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## Current Affairs - 15 October 2025

### CREW ESCAPE SYSTEM



- It is an **emergency escape measure** designed to quickly pull the crew module along with the astronauts to a safe distance from the **launch vehicle in the event of a launch abort.**
- The CES is classified into two types based on the way it extracts the crew module:
  - **Puller type:** It is used in Gaganyaan, where the CES pulls the **crew module away from the launch vehicle;**
  - **Pusher type:** It is used in vehicles like SpaceX's Falcon 9, where the crew module is pushed away using compact, high-thrust liquid-fuel engines.
- The U.S.'s Saturn V, Russia's Soyuz, and China's Long March vehicles also use puller-type CES designs.
- **Working of Crew Escape System:**
  - Once the CES has moved the crew module a safe distance away from the failing vehicle, the module will be **released and decelerated by a multistage parachute system.**
  - It will **reduce the module's velocity in steps**, ensuring it splashes down safely in the sea without exceeding the crew's physiological limits upon impact.
  - Typically, the crew will remain inside the **module until splashdown.**
  - The **Integrated Vehicle Health Management system (IVHM)**, which is a network of sensors, electronics, and software, will aid in **taking a decision to activate the CES** when a contingency arises.
    - It will **monitor all vital parameters of vehicle systems** and crew health in real time.
    - Based on the synthesised information and the flight regime, it will ensure prompt anomaly detection, minimise false alarms, and activate the CES early enough to protect the crew.



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### MISSION DRISHTI



first quarter of next year.

Space-tech start-up GalaxEye will launch the world's first multi-sensor Earth observation (EO) satellite 'Mission Drishti' in the

- It is the world's first **multi-sensor Earth observation (EO) satellite**.
  - It is **India's largest privately built satellite** and also the highest-resolution satellite developed in the country.
  - It is planned by Bengaluru based **space startup – GalaxEye**
  - **Key Features of Mission Drishti**
    - It is carrying **synthetic aperture radar (SAR) and high-resolution optical payloads**, which will make available Earth observation data through any weather and at any time of the day.
    - It is envisioned to deploy **8-12 satellites by 2029**.
    - It is engineered as a **remote-sensing Earth observation system, optimised for spatial**, spectral and temporal resolutions to capture high-precision imagery.
    - The satellite weighs 160 kg and offers **5 metre resolution**.
    - It has successfully undergone stringent structural tests at **ISRO's U R Rao Satellite Centre**, demonstrating its resilience to the extreme environment of space.
    - **Range of applications:** It will enable governments, defence agencies and industries to perform advanced geospatial analysis across a wide range of applications, including;
      - Border surveillance, disaster management, defence, infrastructure monitoring, agriculture financial and insurance assessment etc.
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### SC'S ROADMAP FOR SAFER STREETS: PROTECTING PEDESTRIANS FIRST

- A Supreme Court bench of Justices JB Pardiwala and KV Viswanathan issued the directives while hearing a PIL on road safety highlighting rising pedestrian deaths.
- The Court observed that the lack of specific laws and the poor enforcement of existing rules to remove encroachments from footpaths compel pedestrians to walk on roads, increasing their vulnerability to accidents.

#### **Nationwide Footpath Audit in Top 50 Cities**

- It directed NHAI and other road-owning agencies to audit existing footpaths across India's top 50 cities with populations exceeding one million — including Delhi, Mumbai, Chennai, Lucknow, and Kolkata — where 4,604 pedestrians were killed in 2023.
- The audit must prioritise crowded areas such as markets, railway stations, bus stands, religious and educational institutions, and accident-prone stretches (15–20 spots per city).
- Authorities must identify deficiencies in width, height, and surface quality of footpaths and propose remedial measures to ensure safety and accessibility.
- **Adoption of Indian Roads Congress (IRC) Pedestrian Safety Standards**
  - The Court endorsed the IRC 103-2022 guidelines on pedestrian infrastructure, mandating:
    - Footpath width: 4 m (residential) to 6.5 m (high-street areas)
    - Footpath height: 150 mm
    - Anti-skid surfaces and tactile paving for the visually impaired
    - Wheelchair ramps and bollards to deter illegal parking
  - The NHAI, State Governments, and Municipal Authorities must also set up an **online grievance redressal system** for public complaints and suggestions regarding encroachments and maintenance of footpaths.



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- **Strict Enforcement of Helmet Rules**
  - The Court ordered stringent implementation of helmet laws for two-wheeler riders and passengers.
  - Authorities must use electronic surveillance systems (such as traffic cameras) to detect violations and submit reports on:
    - Number of offenders penalised
    - Amounts collected through challans
    - Licenses suspended
  - These details are to be regularly reported to the Supreme Court.
- **Curbing Wrong-Lane Driving**
  - To address lane discipline violations, the Court recommended:
    - Automated cameras and graduated fines
    - Coloured or textured lane markings (for bus/cycle lanes)
    - Dynamic lighting, rumble strips, and tyre killers at conflict points
    - Real-time dashboards displaying lane violation data to raise public awareness and improve compliance.
- **Regulation of Headlights and Banning Illegal Flashers**
  - The MoRTH, State Transport Departments, and traffic police must:
    - Prescribe limits for maximum luminance and beam angles in headlights.
    - Conduct vehicle fitness checks and penalise non-compliance.
    - Launch targeted drives against modified or excessively bright headlights.
  - A complete ban on unauthorised red-blue strobe lights and illegal hooters must be enforced through seizures, market crackdowns, and penalties.

### States Directed to Frame Rules for Pedestrian Safety and Road Design Standards

- Following the Supreme Court's order, all states and union territories (UTs) must formulate and notify rules within six months under two key provisions of the Motor Vehicles Act (MV Act):
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### WHAT IS PARKINSON'S DISEASE?



- It is a progressive neurodegenerative disorder that primarily affects movement.
- It causes nerve cells (neurons) in parts of the brain to weaken, become damaged, and die, leading to symptoms that include problems with movement, tremor, stiffness, and impaired balance.
- As symptoms progress, people with PD may have difficulty walking, talking, or completing other simple tasks.
- Although many brain areas are affected in Parkinson's disease, the most common symptoms result from the loss of neurons in an area near the base of the brain called the substantia nigra.
  - The neurons in this area produce dopamine.
  - Dopamine is the chemical messenger that transmits signals in the brain to produce smooth, purposeful movement.
  - Most people with PD have lost 60 to 80% or more of the dopamine-producing cells in the substantia nigra by the time symptoms appear.
  - Lack of dopamine causes the slowed movements and tremors symptoms of Parkinson's disease.
- Who does it affect?
  - The disease usually occurs in older people, but younger people can also be affected.
  - Men are affected more often than women.
  - The cause of PD is unknown but people with a family history of the disease have a higher risk.
  - Exposure to air pollution, pesticides, and solvents may increase risk.
  - People with PD often develop a "parkinsonian gait."



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- This includes a **tendency to lean forward, taking small, quick steps** as if hurrying (called **festination**), and reduced swinging in one or both arms.
  - They may have **trouble initiating movement** (called “start hesitation”) and stop suddenly as they walk, freezing in place.
  - **Diagnosis:** Currently, **no blood laboratory or radiological tests are available** to diagnose Parkinson’s disease.
  - **Treatment:** There’s **no cure** for this disease, but treatments can help significantly improve your symptoms.
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### INNOVATION ECONOMICS: THE BIG IDEA BEHIND THE 2025 NOBEL

The 2025 Nobel Prize in Economics has been awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their pioneering work in explaining innovation-driven economic growth.

#### **2025 Economics Nobel Laureates: Pioneers of Innovation-Led Growth**

- **Joel Mokyr** (Netherlands), Professor at Northwestern University, was recognised “**for identifying the prerequisites for sustained growth through technological progress.**”
- Philippe Aghion (France), Professor at Collège de France, INSEAD, and LSE, and Peter Howitt (Canada, 1946), Professor at Brown University, jointly received the other half of the prize “**for the theory of sustained growth through creative destruction.**”
- Their combined work has deepened global understanding of how innovation, knowledge, and competition fuel long-term economic prosperity.

#### **Joel Mokyr’s Theory of “Useful Knowledge”**

- Joel Mokyr’s research seeks to explain **why global economic growth has accelerated and sustained over the past 200 years**, breaking centuries of stagnation.
- His work, grounded in economic history, identifies how the systematic creation and application of knowledge triggered the Industrial Revolution and continues to sustain progress today.

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### The Concept of “Useful Knowledge”

- Mokyr proposed that sustained growth depends on a continuous flow of “**useful knowledge**”, which he divided into two interconnected parts:
  - **Propositional Knowledge:** Understanding why things work — derived from scientific theories and natural observations.
  - **Prescriptive Knowledge:** Knowing how things work — practical, reproducible instructions or “recipes” that enable implementation, such as technical drawings or process manuals.
- He argued that before the **Industrial Revolution**, innovators possessed ample **propositional knowledge** but lacked strong **prescriptive knowledge**, limiting their ability to apply scientific ideas to real-world production.
- **The Turning Point: Scientific Revolution and Reproducibility**
  - According to Mokyr, the transformation began in the 16th and 17th centuries, when scientists started to use precise measurements, controlled experiments, and reproducible results.
  - This new scientific discipline created a feedback loop between theoretical understanding and practical application — a dynamic exchange that laid the foundation for continuous technological improvement.
- **From Theory to Application: Examples of “Useful Knowledge”**
  - Mokyr illustrated his theory with examples such as:
    - The **steam engine’s evolution**, enabled by deeper insights into **atmospheric pressure and vacuums**.
    - The **advancement of steel production**, made possible by understanding how **oxygen reduces carbon content in molten iron**.
  - These innovations exemplify how tighter feedback between scientific discovery and practical engineering created **self-sustaining progress**, driving industrialisation and modern economic growth.



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### LADAKH UNREST - A TEST OF INDIA'S UNITY, FEDERALISM, AND STATESMANSHIP

- The ongoing **unrest in Ladakh** highlights the **growing strain within India's federal framework**, where governance without representation and delayed political dialogue have deepened local disillusionment.
- The situation serves as a reminder that **national integrity depends** not just on territorial control but **on the trust between citizens and the state** — a vital lesson in the context of India's internal security and nation-building.

#### Ladakh's Constitutional and Political Predicament:

- **From hope to disillusionment:**
  - In 2019, after the **revocation of Article 370**, Ladakh was carved out as a Union Territory (UT) separate from Jammu & Kashmir.
  - Initially, Ladakhis welcomed this, **expecting direct Central access and greater self-governance**.
  - Over six years, however, the **absence of legislative representation and autonomous safeguards** (like those under the Sixth Schedule) has led to widespread disillusionment.
- **Governance without representation:**
  - **Decisions** on land, hydropower, and mining are being **taken from Delhi**, often ignoring local voices.
  - This has created a sense of **political marginalisation** and **resource alienation** among the locals.
  - The region's **traditional ecological and cultural equilibrium** is under **threat from corporate exploitation**.



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### Protests and Crackdown - Wangchuk's Arrest and its Symbolism:

- The September 2025 violence, which left **four dead and dozens injured**, followed by the arrest of Sonam Wangchuk under the National Security Act (NSA), has intensified anger.
- His NGO's **Foreign Contribution Regulation Act (FCRA) licence was cancelled**, and he was accused of "anti-national" activities despite a credible record of environmental and social work.
- The administrative response — **curfews, internet bans, and arrests** — indicates absence of dialogue and administrative insensitivity.

### The Way Forward - Restoring Trust and Representation:

- **Immediate release of Wangchuk:** As a goodwill gesture to resume political dialogue.
- **Institutional dialogue:** Engage with the Leh Apex Body (LAB) and Kargil Democratic Alliance (KDA).
- **Statutory safeguards:** If Sixth Schedule inclusion is delayed, create **special legislative protections for land, jobs, and local governance**.
- **Narrative management:** Frame a positive national narrative respecting Ladakhi identity while **countering misinformation**.
- **Diplomatic sensitivity:** Brief international partners to prevent external interference in domestic unrest.

### Conclusion:

- Ladakh's unrest is **more than a regional crisis** — it's a mirror to the state of India's internal unity.
  - The region, guarding India's sensitive borders, is also where the "**idea of India**" is being tested.
  - **Restoring calm through dialogue, inclusion, and autonomy** will not weaken the Union; it will reaffirm the strength of Indian democracy and statesmanship.
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