempted to fill the gap.
 - ♦ Organizations such as the African Union and Economic Community of West African States often lack sufficient resources for long-term peacebuilding.

United Nations Peacekeeping Missions

- The United Nations Peacekeeping Missions are **operations deployed by the United Nations to maintain international peace and security** in conflict-affected regions.
- **First peacekeeping mission** was established in **1948**, to monitor the armistice between **Israel and its Arab neighbors**.
- It was established and tasked by the **UN Security Council**.
- **It serves as an important instrument of collective security** and aims to prevent conflicts, protect civilians, support political processes, and assist countries in transitioning from conflict to peace.
- **Key UN Peacekeeping Missions:**
 - ♦ **MINUSTAH (Haiti):** Worked for political stabilisation, security and humanitarian assistance in Haiti (2004–2017).
 - ♦ **UNMISET (East Timor):** Supported stability, governance and security in East Timor (2002–2005).
 - ♦ **UNMIL (Liberia):** Assisted peacebuilding, disarmament and post-conflict recovery in Liberia (2003–2018).
 - ♦ **MINURCAT (Central African Republic & Chad):** Focused on civilian protection and regional stability (2007–2010).
 - ♦ **UNMOGIP (India–Pakistan):** Monitors the ceasefire situation between India and Pakistan in Jammu & Kashmir (since 1949).
- **Uganda became the top contributor of military personnel**, followed by Nepal, Bangladesh and India.
- The United Nations Peacekeeping Forces **were awarded the Nobel Peace Prize in 1988**.

Principles of UN Peacekeeping

- **Consent of the Parties:** Peacekeeping operations require acceptance from major conflicting parties to operate effectively.
- **Impartiality:** Peacekeepers must remain neutral and unbiased among parties.
- **Non-use of Force Except in Self-defence and Defence of Mandate:** Force may be used only in self-defence, to protect civilians, and to implement the mission mandate.

Source: SIPRI

UNION FINANCE MINISTER FLAGS '3F' CONCERNS: FUEL, FERTILISER, FOREIGN EXCHANGE

Context

- Union Finance Minister Nirmala Sitharaman **called for increased focus on 3Fs- fuel, fertiliser and**

forex - amid the West Asia crisis, underlining that the domestic economy continues to be resilient.

Why the "3Fs" Matter for India

- **Fuel:** India is among the world's largest crude oil importers and depends heavily on West Asian countries for energy supplies.

- ◆ Rising crude oil prices increase India's import bill and widen the current account deficit.
- ◆ Higher fuel costs lead to inflation in transport, manufacturing, and household energy consumption.
- ◆ Increased government expenditure on fuel subsidies and excise duty cuts can strain fiscal management.
- **Fertilisers:** India imports significant quantities of fertilisers and raw materials like urea, ammonia, and phosphates from the Gulf region. Disruptions in shipping and rising LNG prices can sharply increase fertiliser costs.
 - ◆ Higher fertilizer prices raise cultivation costs for farmers.
 - ◆ Reduced fertilizer availability can affect agricultural productivity and food security.
 - ◆ Rising input costs may push food inflation upward.
 - ◆ Increased subsidy burden on the government to shield farmers from price shocks.
- **Forex:** India's foreign exchange reserves and currency stability are vulnerable during geopolitical crises because higher oil imports require more dollar payments. It leads to:
 - ◆ Depreciation of the Indian rupee against the US dollar.
 - ◆ Increased pressure on forex reserves due to higher import payments.
 - ◆ Foreign investors may pull money out of emerging markets during global uncertainty.
- **Expansion of Strategic Petroleum Reserves:** India should expand strategic oil and gas reserves to withstand temporary global supply disruptions.
- **Accelerating Renewable Energy Transition:** Greater investment in solar energy, wind power, green hydrogen and electric mobility can reduce long-term dependence on imported fossil fuels.
- **Strengthening Export Competitiveness:** India needs to improve manufacturing efficiency, logistics infrastructure, supply chain resilience and technological competitiveness. A stronger export base can reduce persistent trade deficits.
- **Encouraging Stable Capital Inflows:** India should prioritize long-term FDI, domestic manufacturing investment and infrastructure investment.
- **Increasing self-reliance in fertilisers** through technological innovation, policy support, and sustainable alternatives is essential for ensuring long-term agricultural stability and economic resilience.

Conclusion

- The Finance Minister's emphasis on the "3Fs" reflects India's vulnerability to geopolitical instability in West Asia.
- Since fuel, fertilisers, and forex are directly linked to inflation, agriculture, external trade, and macroeconomic stability, prolonged conflict in the region could significantly affect India's economic trajectory.
- Managing these vulnerabilities through diversification, fiscal prudence, and energy transition will remain crucial for India's economic resilience.

Source: IE

Broader Economic Concerns for India

- **Inflationary Pressures:** Higher fuel and fertilizer prices can create widespread inflation across sectors including food, transportation, logistics, and manufacturing.
- **Fiscal Stress:** To protect consumers, the government may reduce fuel taxes or increase subsidies, affecting fiscal deficit targets.
- **Impact on Growth:** Persistent global uncertainty and high energy prices can slow industrial activity and economic growth.
- **External Sector Vulnerability:** India's dependence on imported crude makes it highly exposed to geopolitical shocks in West Asia.

Reforms Needed

- **Diversification of Energy Sources:** India must reduce excessive dependence on Gulf oil by expanding imports from other countries.

NEWS IN SHORT

PRESIDENT CONFERS PADMA AWARDS

In News

- President Droupadi Murmu conferred Padma Awards to 66 eminent personalities for the year 2026 at the first Civil Investiture Ceremony held at Rashtrapati Bhavan.

More about the News

- The awards are announced annually on Republic Day. For 2026, the President approved **131**

Padma Awards, including 5 Padma Vibhushan, 13 Padma Bhushan, and 113 Padma Shri.

- Remaining awardees will be felicitated in a second ceremony later.

Key Recipients

- Dharmendra Singh Deol was honoured with the **Padma Vibhushan** posthumously for contributions to art. N.
- Rajam also received the **Padma Vibhushan** for contributions to music.
- Bhagat Singh Koshyari received the **Padma Bhushan** for public affairs.
- Uday Kotak was awarded the **Padma Bhushan** for trade and industry.
- Harmanpreet Kaur received the **Padma Shri** for sports.
- Folk musician Taga Ram Bheel was conferred the **Padma Shri** award for keeping alive the legacy of the Algoza.

Padma Awards

- **Padma Awards:** One of the highest civilian awards of the country instituted in **1954**, are conferred in **three categories**:
 - ♦ **Padma Vibhushan:** Second-highest civilian award in India.
 - ♦ **Padma Bhushan:** Third-highest civilian award.
 - ♦ **Padma Shri:** Fourth-highest civilian award.
- They are **awarded annually** in various disciplines and fields of activities, including art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, and civil service.
- They are announced **every year on Republic Day (January 26)**.
- Open to **all persons, regardless of race, occupation, position, or gender**.
- Can be **awarded posthumously**.
- **Selection Process:**
 - ♦ Recommendations are made by state governments, central ministries, previous awardees, and the public.
 - ♦ Managed by the Padma Awards Committee, constituted by the Prime Minister annually.
 - ♦ Committee recommendations are submitted to the Prime Minister and President for approval.

Source: TH

PRATAS ISLANDS

Context

- The Pratas Islands recently witnessed a maritime standoff between the coast guards of China and Taiwan.

About Pratas Islands

- **Location:** The Pratas Islands, also known as **Dongsha Islands**, are a group of **coral atolls** located in the northern part of the **South China Sea**.
 - ♦ The islands lie roughly midway between **southern Taiwan, Hong Kong, and the Chinese mainland**.
 - ♦ The atoll is currently administered and controlled by Taiwan.
- **Population:** The islands are **lightly populated and mainly host Taiwan's coast guard personnel and research facilities**.
- **Ecological Importance:** The area also includes the **Dongsha Atoll National Park**, which is known for its marine biodiversity and coral reef ecosystems.
- **Strategic Importance:** The islands are situated at the northern edge of the South China Sea, making them strategically significant for maritime surveillance and naval operations.



Source: IE

LAUNCH OF JEEVAN APP AND SHATAYU GERIATRIC CAREGIVER DASHBOARD

Context

- A mobile application **JEEVAN (Joint Elderly Empowerment and Virtual Assistance Network)** has been launched by the **Ministry of Social Justice and Empowerment**.

About

- **Aim:** To strengthen support systems for senior citizens across the country.
- **Features of JEEVAN App:** Information on Government schemes and welfare programmes, emergency assistance and details of senior citizen homes.
 - ♦ The platform has been designed with a user-friendly interface, simplified navigation and accessibility features.
- The ministry also launched **Senior Holistic Care Assistance and Training for Your Utility (SHATAYU) Dashboard** to support and strengthen caregiving services for senior citizens.
 - ♦ The platform is designed to enhance the safety, welfare, healthcare access and social inclusion of senior citizens across the country.
 - ♦ It provides features such as information on the availability of Geriatric Caregivers in a particular district and the State for the senior citizens.

Source: AIR

PRADHAN MANTRI FORMALISATION OF MICRO FOOD PROCESSING ENTERPRISES (PMFME) SCHEME

Context

- Ministry of Food Processing Industries, addressed a media interaction regarding the implementation and achievements of the **Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) Scheme**.

About

- The PMFME Scheme was launched in **2020** under the **Ministry of Food Processing Industries** as part of the Aatmanirbhar Bharat Abhiyan.
- The scheme was conceptualised **to address the challenges faced by India's unorganised micro food processing sector**.
- It is the **centrally sponsored scheme**, with an outlay of Rs. 10,000 crore, approved for implementation during 2020-21 to 2024-25 and has been extended till September 2026.
- The Scheme also operationalizes the **One District One Product (ODOP) approach**, enabling economies of scale in procurement, common services, and market linkage.
 - ♦ The scheme has so far identified 137 unique products across 726 districts in 35 States and Union Territories.

- **Achievements:** A total of 1,96,270 individual micro food processing enterprises have been supported under the Credit Linked Subsidy component with **more than 40% of beneficiaries being women entrepreneurs**.
 - ♦ Under Branding and Marketing support, 32 proposals and 40 ODOP brands have been approved, resulting in the launch of more than 200 food products.
 - ♦ A total of 1,164 micro enterprises have directly benefited from branding and marketing assistance.

Source: PIB

FRACTIONAL QUANTUM HALL EFFECT (FQHE)

Context

- Recent advances in quantum materials, especially in twisted multilayer graphene, have enabled physicists to recreate the Fractional Quantum Hall Effect (FQHE) without extremely strong magnetic fields.

Hall Effect

- The Hall Effect was discovered in **1879** by **Edwin Hall**.
- **Principle:** When electrons move through a conductor under a magnetic field, they experience a sideways force known as the Lorentz force.
 - ♦ This force causes electric charges to **accumulate on one side of the material**, producing a transverse voltage called the **Hall voltage**.
 - ♦ The Hall Effect helped scientists understand the nature of electric charge carriers in materials.

What is the Quantum Hall Effect (QHE)?

- The Quantum Hall Effect (QHE) is a **quantum mechanical version of the Hall Effect** observed in two-dimensional electron systems under extremely low temperatures and very strong magnetic fields.
- In ordinary conditions, electrical resistance changes smoothly with changes in magnetic field strength.
 - ♦ However, under quantum conditions, the **Hall resistance changes only in discrete steps** rather than continuously. This phenomenon is known as **quantisation of Hall resistance**.

- The Quantum Hall Effect demonstrated that electron behaviour at microscopic scales follows the principles of quantum mechanics.
- **Integer Quantum Hall Effect (IQHE):** In the Integer Quantum Hall Effect, the Hall resistance takes only whole-number values such as **1, 2, 3, etc.**
 - ♦ The effect occurs because electrons occupy **discrete energy levels** known as Landau levels under strong magnetic fields.
- **Fractional Quantum Hall Effect (FQHE):** In the Fractional Quantum Hall Effect, the Hall resistance takes fractional values such as **1/3, 2/5, and 3/7.**
 - ♦ The phenomenon occurs due to **strong interactions between electrons**, which form collective quantum states.
 - ♦ These collective states give rise to **quasiparticles** carrying fractional electric charge, known as **anyons**.

Applications of the Quantum Hall Effect (QHE)

- **The Fractional Quantum Hall Effect** produces quasiparticles called **anyons**, which are considered promising for fault-tolerant quantum computing.
 - ♦ **Anyons can store quantum information in a more stable manner** than ordinary quantum particles.
- The Quantum Hall Effect provides **extremely precise measurements of electrical resistance**. It is used internationally to define resistance standards in metrology.
- QHE has contributed significantly to research on advanced quantum materials such as **Graphene**.

Source: TH

CARBON-FREE FERROCENE BREAKTHROUGH

Context

- Researchers from IIT Madras and Indian Institute of Science have synthesized a new carbon-free molecule with a structure similar to ferrocene, solving a chemistry puzzle that had remained unresolved for more than 70 years.

What is Ferrocene?

- Ferrocene is a chemical compound discovered in the 1950s with a **unique sandwich structure**.
- It consists of an **iron atom placed between two carbon-ring molecules**.

- Ferrocene is an important compound in **organometallic chemistry** due to its **high stability and unusual bonding**.
- It is used in **medicines, batteries, catalysts, advanced materials, and electronics**.

What is the new Discovery?

- Researchers **synthesized a completely carbon-free molecule** similar to ferrocene.
- In the new molecule, **Osmium replaces iron at the centre** and **Boron-based rings replace carbon rings**.
- The discovery solved a scientific puzzle that had remained unresolved for more than seven decades.

Significance of the Discovery

- The breakthrough proves that stable ferrocene-like sandwich structures can exist without carbon.
- It expands scientific understanding of chemical bonding and molecular stability.
- The discovery opens new possibilities in advanced materials, nanotechnology, catalysis, and electronics.

Source: IE

ORESHNIK MISSILE

Context

- Russia used its powerful Oreshnik hypersonic ballistic missile in an overnight missile and drone attack on Kyiv, Ukraine.

About

- Oreshnik is an intermediate-range hypersonic weapon believed to be based on Russia's **RS-26 Rubezh system**. It can carry both **nuclear and conventional warheads**.
- Its strike range is estimated between **3,000 and 5,500 kilometres**, allowing it to target large parts of **Europe**.
- It is almost impossible for modern air defence systems to intercept the missile owing to its speed of **Mach 10**, or nearly 2.5–3 kilometres per second.
- What makes Oreshnik especially significant is its ability to carry **multiple warheads** capable of striking different targets simultaneously, a feature generally associated with Intercontinental Ballistic Missiles (ICBMs).

Do you know?

- Oreshnik's range falls within the category once banned under the Cold War-era **Intermediate-Range Nuclear Forces (INF) Treaty**, from which the United States withdrew in 2019, followed later by Russia.

Source: HT

DEATHS CAUSED BY LIGHTNING HAVE BEEN CONSISTENTLY RISING

Context

- **Lightning** has emerged as the **most lethal natural hazard in India**, with the number of fatalities **rising consistently over the years**.

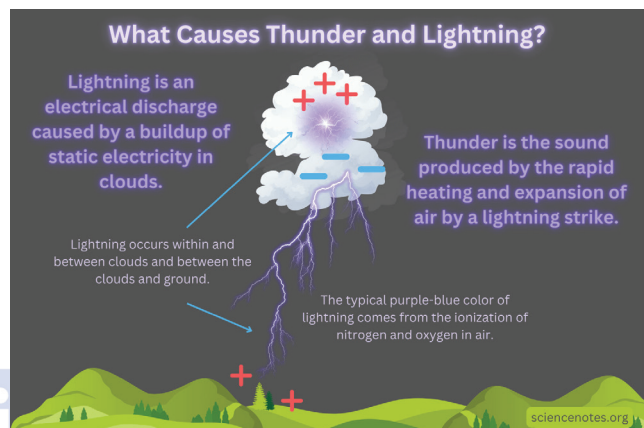
About

- A review of reports published by the **National Crime Records Bureau (NCRB)** showed that the country reported a total of **1,02,263 deaths due to lightning in the 50-year-period between 1975 and 2024**.
 - ◆ Over half of these deaths happened between **2005 and 2024**.
- **From 2016**, lightning accounted for at least **50%** of all deaths due to natural causes while cyclones and floods accounted for fewer.
- **State-wise trends show** that the majority of deaths caused by lightning happened in **non-peninsular States**.
 - ◆ **In 2024, five States** — Madhya Pradesh, Bihar, Uttar Pradesh, Odisha, and Chhattisgarh — accounted for nearly **60% of total deaths**.

What is Lightning?

- It is a **giant spark of electricity** in the atmosphere **between clouds, the air, or the ground**.
- The thunderclouds possess **millions of volts of electrical charge** and different polarity within the cloud itself.

- **In the early stages of development, air acts as an insulator** between the positive and negative charges in the cloud and between the cloud and the ground.
- When the opposite charge builds up enough, this **insulating capacity of air breaks down** and there is a rapid discharge of electricity known as lightning.
- Lightning **can occur between opposite charges** within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).



- The atmospheric conditions are quite conducive for formation of severe thunderstorms **in the pre-monsoon season**.

Forecasts and Awareness

- The India Meteorological Department currently provides thunderstorm forecasts, while the IITM provides real-time alerts on lightning through **its mobile application Damini**.
 - ◆ The app also shares **precautionary guidelines during thunderstorms in 23 regional languages**, making safety information more accessible.
- The increasing fatalities emphasise the need for creating more awareness among the public on precautions to be taken during lightning attacks.

Source: TH

