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Coverage of

28th May - 3rd June, 2025

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28th MAY 2025

Quantum Technology Research Centre

- **Context:** Defence Research and Development Organisation (DRDO) inaugurated the Quantum Technology Research Centre (QTRC).

Key Highlights

- QRTC is equipped with state-of-the-art experimental set-ups designed to propel research and development in critical quantum domains.
- It aims to strengthen indigenous quantum capabilities for strategic and defence applications.
- **The key capabilities of this centre include:**
  - Characterisation of Vertical-Cavity Surface-Emitting Lasers and Distributed Feedback Lasers;
  - Test-beds for evaluating single-photon sources;
  - Set-up for characterisation of Micro Fabricated Alkali Vapor Cell;
  - Experimental platforms for developing and validating Quantum Key Distribution techniques to enable ultra-secure communication and safeguard national security in the post-quantum era, spearheaded by Scientific Analysis Group (SAG), DRDO.

About Quantum Technology

- Quantum technology is a rapidly advancing field that leverages the principles of quantum mechanics to develop new technologies with unprecedented capabilities.
- Quantum mechanics is the branch of physics that studies the behavior of particles at the quantum level, where classical physics no longer applies.
- Quantum technology harnesses the unique properties of quantum systems, such as superposition and entanglement, to perform tasks that were previously thought impossible or significantly enhance existing capabilities.

- **Four domains of quantum technologies:**
  - Quantum communication: It applies the properties of quantum physics to provide better security and improved long-distance communications.
  - Quantum simulation: It refers to the use of a quantum system to simulate the behavior of another quantum system.
  - Quantum computation: It is a field of computing that utilizes the principles of quantum mechanics to perform certain types of calculations more efficiently than classical computers.
  - Quantum sensing and metrology: It leverages the principles of quantum mechanics to achieve highly precise measurements.

About National Quantum Mission (NQM)

- The government approved the NQM in 2023 from 2023-24 to 2030-31.
- It aims to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).
- The Mission objectives include developing intermediate-scale quantum computers with 50-1000 physical qubits in 8 years in various platforms like superconducting and photonic technology.

RoDTEP Scheme

- **Context:** The Government of India has announced the restoration of benefits under the RoDTEP scheme for exports made by Advance Authorization (AA) holders, Export-Oriented Units (EOUs), and units operating in Special Economic Zones (SEZs).

About RoDTEP Scheme

- Remission of Duties and Taxes on Exported Products (RoDTEP) scheme was launched in January 2021.
- It reimburses exporters for embedded Central, State, and local taxes that were previously non-refundable.
- It follows the principle that taxes on exported goods should be exempted or refunded.

- It complies with World Trade Organization (WTO) rules and uses a fully digital platform for transparent and efficient implementation.
- The rebate is issued as a transferable electronic scrip by the Central Board of Indirect Taxes & Customs (CBIC) through a fully digital system.

India's First Gene-Edited Sheep

- **Context:** Researchers at a Kashmir-based Agricultural university have produced India's first gene-edited sheep, marking a historic milestone in the field of animal biotechnology.

Key Highlights

- The gene editing was performed using CRISPR-Cas9 technology and adhered to international biosafety protocols.
- The edited sheep contains no foreign DNA, distinguishing it from transgenic organisms and paving the way for regulatory approval under India's evolving biotech policy framework,
- The gene editing targeted the myostatin gene to increase muscle mass by about 30%, a trait absents in Indian sheep but present in some European breeds.
- The team aims to apply this technology for disease resistance and other improvements.

About Gene Editing

- Genome editing involves technologies that enable precise changes to an organism's DNA by adding, removing, or altering genetic material.
- The first genome editing technologies were developed in the late 1900s.
- A new genome editing tool called CRISPR, invented in 2009, has made it easier than ever to edit DNA.
- CRISPR-Cas9 is a popular and efficient method adapted from a natural bacterial immune system, where bacteria capture viral DNA snippets to recognize and cut viral DNA during future attacks, disabling the virus.

- This system has revolutionized genome editing due to its speed, accuracy, and cost-effectiveness.

29th MAY 2025

Breakthrough Prize 2025

- **Context:** The 2025 Breakthrough Prize in Fundamental Physics was jointly awarded to four experimental collaborations operating at CERN's Large Hadron Collider (LHC) —ATLAS, CMS, ALICE and LHCb. The four collaborations studied the Higgs boson, considered as elementary as electrons, photons or neutrinos.

About Breakthrough Prize

- The Breakthrough Prizes were founded by Sergey Brin, Priscilla Chan and Mark Zuckerberg, Yuri and Julia Milner, and Anne Wojcicki.
- The Prizes often referred to as the "Oscars of Science," honour pioneering achievements in Life Sciences, Fundamental Physics, and Mathematics.
- **Aim:** Celebrate scientists as societal heroes, inspire the youth towards science, and promote "science for the benefit of all."

About Large Hadron Collider (LHC)

- The LHC is the world's largest and most powerful particle accelerator, enabling high-energy proton and heavy-ion collisions to explore the structure of matter at the smallest scales. It's a 27-kilometer tunnel-like ring built at CERN.
- The European Organization for Nuclear Research, known as CERN, was established in 1954 in Geneva (France–Switzerland border).

Index of Industrial Production (IIP)

- **Context:** India's industrial production growth dropped to an eight-month low of 2.7% in April, mainly due to a decline in mining output, a high base effect, and slower electricity production.

About Index of Industrial Production (IIP)

- The Central Statistical Organisation (CSO) has been compiling the Index of Industrial Production (IIP) since 1950.
- The IIP measures industrial output using Laspeyre's formula, primarily based on physical production data, though some items like machinery are reported in value terms and adjusted using the Wholesale Price Index (WPI)
- The scope of the IIP as recommended by the United Nations Statistical Office (UNSO) includes mining, manufacturing, construction, electricity, gas and water supply. But due to constraints of data availability, the IIP compiled in India has excluded construction, gas and water supply sectors.
- The Eight Core Industries — Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizers, Steel, Cement, and Electricity — collectively account for 40.27% of the weight of items included in the Index of Industrial Production (IIP).

Seven Summits

- **Context:** Hyderabad teenager Vishwanath Karthikey Padakanti has become the youngest Indian and the second youngest person in the world to complete the legendary 7 Summits challenge.

Key Facts

- The Seven Summits are defined as the highest peaks on each of the seven continents; it ranks among the most prestigious in global mountaineering.
- The seven mountain peaks are Mt. Everest (Asia), Mt. Kilimanjaro (Africa), Mt. Elbrus (Europe), Mt. Aconcagua (South America), Mount Kosciuszko (Australia), Mt.Vinson (Antarctica) and Mt. Denali (North America).

30th MAY 2025

Swachh Survekshan Grameen (SSG), 2025

- **Context:** Union Minister of Jal Shakti Shri C R Patil launched Swachh Survekshan Grameen (SSG) 2025.

About Swachh Survekshan Grameen (SSG) 2025

- It is a nationwide rural sanitation survey by the Department of Drinking Water and Sanitation (DDWS), Ministry of Jal Shakti.
- It is India's largest sanitation survey and the first Swachh Survekshan was conducted in 2016, in which 73 cities were evaluated and Mysuru was ranked first in the country.
- It will conduct a comprehensive assessment of rural sanitation, with a strong focus on sustaining the achievements of the Open Defecation Free (ODF) Plus Model under the Swachh Bharat Mission-Gramin (SBM-G).
- The survey will involve sampling village evaluations and detailed surveys of households and public spaces to measure cleanliness across various parameters.
- Key areas of assessment include the operational status of Plastic Waste Management Units (PWMUs), Faecal Sludge Management (FSM) plants, and GOBARdhan plants, along with citizen feedback and the evaluation of Swachhata Green Leaf Rating (SGLR) sites.

About Swachh Bharat Mission (Grameen) [SBM(G)]

- It was launched on 2nd October 2014 to eliminate open defecation in rural India by providing toilet access to all rural households.
- By 2nd October 2019, the mission had achieved 100% sanitation coverage, constructed over 10 crore Individual Household Latrines (IHHLs) and declaring all villages Open Defecation Free (ODF).
- Phase-II of SBM(G) was initiated on 1st April 2020, focusing on sustaining ODF status and implementing Solid and Liquid Waste Management (SLWM) to transition villages to ODF Plus (Model) status by 2025-26.
- The ODF Plus progress is tracked through three categories: Aspiring, Rising, and Model.

Viksit Krishi Sankalp Abhiyan

- **Context:** The Union Agriculture Minister launched the Viksit Krishi Sankalp Abhiyan (VKSA-2025) at Central Institute of Freshwater Aquaculture, Bhubaneswar, aiming to empower more than 1.5 crore farmers across the country.

About Viksit Krishi Sankalp Abhiyan

- It is a nationwide agricultural outreach campaign to promote sustainable agricultural development by integrating scientific knowledge, modern technology, and farmer feedback.
- The campaign aims to bridge the gap between "lab and land", empowering farmers through direct interaction with over 16,000 agricultural scientists, Krishi Vigyan Kendras (KVKs), and government officials.
- **Key Features:**
  - Over 2,000 teams will visit 2,170 locations across 700+ districts, covering nearly 1.5 crore farmers over a 15-day period.
  - Scientists will provide customized advice on seed varieties, fertilizers, crop choice, and soil health. In return, they will collect data on farmer challenges for guiding future research and policy.
  - Encouragement for adoption of solar farming, beekeeping (Sweet Revolution), nutri-cereals (Shri Anna), Gobardhan Yojana, and agricultural waste-to-energy initiatives.

Exercise NOMADIC ELEPHANT

- **Context:** The Indian Army participated in 17th edition of the India-Mongolia Joint Military Exercise Nomadic Elephant at Ulaanbaatar, Mongolia.

Key Facts

- Exercise Nomadic Elephant is an annual bilateral military exercise conducted alternately in India and Mongolia since 2006. The last edition of the same exercise was held in Meghalaya, India in 2024.

- The aim of the exercise is to enhance interoperability between the two forces while employing a joint task force in semi conventional operations in semi urban/mountainous terrain under United Nations mandate.

31st MAY 2025

ULLAS Scheme: Goa Fully Literate State

- **Context:** Goa has officially achieved the status of a fully literate state under the ULLAS – Nav Bharat Saaksharta Karyakram (New India Literacy Programme).

About ULLAS Scheme

- ULLAS is a centrally sponsored scheme implemented from 2022-2027.
- The scheme, aligned with NEP 2020, targets adults (aged 15 years and above) who can't go to school.
- It has five components: Foundational Literacy and Numeracy, Critical Life Skills, Basic Education, Vocational Skills and Continuing Education.
- The vision of the ULLAS Scheme is to make India Jan Jan Saakshar and is based on the spirit of Kartavya Bodh and is being implemented on volunteerism.
- Goa has become the second state in India after Mizoram, to surpass the 95% literacy threshold, as defined by national standards.

National Florence Nightingale Award 2025

- **Context:** The President of India presented the National Florence Nightingale Awards 2025 to nurses at a ceremony held at Rashtrapati Bhavan.

Key Facts

- Named after Florence Nightingale, the founder of modern nursing, it was instituted in 1973 by the Ministry of Health and Family Welfare, Government of India.

- It recognizes meritorious services of nurses and nursing professionals who contribute significantly to society.

- A total of 15 awards are given in the category of Registered Auxiliary Nurses & Midwife, Registered Nurses and Midwife and Registered Lady Visitor.

- Eligible recipients include nursing personnel working in Central/State Governments, Union Territories, and Voluntary Organizations, whether in hospitals, community settings, educational institutions, or administration.

- Each award consists of a Certificate of Merit, Cash Award of Rs.1,00,000/- and a medal.

1st JUNE 2025

Operation Spider's Web

- **Context:** Under its 'Operation Spider's Web', Ukraine launched first-person view (FPV) drone attacks on five airbases across Russia.

About First-person View (FPV) Drones

- FPV or first-person view drones are smaller in size and have cameras built in on the front, which sends live video to the operator.

- This enables precise flying and manoeuvrability by the operator from a remote location, almost like an aircraft.

- These drones used Russian mobile-telephone networks to relay their footage back to Ukraine.

Key Facts

- In the early years of the 21st century, most drone strikes were carried out by the US military in countries such as Afghanistan, Pakistan, Syria, Somalia, Yemen, and Libya, using air-to-surface missiles against ground targets.

- Drone warfare has since been adopted by countries like Russia, Ukraine, Turkey, Azerbaijan, and Iran, as well as by non-state actors such as the Houthis.

- India, too, has employed drones in recent operations, including the Operation Sindoor and retaliatory strikes against Pakistan.

About Drone Warfare

- Drone warfare refers to a mode of warfare employing unmanned or remotely controlled devices.

- Such drones have the capability of staying in the air, on land, at sea level, or underwater.

- The drones may be operated by manual control, and others may utilise auto-pilot systems on their missions.

- Remotely Piloted Aircraft System refers to a set of components that include the drone, its ground-based control system.

- The US, UK, Israel, China, India, Russia, and Turkey, have produced combat drones, or UCAVs (Unmanned Combat Aerial Vehicles).

- These are employed in targeted attacks, frequently in locations difficult to access by conventional forces.

- The second stage of drone application is artificial intelligence. AI drones can navigate on their own, detect targets, and even operate in "swarm" groups.

NAKSHA Initiative

- **Context:** The Ministry of Rural Development launched the second phase of the NAKSHA (NAtional geospatial Knowledge-based land Survey of urban HAbitations) programme.

Key Facts about NAKSHA

- NAKSHA is implemented under the Digital India Land Records Modernization Programme (DILRMP).

- **Phase I: Pilot Implementation and Survey Operations**

  - It was announced in the 2024-25 Budget to standardise record-keeping, simplify processes and bring transparency in land transactions.

  - Initiated across 152 Urban Local Bodies (ULBs) in 26 states and 3 Union Territories, targeting cities with an area less than 35 sq km and a population under 2 lakhs. Cover the entire urban area in the country within a period of 5 years.

  - Employed aerial surveys, drone technology, and Web-GIS platforms for high-precision mapping.

- **Phase II: Capacity Building and Skill Enhancement**

  ▪ Under this training programme, 304 ULB-level and district officers have been nominated from 157 Urban Local Bodies (ULBs).

  ▪ These officers will undergo hands-on training in leveraging modern geospatial technologies for effective urban property surveys.

  ▪ The training aims to equip ULB officers and field staff with the technical and practical skills required to oversee high-accuracy land surveys under the NAKSHA programme.

2nd JUNE 2025

International Organisation for Mediation (IOMed)

- **Context:** China asks Nepal to join its new International mediation organisation.

About International Organisation for Mediation

- It is a China-led global initiative, formally launched on May 30, 2025, in Hong Kong.

- It is positioned as an alternative dispute resolution forum aimed at resolving international conflicts through mediation, rather than arbitration or litigation.

- At its inception, the IOMed saw participation from 33 founding member countries, many of them developing nations from Africa, Latin America, Southeast Asia, and Central Asia regions where China's Belt and Road Initiative (BRI) has already been established.

- The convention promotes mediation based on key international norms: sovereign equality, non-interference in internal affairs, and peaceful resolution of disputes.

Andaman & Nicobar Command

- **Context:** Lt. Gen Dinesh Singh Rana assumed charge as the 18th Commander-in-Chief of the Andaman & Nicobar Command (CINCAN).

Key Facts

- The Andaman and Nicobar Command (ANC) is the first integrated theatre command in India with headquarters at Port Blair and set up in 2001.

- It integrates the Army, Navy, Air Force and Coast Guard to safeguard national interests in the strategically vital Indian Ocean Region.

- It is headed by a Commander-in-Chief Andaman and Nicobar Command (CINCAN), a rotational post among three services (Army, Navy, Air Force).

- It is typically held by a Lieutenant General, Vice Admiral, or Air Marshal.

3rd JUNE 2025

IPL 2025

- **Context:** Royal Challengers Bengaluru (RCB) ended an 18-year wait for the Indian Premier League (IPL) title by beating the Punjab Kings by six runs at the Narendra Modi Stadium in Ahmedabad.

Key Highlights

- RCB scored 190/9 batting first and the Punjab Kings were limited to a score of 184/7.

List of IPL 2025 Award Winners	
IPL 2025 Champions	Royal Challengers Bengaluru
IPL 2025 Runners-Up	Punjab Kings
Player of the Match	Krunal Pandya (RCB)
Emerging Player of the Season	Sai Sudharsan (GT)
Super Striker of the Season	Vaibhav Suryavanshi (RR)
Purple cap	Prasidh Krishna (25 wickets, GT)
Orange cap	Sai Sudharsan (759 runs, GT)
Fair Play Award	Chennai Super Kings
Most Valuable Player of the Season	Suryakumar Yadav (MI)

DHRUVA Initiative

- **Context:** The Department of Posts has released a comprehensive policy document titled DHRUVA (Digital Hub for Reference and Unique Virtual Address), aimed at establishing a national Digital Address Digital Public Infrastructure (DPI).

About DHRUVA

- DHRUVA is a Digital Public Infrastructure (DPI) project being developed by the Department of Posts (DoP) in India. Its primary goal is to provide a unique digital address for every home in India.

- It has objective to establish address information management as a foundational public infrastructure and to enable effective governance, inclusive service delivery, and enhanced user experience through accurate address sharing.

- **Structural Components of DHRUVA**

  - **Digital Postal Index Number (DIGIPIN):** A 10-digit alphanumeric code assigned to a 4×4 metre grid over India's landmass using latitude-longitude coordinates. Each DIGIPIN uniquely identifies a physical location, thus eliminating ambiguity and duplication in address data.

  - **Digital Address Layer:** A user-centric and consent-based layer built over the DIGIPIN, allowing users to create custom labels for their address (e.g., "Home", "Office", "Warehouse"). It integrates descriptive elements (landmarks, floor numbers, house names) while retaining precise geospatial tagging.

BharatGen

- **Context:** The Union Ministry for Science & Technology launched 'Bharat Gen'.

About BharatGen

- It is India's first government-funded multimodal Large Language Model (LLM) designed for 22 Indian languages.

- It integrates text, speech, and images to provide ethical, inclusive, and region-specific AI solutions.

- It is developed under the National Mission on Interdisciplinary Cyber-Physical Systems and led by IIT Bombay's TIH Foundation.

- It is supported by the Department of Science and Technology (DST) and brings together a robust consortium of leading academic institutions, experts, and innovators.

- It aims to revolutionize AI development across India's linguistic and cultural spectrum.

- It has potential to revolutionize healthcare, education, agriculture, and governance by enabling AI-powered solutions like telemedicine that allow doctors to communicate in patients' native languages, enhancing healthcare access and trust in remote areas.

About Multimodal Large Language Model (MLLM)

- MLLMs are deep learning models capable of interpreting and generating information from multiple data sources.

- A MLLM merges the reasoning capabilities of Large Language Models (LLMs), for instance GPT or LLaMA-3, with the ability to receive, reason, and output with multimodal information.

- MLLMs are crucial in advancing artificial intelligence due to their ability to process and integrate multiple data types such as text, images, audio, and video.