Factly Weekly

Compilation

2025

For UPSC CSE Prelims Exam

3rd Week

December 2025

INDEX

ICTP Prize 2025

News: The ICTP announced the 2025 ICTP Prize to Indian Assistant Professor Titas Chanda of IIT-Madras and Sthitadhi Roy of ICTS Bengaluru.

About ICTP Prize 2025

Source – ICTP

- The ICTP Prize 2025 has been awarded for outstanding theoretical research in quantum many-body systems.
- Winners: The ICTP Prize 2025 was awarded to
    - Titas Chanda, Assistant Professor at IIT-Madras.
    - Sthitadhi Roy, Assistant Professor at the International Centre for Theoretical Sciences, Bengaluru, under the Tata Institute of Fundamental Research.
- Awarding body: The prize is awarded by the International Centre for Theoretical Physics (ICTP), which was founded in 1964 by Nobel laureate Abdus Salam.
- Prize is dedicated to: The 2025 ICTP Prize was dedicated to the memory of Italian physicist Giancarlo Ghirardi.
- Awarded for: The ICTP Prize 2025 recognizes exceptional and original contributions to the theory of quantum many-body systems at the interface of condensed matter physics and quantum information science.
    - Their work is relevant to real problems in keeping quantum devices, such as quantum computers and sensors, under control and understanding their behaviour when they are not in equilibrium.

About ICTP Prize

- Established: The ICTP Prize was created in 1982 by the ICTP Scientific Council.
- It is awarded annually to young scientists from developing countries for outstanding and original contributions in physics.
- Prize components: The prize includes a sculpture, a certificate, and a cash award.
- Each year, the prize is given in honour of a scientist who made outstanding contributions to the relevant field.

Note: Quantum many-body systems are complex assemblies of interacting particles where quantum mechanical effects play a crucial role, making them essential for understanding materials and fundamental physics phenomena.

SDAT Squash World Cup 2025

News: The Indian Squash Team won its first-ever World Cup title at the SDAT Squash World Cup 2025.

About SDAT Squash World Cup 2025

Source: olympics.com

- Organized by: World Squash Federation (WSF) in Chennai, Tamil Nadu.
- Winner: India
- Runner up: Hong Kong, China
- India becomes the first Asian country to win the SDAT Squash World Cup.
- India is also only the fourth nation after Australia, England and Egypt to win the Squash World Cup title in its five editions.
- Notable players
    - India won the trophy under the captainship of Abhay Singh – India No. 1 and Arjuna Awardee.
- Former winners: England, Australia and Egypt

Viksit Bharat Gramin Rozgar Bill, 2025

News: The Union government is set to introduce the Viksit Bharat Guarantee For Rozgar And Ajeevika Mission (Gramin) Bill, 2025 in the Lok Sabha. The Bill seeks to replace the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA).

Viksit Bharat Guarantee For Rozgar And Ajeevika Mission (Gramin) Bill, 2025

Figure 1.Source – HT

- Nodal Ministry: Ministry of Rural Development
- Aim: The Bill aims to establish a future-ready, convergence driven, saturation-oriented rural development architecture.
- It will support the accelerated pace of rural development in accordance with the vision of Viksit Bharat @2047, thereby empowering the rural households through increased employment opportunities.

Key Provisions

- Shift From Demand-Driven to Supply-Driven Model: The Bill marks a fundamental shift from a demand-driven employment guarantee to a supply-driven rural jobs scheme.
  - Employment generation under the new framework will be limited by pre-fixed budgetary allocations rather than actual demand from rural households.
  - Unlike MGNREGA, workers will no longer have an enforceable right to demand employment.
- Increase in Guaranteed Workdays: The Bill increases the number of guaranteed workdays per rural household from 100 days to 125 days per financial year. However, this increase is subject to budgetary ceilings determined by the Union government.
- Increased Financial Burden on States: The financial contribution required from States will rise significantly under the new Bill.
  - For most States and Union Territories with legislatures, the cost-sharing ratio will shift to 60:40 between the Centre and the States.
  - For north-eastern States, Himalayan States, and certain Union Territories, the cost-sharing ratio will remain at 90:10.
  - Under MGNREGA, the effective cost-sharing was approximately 90:10 for all States.
- Centralised Budget Allocation: The Bill empowers the Union government to determine State-wise normative allocations for each financial year.
  - These allocations will be based on "objective parameters" that will be prescribed by the Central government.
  - States will no longer be able to seek additional funds based on increased demand for work.
- Restricted Geographic Coverage: The Union government will have the authority to notify specific rural areas within States where the scheme will be implemented.
  - This represents a departure from the universal coverage model of MGNREGA, which applied to all rural areas.

- Control Over Timing of Work: The Bill allows the programme to be paused during peak agricultural seasons.
    - This provision is intended to ensure the availability of labour for agricultural activities but may reduce employment security for rural workers.
- Codification of Technological Measures: Technological interventions previously introduced administratively under MGNREGA are formally incorporated into the new law.
    - These include mobile app-based attendance systems, Aadhaar-based wage payments, and geotagging of worksites.

SHANTI Bill, 2025

News: The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill, 2025, was introduced in the Lok Sabha. The Bill seeks to reform India's nuclear energy framework to support the government's goal of achieving 100 gigawatt nuclear power capacity by 2047.

SHANTI Bill, 2025

Source – BS

- Full name: Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India Bill (SHANTI Bill), 2025
- Nodal Ministry: Department of Atomic Energy

Key Provisions

- Repeal of Existing Nuclear Laws: The Bill proposes the repeal of the Atomic Energy Act, 1962, which currently governs nuclear activities in India.
    - It also seeks to repeal the Civil Liability for Nuclear Damage Act, 2010, which regulates liability in case of nuclear accidents.
- New Legal Framework for Nuclear Energy: The Bill establishes a unified framework to govern the production, use, and regulation of nuclear energy and ionizing radiation in India.
- Entry of Private Sector in Nuclear Power: For the first time, private companies, joint ventures, and other eligible entities will be allowed to apply for licences to set up and operate nuclear power facilities.
    - Private entities will also be permitted to transport nuclear fuel, subject to regulatory approval.
    - This marks a major departure from the existing public sector monopoly in civil nuclear power.
- Activities Reserved for the Government: Sensitive activities such as uranium enrichment, spent nuclear fuel management, and heavy water production will remain under the exclusive control of the Union government.

- Licensing and Regulatory Oversight: All nuclear and radiation-related activities will require a licence from the Central government.
    - In addition, operators must obtain safety authorisation from the Atomic Energy Regulatory Board (AERB). The Bill grants statutory status to the AERB and clearly defines its regulatory powers.
- Strengthening of Nuclear Safety Regulation: The Atomic Energy Regulatory Board will be empowered to regulate radiation exposure, waste management, safety inspections, and emergency preparedness.
    - The Bill authorizes the Centre to take control of radioactive substances or radiation-generating equipment in situations involving radiation hazards.
    - The cost of safe disposal may be recovered from the entity holding the safety authorization.
- Liability in Case of Nuclear Accidents: The operator of a nuclear installation will be primarily liable for any nuclear damage caused by an accident.
    - Exceptions apply in cases of grave natural disasters of an exceptional character, armed conflict, war, civil unrest, or terrorism.
    - If compensation exceeds the operator's liability limit, the Central government will assume responsibility for additional compensation.
- Insurance and Financial Security Requirements: Nuclear operators will be required to maintain insurance or other financial security to cover potential nuclear damage.
    - The Bill provides for the establishment of a Nuclear Damage Claims Commission to adjudicate compensation claims. This replaces the existing liability framework under the Civil Liability for Nuclear Damage Act, 2010.
- Treatment of Research and Innovation Activities: Research and innovation activities in the nuclear sector will largely be exempt from licensing requirements.
    - Exceptions will apply in cases involving national security concerns or activities reserved exclusively for the government.

Key Facts About Jordan

News: Prime Minister Narendra Modi arrived in Amman on a landmark Jordan visit after 37 years, coinciding with 75 years of diplomatic relations.

Key Facts About Jordan

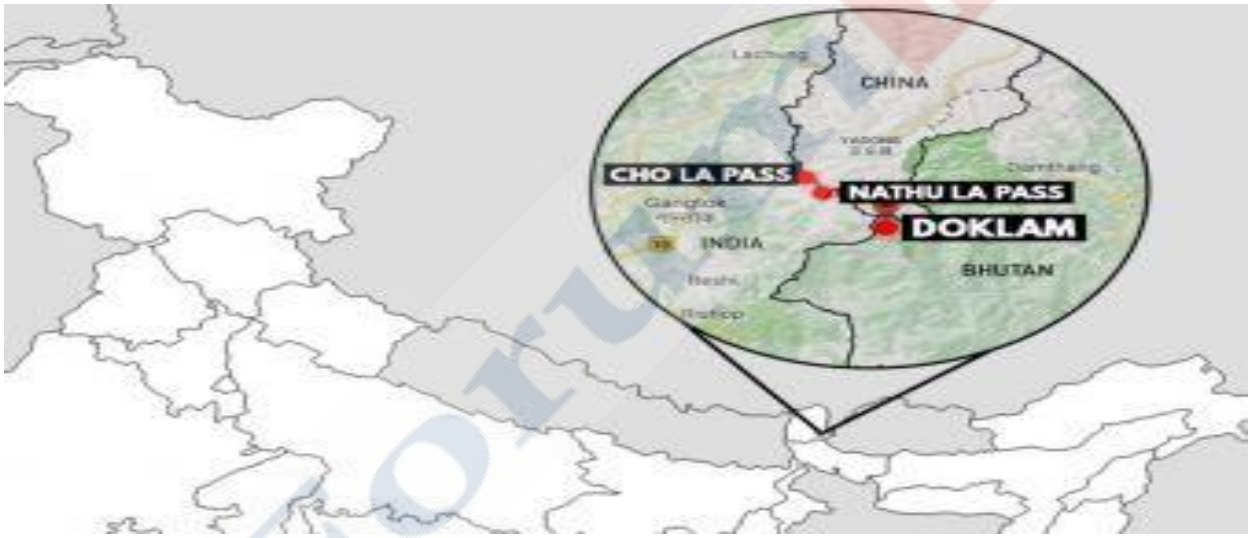
Figure 2. Source – Britannica

- Location: It is a country in Western Asia, situated at the crossroads of the continents of Asia, Africa, and Europe.
- Naming: Jordan is named after the Jordan River.
- Capital City: Amman
- Bordered by: Jordan is bordered by Syria to the north, Iraq to the east, Saudi Arabia to the south and southeast, and Israel and Palestine to the west.
- Water Bodies: Jordan is associated with the Dead Sea, the Gulf of Aqaba, and the Sea of Galilee, with the Dead Sea along its western border.

- Main ports: Jordan is largely landlocked, with a 26-km coastline on the Gulf of Aqaba in Red Sea and Al-Aqabah is its only port.
- The Gulf of Aqaba: Jordan has a 26-kilometre-long coastline along the Gulf of Aqaba in the Red Sea.
- Climate: Jordan's climate varies greatly, with Mediterranean conditions in the highlands and arid desert conditions in the eastern regions.
- Terrain: It has an arid desert plateau in the east and a north–south geological rift along the west.
- Major River: The Jordan River flows through the country and drains into the Dead Sea and the Yarmuk River, an eastern tributary of the Jordan, forms part of Jordan's northern boundary with Syria.
- Highest Point: Jabal Umm ad Dami (1,854 m).
- Lowest Point: The Dead Sea at – 420 m from sea level, making it the lowest land point on Earth.
- Forest cover: Forests cover is less than 2% of Jordan's area.

Cho La and Dok La Passes

News: Cho-La and Dok-La were opened for tourists under the Bharat Rannbhoomi Darshan initiative on December 15, 2025.



Source – The Print

About Cho La Pass

- Location: Cho-La Pass is a high-altitude mountain pass in east Sikkim, located in the eastern Himalayas along the India–China border.
- Altitude: It is situated at an altitude of around 17,780 feet above mean sea level.
- Historical Significance: It was a major site of military skirmishes between the Indian Army and the Chinese People's Liberation Army (PLA) in 1967, which resulted in a strategic victory for India.

About Dok La (Doklam) Pass

- Location: Dok-La, also known as Doklam, is a high-altitude plateau located at the tri-junction of India, Bhutan, and China.
- It lies in the Chumbi Valley.
- Altitude: It is situated at an altitude of around 15,600 feet above sea level.
- The pass is about 68 km east of Gangtok.
- Historical Significance: It gained international attention in 2017 during a 73-day military standoff between Indian and Chinese troops.

- Strategic importance: The area holds strategic importance because of its proximity to the Siliguri Corridor.

Central Information Commission(CIC)

News: The Central Information Commission has reached its full sanctioned strength of 11 members for the first time in seven years following the appointment of IAS officer Raj Kumar Goyal as the Chief Information Commissioner.

About Central Information Commission (CIC)

Figure 3.Source: CEC

- The Central Information Commission was constituted on 12 October 2005.
- It functions as a statutory body under the Right to Information Act, 2005.
- Its jurisdiction extends to all Central Public Authorities.
- Headquarters: New Delhi
- The Commission exercises powers under Sections 18, 19, 20, and 25 of the Act.

- Functions: It includes adjudicating second appeals, directing record management and suo motu disclosures, inquiring into RTI-related complaints, imposing penalties, and monitoring implementation through the preparation of an Annual Report.
- The decisions of the Commission are final and binding.
- Composition of Central Information Commission (CIC): It consists of a Chief Information Commissioner and not more than ten Information Commissioners.
    - They are appointed by the President on the recommendation of a selection Committee consisting of: Prime Minister of India, a Union Cabinet Minister nominated by the Prime Minister, and the Leader of the Opposition in the Lok Sabha.
- Chief Information Commissioner: The Chief Information Commissioner is the head of the Central Information Commission of India.
    - Role and Functions of CIC: CIC hears second and subsequent appeals filed by citizens when information is denied by public authorities.
    - The CIC is responsible for adjudicating complaints related to violations of the Right to Information Act.
    - Tenure and Service Conditions: The Chief Information Commissioner holds office until attaining the age of 65 years or for the term prescribed under law, whichever is earlier.

United Nations Alliance of Civilizations (UNAOC)

News: India reaffirmed its commitment to the ideals of Vasudhaiva Kutumbakam and religious harmony at the 11th United Nations Alliance of Civilizations, UNAOC, forum in Riyadh.

About United Nations Alliance of Civilizations (UNAOC)

Source – UN

- The United Nations Alliance of Civilizations (UNAOC) is an initiative to improve understanding and cooperative relations among nations and peoples across cultures and religions and to help counter the forces that fuel polarisation and extremism.
- It was established in 2005, as the political initiative of Mr. Kofi Annan, former UN Secretary-General and co-sponsored by the Governments of Spain and Türkiye.
- It has connected governments, lawmakers, local authorities, civil society organizations, the media, and individuals devoted to promoting understanding across diverse communities.
- Secretariat: New York, USA
- Motto: Many cultures, one humanity.
- The Global Forum is UNAOC's flagship event, convening key leaders and stakeholders from across sectors.
- Fund: The Secretary-General has established a voluntary Trust Fund to support the work of the United Nations Alliance of Civilizations. The Fund is administered by the UN Secretariat in accordance with UN financial rules.
- Pillars of UNAOC: UNAOC works mainly in five priority areas to which it brings a multidisciplinary and multi-perspective approach: Youth, Education, Media, Migration, and Women as Peace Mediators.
- Functions: UNAOC's programme activities aim to promote global dialogue on diversity in an interconnected world while preventing intercultural tensions and crises.
    - The programmes seek to combat stereotypes, discrimination, and xenophobia, and to support innovative grassroots initiatives that foster intercultural dialogue, mutual respect, and cooperation across divides.

DHRUV64

News: DHRUV64 was launched as India's first homegrown 1.0 GHz, 64-bit dual-core microprocessor, marking a key milestone in indigenous semiconductor development.

About DHRUV64

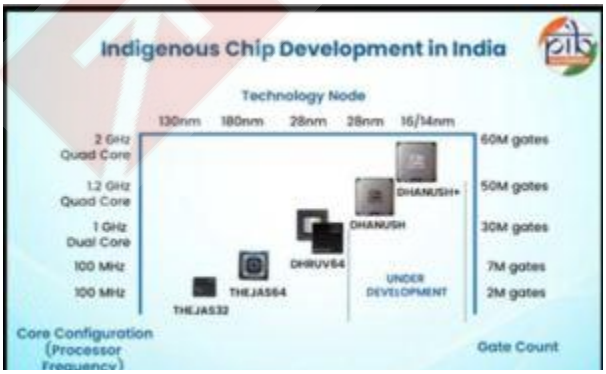


Figure 4. Source – PIB

- DHRUV64 is India's first homegrown 1.0 GHz, 64-bit dual-core microprocessor, strengthens the indigenous processor pipeline.
- Developer : It has been created by the Centre for Development of Advanced Computing (C-DAC) under the Microprocessor Development Programme (MDP) of Ministry of Electronics and Information Technology (MeitY).
- Supported by: It is also powered and supported by programmes including Digital India RISC-V (DIR-V),

Chips to Startup (C2S), India Semiconductor Mission (ISM), Design Linked Incentive (DLI), and Indian Nanoelectronics Users Programme- idea to innovation (INUP-i2i).

- Architecture:: It is based on the open-source RISC-V (Reduced Instruction Set Computer) architecture, which allows design flexibility without paying foreign license fees.
- Strategic Goal: It aims to achieve Atmanirbhar Bharat in the semiconductor sector by reducing dependence on imported chips, as India currently consumes about 20% of global microprocessors.
- Applications: It is designed for use in 5G infrastructure, automotive systems, the Internet of Things (IoT), industrial automation, and strategic defence equipment.
- It is builds on earlier indigenous efforts such as SHAKTI (IIT Madras), AJIT (IIT Bombay), VIKRAM (ISRO–SCL) and THEJAS64 (C-DAC).
- Significance: It is the third major chip fabricated under the Digital India RISC-V (DIR-V) programme,
    - The first chip, *THEJAS32*, fabricated at the Silterra facility in Malaysia.
    - The second chip, *THEJAS64*, manufactured domestically at Semiconductor Lab (SCL) Mohali.
- Next projects: After DHRUV64 success, the next-generation Dhanush and Dhanush+ processors are now under development.

Param Vir Chakra Award

News: President inaugurated Param Vir Dirgha at Rashtrapati Bhavan on Vijay Diwas, displaying portraits of all 21 Param Vir Chakra awardees.

About Param Vir Chakra Award

Figure 5. Source – Aaj Tak

- The Param Vir Chakra is India's highest military decoration for the most exceptional acts of valour, courage, and self-sacrifice during war.
- Introduced on: It was introduced on January 26, 1950, with retrospective effect from August 15, 1947.
- Conferred by: It is conferred by the President of India.
- Naming: The term Param Vir Chakra literally means the "Wheel of the Ultimate Brave."
- Eligibility: It is awarded to officers, men, and women of all ranks of the Army, Navy, Air Force, Reserve Forces, Territorial Army and other lawfully constituted armed forces.
- It can be and often has been, awarded posthumously.
- Design
    - The Param Vir Chakra medal was designed by Mrs. Savitri Khanolkar.
    - The medal is cast in bronze and has a circular shape.
    - In the centre, it has the State Emblem on a raised circle.
    - Around the State Emblem, there are four replicas of Indra's Vajra, and it is flanked by the sword of Shivaji.
    - On the reverse side, the words "Param Vir Chakra" are embossed in Hindi and English, with two lotus flowersplaced between the Hindi and English text.
    - The fitting uses a swivel mounting, and the decoration is suspended from a straight swivelling suspension bar.
    - It is held by a 32 mm purple ribbon.

- First winner: Major Somnath Sharma of the Kumaon Regiment was the first recipient.
    - Till now, only 21 people had been given the Param Vir Chakra award.

About Gallantry Awards in India

- Gallantry awards are instituted by the Government of India to honour bravery and sacrifice of armed forces, other forces, and civilians.
- These awards are announced twice every year on Republic Day and Independence Day.
- All gallantry awards may be given posthumously.
- The Order of precedence of these awards is the Param Vir Chakra, the Ashoka Chakra, the Mahavir Chakra, the Kirti Chakra, the Vir Chakra and the Shaurya Chakra.
- The President presents gallantry awards at Defence Investiture Ceremonies at Rashtrapati Bhavan.
    - However, the Param Vir Chakra and the Ashoka Chakra are conferred by the President to the awardees on the occasion of the Republic Day Parade at the Rajpath.

AH-64E Apache Helicopters

News: The Indian Army received the final batch of three AH-64E Apache helicopters, completing its six-unit Apache squadron at Jodhpur.

About AH-64E Apache Helicopters

Figure 6.Source – India Defence News

- The AH-64E Apache is regarded as the world's most advanced and lethal attack helicopter and is widely used for reconnaissance, precision strikes, and close air support missions.
- It is also known as the Apache Guardian.
- Version: The Indian Army inducted the AH-64E Version 6, which is the most advanced version.
- Manufactured by: It is manufactured by Boeing, United States.

- Key Features
    - Physical Features:
        - The AH-64E Apache has a length of 17.8 metres and a maximum speed of 300 kilometres per hour.
        - It has a maximum operating weight of 10,432 kilograms and can climb at a rate of more than 2,800 feet per minute.
        - It is a heavily armed, twin-engine ground attack helicopter.
    - Warhead and Weapons:
        - The helicopter carries air-to-ground Hellfire missiles, 70 mm rockets, and a 30 mm chain gun.
        - It can also fire short-range air-to-air Stinger missiles to counter aerial threats..
    - Technology: It is equipped with Longbow fire control radar, advanced sensors, and integrated infrared and night vision systems for all-weather and all-terrain operations.

Jumping Genes

News: Polar bears in southern Greenland are 'using jumping genes to rapidly rewrite their own DNA' to survive melting sea ice.

About Jumping Genes

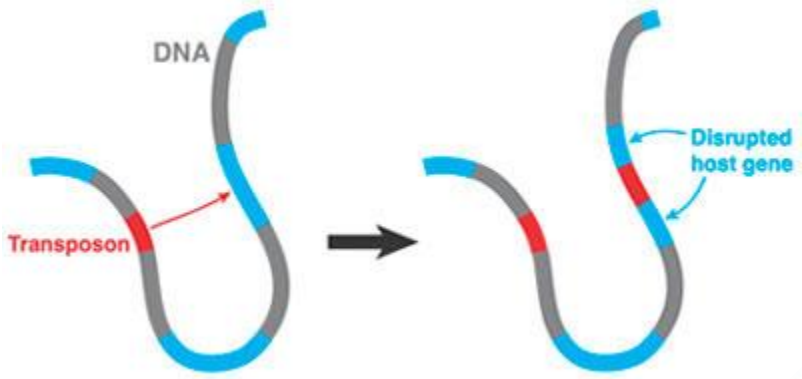


Figure 7. Source: UC San Francisco

Jumping genes are segments of DNA that can move from one position to another within the genome.

- They are scientifically known as transposable elements.
- They are called jumping genes because they can change their location in the DNA sequence.
  - This movement can affect how genes function.
- Discovery of Jumping Genes: Jumping genes were discovered by Barbara McClintock while studying maize plants.

- Types of Jumping Genes: There are two main types of jumping genes called DNA transposons and retrotransposons.
  - Each type moves in a different way within the genome.
- Mechanism
  - DNA transposons move by cutting themselves out of one location and inserting into another location in the DNA.
    - This process is known as the cut-and-paste mechanism.
  - Retrotransposons move by making a copy of themselves through an RNA intermediate.
  - The original remains in place while the copy inserts into a new position.
- How Jumping Genes Move: Jumping genes move with the help of special enzymes that allow them to cut, copy, or insert DNA.
  - These enzymes make the movement possible inside the genome
- Regulation of Jumping Genes: Cells control jumping genes using mechanisms such as DNA methylation and RNA-based silencing.
  - These controls help maintain genome stability.
- Presence in Living Organisms: Jumping genes are found in almost all living organisms, including plants, animals, and humans.
- Applications
  - In genetic engineering, transposons are used to introduce desired genes into plants, animals, or cells for research.
  - They are also being studied for gene therapy, where they may help deliver healthy genes to treat genetic disorders, such as through the Sleeping Beauty transposon system.
  - In addition, jumping genes are used in insertional mutagenesis to disrupt genes and study their functions.
- Effect on Genes: Jumping genes can disrupt normal genes when they insert themselves into important regions of DNA.
  - This disruption can change gene activity or stop gene function.

- Role in Genetic Diversity: Jumping genes increase genetic diversity by creating changes in the DNA sequence.
    - These changes help populations adapt to changing environments.
- Issues with Jumping Genes: Jumping genes can cause harmful mutations that lead to genetic disorders or diseases.

India's First AI-Driven Community Screening Programme for Diabetic Retinopathy

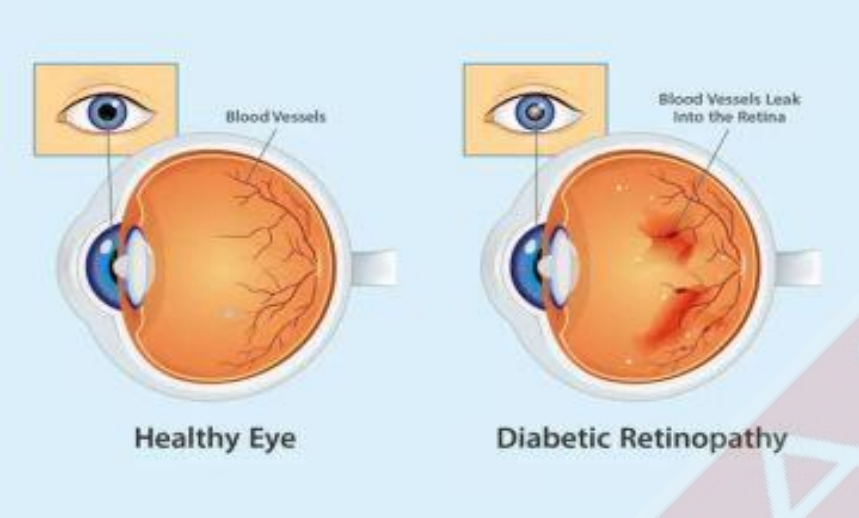
News: India launched its first AI-driven community screening programme for diabetic retinopathy to strengthen early detection and real-time health intelligence.

About India's First AI-Driven Community Screening Programme for Diabetic Retinopathy

Source – Tribune

- Launched by: It has been launched by The Armed Forces Medical Services (AFMS), in collaboration with the Dr. Rajendra Prasad Centre for Ophthalmic Sciences (RPC), AIIMS, and the eHealth AI Unit of the Ministry of Health & Family Welfare (MoHFW).
- Anchored by: The programme is anchored by MadhuNetrAI, a web-based Artificial Intelligence tool developed by the Dr. Rajendra Prasad Centre for Ophthalmic Sciences.
- Aim: The programme aims to strengthen early detection of diabetic retinopathy and support evidence-based planning through real-time national health intelligence.
- Key features:
    - AI platform: MadhuNetrAI facilitates automated screening, grading and triaging of retinal images.
    - Referral pathway: Identified patients are referred for optimal diabetic management, while vision-threatening cases are referred to vitreo-retina specialists at district hospitals.
    - Real-time intelligence: The system generates real-time data on prevalence and geographic distribution to support planning and policy formulation.
- As part of the pilot phase, the initiative is implemented at 7 locations (Pune, Mumbai, Bengaluru, Dharamshala, Gaya, Jorhat, and Kochi) covering metropolitan, rural, hilly, coastal, and remote regions.

About Diabetic Retinopathy



Source – WebMD

- Diabetic retinopathy is an eye condition that causes changes to the blood vessels in the part of your eye called the retina.
    - Retina is the lining at the back of the eye that changes light into images.
- The blood vessels can swell, leak fluid, or bleed, which often leads to vision changes or blindness.
- It usually affects both eyes.
- When left untreated, diabetic retinopathy can scar and damage the retina.
- Diabetic retinopathy is the most common cause of vision loss for people with diabetes.
    - It's the leading cause of blindness for all adults in many countries today.

Ekam AI and the SAMBHAV

News: During Vijay Diwas, the Indian Army showcased Atmanirbharta-driven innovations, including homegrown Ekam AI and the SAMBHAV project.

About Ekam AI

Figure 8. Source – EKAM-AI

- Ekam AI is a fully indigenous and secure artificial intelligence platform designed for sensitive defence environments.
- Developed by: It is being developed by the Bengaluru-based startup Neuralix, under the iDEX ADITI 2.0 initiative, which provides grants for defense innovation.
- Aim: Its aim is to support information analysis, document management, and decision-making without foreign software or external cloud systems.
- Features

- It supports classified datasets, military terminology and operational doctrines, and can host a range of open-source and indigenous AI models within the Army Data Network.
- It offers a suite of advanced AI services, including Jigyasa (GPT with RAG), Darpan (document analyser), Manthan (document-specific agents), Lipik (correspondence generator), Rachna (PPT generator), Saar (summariser), Anuvadak (translation), Vaachak (text-to-speech), Lekhak (speech-to-text), OCR and PDF tools.
    - These tools are expected to improve staff work, analysis and multilingual communication across formations.

About SAMBHAV

Source – MoD

- SAMBHAV (Secure Army Mobile Bharat Vision) is a portable satellite-based communication system showcased under a defence innovation initiative.
- Aim: The aim of SAMBHAV is to provide mobile connectivity in remote or disaster-affected areas.
- Features: The system can be deployed quickly in remote or disaster-affected areas, improving communication for both soldiers and civilians.

ASPIRE Scheme

News: The Ministry of Micro, Small and Medium Enterprises (MSME) is implementing the ASPIRE (A Scheme for Promotion of Innovation, Rural Industry, and Entrepreneurship) scheme to promote entrepreneurship and livelihood opportunities in rural areas.

About ASPIRE Scheme

ASPIRE

A Scheme for Promotion of Innovation, Rural Industries and Entrepreneurship

Source: MoMSME

- ASPIRE scheme stands for A Scheme for Promotion of Innovation, Rural Industry, and Entrepreneurship.
- Implemented by: Ministry of Micro, Small and Medium Enterprises
- It is to promote entrepreneurship and livelihood opportunities in rural areas and focuses on creating an enabling ecosystem for innovation, skill development, and enterprise creation.
- Aim: To encourage entrepreneurship by supporting innovation and rural industrial development.
- Objective: The scheme seeks to generate employment opportunities by promoting self-employment and wage employment through micro-enterprises.
- The scheme intends to strengthen rural livelihoods by providing incubation and handholding support to aspiring entrepreneurs.
- The ASPIRE scheme complements other MSME initiatives such as the Prime Minister's Employment Generation Programme, which supports self-employment through credit-linked subsidies.
- It also aligns with the MSME Champions scheme, which focuses on enterprise modernisation, competitiveness, and innovation.
- Key Features of the Scheme
    - The scheme supports the establishment of Livelihood Business Incubators to nurture rural entrepreneurs.
    - These incubators provide training, mentoring, and business support services to beneficiaries.
    - The scheme facilitates the transformation of skills into sustainable business ventures.
    - As of now, 109 Livelihood Business Incubators have been approved across different parts of the country.
        - These incubators function as local centres for entrepreneurship development in rural and semi-urban areas.

China Tests World-First Wireless Rail Convoy

News: Recently, China successfully tested seven fully loaded freight trains operating together as a single convoy without any physical coupling.

About China Tests World-First Wireless Rail Convoy

Source – BS

- China tested a wireless-controlled freight train convoy that allowed multiple heavy trains to operate together without mechanical connections.
- Developed by: It is developed by the China Shenhua Energy Company, a subsidiary of the state-owned CHN Energy group.
- The test was conducted on the Baoshen Railway in the Inner Mongolia autonomous region.
- Technology used
    - The system uses a wireless group control system based entirely on wireless communication.
    - It replaces traditional mechanical couplers with virtual coupling through continuous wireless signals.
    - It applies a two-dimensional control mode that combines relative speed control with absolute distance monitoring.
- Key features
    - Seven freight trains, each carrying 5,000 tonnes, operated as a single coordinated unit without physical attachment.
    - The trains maintained a distance of around 1,091 metres while running at a speed of 60 kmph during the trial.
    - All trains synchronised acceleration and braking through wireless signals, and no collision or separation occurred.
    - The system allowed trains to respond quickly to movement changes and operate safely at closer intervals.
- Significance: The technology can increase China's railway freight capacity by over 50 percent without building additional railway infrastructure.

Annatto

News: The CSIR–Central Food Technological Research Institute (CSIR–CFTRI), Mysuru has undertaken four Grant-in-Aid projects on annatto, including post-harvest technologies and Vitamin-E enriched annatto oil development.

About Annatto

Source – Health

- Annatto is a natural food colouring and flavouring agent obtained from the seeds of the achiote tree.
- It is scientifically known as *Bixa orellana*.
- Native to: Annatto is native to the tropical regions of Central and South America and other tropical parts of the Americas.
- Colour: Annatto provides a yellow to red-orange colour to foods due to carotenoid pigments, mainly bixin and norbixin, present in the seed coating.
- Flavour: Annatto has a mild, slightly nutty, sweet, and peppery flavour, along with a nutty and floral scent when used in food.
- Uses
    - Culinary Uses: Annatto is used to colour cheese, butter, yogurt, sausages, smoked fish, ice cream, rice, and baked goods, and as annatto-infused oil in cooking.
    - Cosmetics uses: Historically used for body paint and lipstick due to its vibrant color, it is also used in modern cosmetics.
- Health benefits
    - Annatto contains carotenoid pigments such as bixin and norbixin, which act as antioxidants and help reduce cell damage.
    - It is rich in antimicrobial compounds that can limit the growth of bacteria, fungi, and parasites.
    - It contains tocotrienols, a form of vitamin E, which may support heart health and bone strength.
    - It has been linked to reduced inflammation and improved eye and skin health.

Multi-Lane Free Flow (MLFF) Tolling System

News: The Union Road Transport Minister informed the Rajya Sabha about the nationwide rollout of the MLFF tolling system by 2026.

About Multi-Lane Free Flow (MLFF) Tolling System

Source – India SeaTrade News

- The Multi-Lane Free Flow tolling system is a barrier-free digital toll collection system that allows vehicles to pass toll points without stopping.
- Initiated by: The system has been initiated by the National Highways Authority of India through its subsidiary Indian Highways Management Company Limited.
- Technologies used : Each tolling point will be equipped with:
    - Automatic Number Plate Recognition (ANPR) cameras at the front and rear to capture license plates.
    - High-performance RFID readers that detect and authenticate FASTag information.
    - Artificial intelligence-enabled software for precise optical character recognition and data validation.
    - LiDAR-based sensors for accurate vehicle classification.
- Working mechanism
    - When a vehicle passes through a toll, its registration number and FASTag details are automatically identified, verified, and processed for real-time toll deduction through the NPCI network.
    - Each site will have a bank or financial entity partnered with a system integrator to manage and operate the tolling system.

About Indian Highways Management Company Limited

- Indian Highways Management Company Limited was incorporated jointly by NHAI, its concessionaires, and financial institutions.
- It was established on 26 December 2012.
- The shareholding pattern of stakeholders is NHAI-41.38%, Concessionaires-33.81% and Financial Institutions 24.81%.
- The company was formed under the Companies Act, 1956 to carry out electronic tolling and allied works of NHAI.
- Functions
    - IHMCL implements the FASTag-based Electronic Toll Collection system and deploys Intelligent Transport Systems, including GIS-based tracking and AI-driven traffic management, on national highways.
    - It manages the 1033 toll-free helpline and the toll clearinghouse, and has moved toward data monetisation to share insights with enforcement agencies.

Pamir Mountains/ Pamir-Karakoram Anomaly

News: Scientists have extracted deep ice cores from the Kon-Chukurbashi ice cap in the Pamir Mountains to study why glaciers in this region have resisted melting and even slightly grown.

About Pamir Mountains

Figure 9. Source – World Atlas

- Location: The Pamir Mountains are primarily located in Tajikistan, with parts extending into Afghanistan, China, and Kyrgyzstan.
  - They are situated at a junction with other significant mountain ranges, including the Tian Shan, Karakoram, Hindu Kush, and Himalayas.
  - The Pamir Mountains are part of the greater Pamir-Alai system, which stretches from west to east for 560 miles (900 km), and from north to south for 250 miles (400 km).
- Physiographic Structure: Major ranges include the Trans-Alai, Akademii Nauk, Sarykol, Muzkol, and Alichur ranges.
- Major Peaks and Glaciers: The highest peak is Ismail Samani Peak (7,495 m), followed by Lenin (Ibn Sina) Peak.
  - Extensive glaciation occurs due to heavy snowfall, with the Fedchenko Glacier being the largest, dominating the central Pamirs and feeding several major river systems.
- Eastern and Western Pamirs: The eastern Pamirs have high plateaus, rounded mountains, and broad valleys with relatively low relief.
  - The western Pamirs are sharply dissected, with steep ridges, deep gorges, fast-flowing rivers, and narrow zones suitable for human settlement along alluvial fans.
- Pamir–Karakoram anomaly: It refers to the unusual behaviour of glaciers in the Pamir, Karakoram, and Western Kunlun ranges, where glaciers remained stable or slightly grew while most glaciers worldwide were shrinking.
  - Reason behind the anomaly: Increased winter snowfall due to Western Disturbances added more ice to glaciers, while cooler summer temperatures reduced melting.
  - The Kon-Chukurbashi ice cap in the Pamir Mountains is the only mountainous region on the earth where glaciers have not only resisted melting, but even slightly grown.
- Drainage System: Most meltwater drains into the Panj and Vakhsh rivers, forming the Amu Darya, vital for downstream irrigation.
- Geological Structure: Geologically, the Pamirs are divided into northern, central, and southern zones. They contain Precambrian metamorphic rocks, Paleozoic marine deposits, and younger sedimentary formations, shaped by intense folding, faulting, overthrusts, and frequent seismic activity.
- Climate Characteristics: The climate is cold, arid, and continental, with severe winters and mild to warm summers.

- Temperature extremes are common, snowfall is heavy at higher elevations, and Afghan winds cause summer dust storms and convectional rainfall in western valleys.

- People and Economy: Eastern Pamirs are inhabited mainly by pastoral Kyrgyz, while western valleys are home to Ismaili Mountain Tajiks.
  - Livelihoods include yak herding, agriculture, orchards, and trade.
  - Roads and historic Silk Route corridors connect the Pamirs to Central Asia and China.
- Flora: Vegetation ranges from alpine bogs and steppe grasses in the east to juniper, willow, and fruit trees in western valleys.
- Fauna: Wildlife includes Marco Polo sheep, ibex, brown bears, wolves, snow leopards, and high-altitude birds like lammergeiers.

Key facts about Oman

News: Amid increasing trade restrictions in the US due to tariffs and the European Union on account of the carbon tax, India has signed a trade deal with Oman to expand the footprint for its exports in West Asia.

Key facts about Oman

Source – Britannica

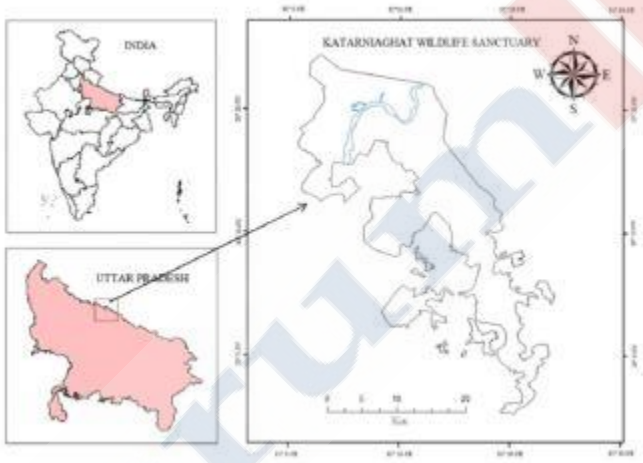
- Location: Oman is located on the southeastern coast of the Arabian Peninsula, at the junction of the Persian Gulf and the Arabian Sea.
- Sharing border: It shares borders with Yemen (southwest), Saudi Arabia (west), and the United Arab Emirates (northwest).
  - The country has a strategic frontage near the Strait of Hormuz through the Musandam Peninsula.
- Ruler: It is ruled by a hereditary monarchy under the Āl Bū Saʿīd dynasty.
- Capital: Muscat
- Physical Geography
  - Oman's interior is dominated by the Rubʿ al-Khali (Empty Quarter) desert which is shared by the Saudi Arabia and Yemen also.
  - The Ḥajar Mountains run parallel to the northern coast and include Mount Shams, the highest peak at about 2,980 m.

- The Al-Bāṭinah coastal plain is fertile and densely populated.
- Climate: Oman has a hot and arid climate, with extreme summer temperatures exceeding 43°C in coastal areas.
- Ports: The Port of Salalah is the largest port in Oman.
- Islands: It also has offshore territories such as Maşīrah Island and Al-Ḥallāniyyah Island.
- Flora: Natural vegetation is sparse, limited mainly to acacia trees and irrigated areas.
- Fauna: Oman protects endangered species such as the Arabian oryx, Arabian leopard, and loggerhead turtle. The country has rich bird diversity due to its geographical location.

Katarniaghat Wildlife Sanctuary

News: A tiger attacked a woman in the Dharmapur Range of Katarniaghat Wildlife Sanctuary in Bahraich, according to forest officials.

About Katarniaghat Wildlife Sanctuary



Source – Research Gate

- Location: Katarniaghat Wildlife Sanctuary is a protected area located in the Upper Gangetic plain, falling in the Terai region of Bahraich district in Uttar Pradesh.
- Establishment: It was established in 1975.
- Border and Wildlife Corridor: The sanctuary shares an international border with Nepal and provides strategic connectivity between tiger habitats of Dudhwa and Kishanpur in India and the Bardia National Park in Nepal.
- Tiger Reserve: In 1987, the sanctuary was brought under Project Tiger and, along with Dudhwa National Park and Kishanpur Wildlife Sanctuary, forms the Dudhwa Tiger Reserve.
- River: The Girwa River flows through the sanctuary and is declared a protected stretch for gharial and mugger crocodiles.
- Flora: The vegetation mainly consists of grasslands, mixed deciduous forests, and moist deciduous forests dominated by sal trees, along with species like Asna, Asidha, Haldu, Faldu, and Gahmhar.
- Fauna: The sanctuary is home to endangered species such as tiger, gharial, Gangetic dolphin, rhino, swamp deer, hispid hare, Bengal florican, and white-backed and long-billed vultures.

Bureau of Port Security (BoPS)

News: The Union Home Minister chaired a meeting to constitute a statutory Bureau of Port Security to strengthen port and vessel security.

About Bureau of Port Security (BoPS)

Source – The Morning Voice

- The Bureau of Port Security is a dedicated body proposed to strengthen security oversight of ports, ships, and maritime infrastructure.
- Legal status: The Bureau of Port Security shall be constituted as a statutory body under Section 13 of the newly promulgated Merchant Shipping Act, 2025.
- Ministry involved: The Bureau shall function under the aegis of the Ministry of Ports, Shipping and Waterways (MoPSW).
- Functions
    - The Bureau shall carry out regulatory and oversight functions relating to the security of ships and port facilities across the country.
    - It will have the legal authority to enforce compliance with the International Ship and Port Facility Security (ISPS) Code.
    - Intelligence and Cybersecurity: The Bureau shall ensure timely analysis, collection, and exchange of security-related information, with a special focus on cyber security.
        - It will include a dedicated division to protect port IT infrastructure from digital and cyber threats.
- Structure
    - Interim: The Director General of Shipping (DGS) will hold additional charge as the DG of BoPS for the initial one-year transition period.
    - Permanent: The bureau will subsequently be led by a senior IPS officer (Pay Level-15) to ensure rigorous regulatory enforcement.
    - The Central Industrial Security Force (CISF) has been officially designated as a Recognised Security Organisation (RSO).
        - This empowers the CISF to conduct mandatory security assessments, perform audits, and prepare security plans for all port facilities, including private terminals.
- "Graded security" model: The security protocols will be customized based on a port's location, trade volume, and vulnerability, rather than a "one-size-fits-all" approach.
- Includes private ports: Its regulations and CISF security audits are mandatory for all ports operating in India, including private entities like Mundra or Krishnapatnam.

Kosi River

News: The Bheja–Bakaur Kosi Bridge project is nearing completion to improve connectivity in flood-affected regions of Madhubani and Supaul in Bihar.

About Kosi River

Source – ResearchGate

- Origins: The Kosi River is formed by the confluence of the Sun Kosi, Arun Kosi, and Tamur Kosi, originating in the Himalayan regions of Nepal and Tibet, and enters India in Bihar.
- Geographical boundaries Kosi river basin: The river basin is surrounded by ridges which separate the Kosi from the Yarlung Tsangpo River in the north, the Gandaki River in the west and the Mahananda River in the east.
- Length: The Kosi River is about 724 km long.
- Tributaries of Kosi: It is called *Saptakoshi* because it has seven main tributaries, namely Sun Kosi, Tama Kosi, Dudh Koshi, Indravati, Arun Kosi, Likhu Khola, and Tamur.
- Joins into: It joins the Ganges River near Kursela in the Katihar district of Bihar.
    - It is the third-largest tributary of the Ganges by water discharge after the Ghaghara and the Yamuna.
- It is known as the "Sorrow of Bihar" due to frequent floods and rapid westward shifting of its river channel.
- Its vast alluvial fan in north-east Bihar is one of the largest in the world and supports fertile agriculture.
- Cultural Significance: The Kosi River, known as Kausiki in the Mahabharata, is the lifeline of the Mithila region.

LVM3-M6 / BlueBird Block-2 Mission

News: In a significant commercial milestone, ISRO's LVM3-M6 rocket is set to launch a communication satellite for the US-based firm AST SpaceMobile.

About LVM3-M6 / BlueBird Block-2 Mission

- LVM3-M6 / BlueBird Block-2 is a dedicated commercial mission of ISRO's LVM3 launch vehicle.
- The mission will launch the BlueBird Block-2 communication satellite of AST SpaceMobile, USA.
- It is the 6th operational flight of the LVM3 rocket.
- Launched by: ISRO
- In this mission, LVM3-M6 will place the BlueBird Block-2 satellite into Low Earth Orbit (LEO).
- LVM3 is a three-stage launch vehicle. It consists of two solid strap-on motors (S200), a liquid core stage (L110), and a cryogenic upper stage (C25). The rocket has a lift-off mass of 640 tonnes, a height of 43.5 m, and can carry 4,200 kg to GTO.
- It will be the largest commercial communications satellite deployed in LEO.
- It will also be the heaviest payload launched by LVM3 from Indian soil.
- The BlueBird Block-2 satellite is designed to provide direct space-based cellular broadband connectivity to standard mobile smartphones.
- Earlier missions of LVM3 include Chandrayaan-2, Chandrayaan-3, and two OneWeb missions carrying 72 satellites.

Fast Patrol Vessel 'Amulya'

News: Indian Coast Guard (ICG) Ship 'Amulya' Fast Patrol Vessels was commissioned in Goa.

About Fast Patrol Vessel 'Amulya'

Source: PIB

- ICG Ship *Amulya* is a new-generation Fast Patrol Vessel of the Indian Coast Guard.
- Naming: The name *Amulya* means "priceless" and reflects India's defence self-reliance under Aatmanirbhar Bharat and Make-in-India initiatives.
- The vessel will be based at Paradip, Odisha and will operate under the Coast Guard Region (North East).
- It is the third vessel in the eight-ship Adamya-class series.
- Designed and built indigenously by: Goa Shipyard Limited (GSL).
- Features: *Amulya* is a 51-metre-long vessel with over 60% indigenous components.
    - The vessel incorporates a modern design focused on efficiency, endurance, and rapid response.
    - It is powered by two 3000 kW advanced diesel engines.
    - The ship can achieve a maximum speed of 27 knots.
    - It has an operational endurance of 1,500 nautical miles.
    - It is equipped with indigenous, state-of-the-art weapons and systems. It is capable of surveillance, interdiction, search and rescue, anti-smuggling operations, and pollution response.
- Other ships in the Adamya-class series: Adamya and Akshar, Akshay, Achal, Atal, Ajit and Aparajit.

Udanti–Sitanadi Tiger Reserve

News: Forest authorities arrested 53 persons for attempting to encroach upon protected land within the Udanti Sitanadi Tiger Reserve, Chhattisgarh.

About Udanti–Sitanadi Tiger Reserve

Source: Udanti Sitanadi Tiger Reserve

- The Udanti–Sitanadi Tiger Reserve is located in the Chhattisgarh.
- The reserve includes the Udanti Wildlife Sanctuary and the Sitanadi Wildlife Sanctuary along with parts of Tourenga, Mainpur, Indagaon, Kulhadighat, Dhawalpur, and Sankara forest ranges.
- It was declared tiger reserve in the year 1984. Later, it became part of the Udanti–Sitanadi Tiger Reserve.
- It acts as a buffer for Sunabeda Wildlife Sanctuary and forms a larger Chhattisgarh–Odisha tiger conservation unit.
- The Tiger Reserve is named after the rivers Udanti and Sitanadi flowing into the Udanti Sanctuary and Sitanadi Sanctuary.
- Core Areas of the Reserve: Udanti and Sitanadi
- Vegetation: The forest type here is predominantly tropical dry and moist deciduous, with a mix of sal (Shorea robusta), bamboo, and other hardwood species.
- Flora: The Udanti Sitanadi Tiger Reserve consists mainly of sal, mixed forest and bamboo forest on hilly areas. There are natural forests of teak in some areas, in which mainly species like Bija, Sheesham, Tinsa, Saj, Khamhar, Haldu, Mudi, Kullu, Karra, Senha, Amaltas etc. are found. Various types of medicinal plants are abundant in the tiger reserve.
- Fauna: The Asiatic Wild Buffalo is the most important endangered species found in the reserve. Other notable animals include the tiger, leopard, Indian wolf, sloth bear, and mouse deer.

Dark Eagle Long-Range Hypersonic Weapon (LRHW)

News: The US Army plans to deploy the Dark Eagle LRHW on a mobile, land-based platform, while the US Navy will field its Conventional Prompt Strike (CPS) version for launch from surface ships and submarines.

About Dark Eagle Long-Range Hypersonic Weapon (LRHW)

Source: eurasiantimes

- The Dark Eagle is a long-range hypersonic missile system developed by U.S.A.
- It is designed to deliver fast, precise, and hard-to-intercept conventional strikes against high-value targets.
- The US Navy will deploy a naval version called Conventional Prompt Strike (CPS), which can be launched from surface ships and submarines.
- Features:
    - Dark Eagle is an intermediate-range boost-glide hypersonic weapon.
    - It uses a booster rocket that carries a Common Hypersonic Glide Body (C-HGB) inside the nose cone.
    - Working Mechanism: After launch, the booster rocket carries the glide body to a high altitude and speed. The glide body then separates and travels toward the target by gliding at hypersonic speeds while maneuvering unpredictably.
    - Range and Speed: The missile has a reported range of about 3,500 km and travels at speeds exceeding Mach 5. Analysis suggests that its cruising speed may approach Mach 10 to reach maximum range in under 20 minutes.
    - Dark Eagle flies at low altitudes and performs unpredictable maneuvers. This reduces the reaction time available to enemy air defense systems.
    - The missile reportedly carries a small blast-fragmentation warhead with a limited explosive charge.
    - Its destructive capability mainly comes from extremely high kinetic energy and high-velocity fragmentation at impact.
    - Dark Eagle is well-suited for striking air defense systems, command-and-control centers, and military infrastructure. Its wide fragment dispersion increases effectiveness even if precision is affected by electronic warfare.
    - The missile's speed, maneuverability, and low-altitude flight make it very difficult to intercept using current air defense systems such as the S-400 or S-500.
    - The launcher is mounted on a mobile, truck-based platform, making detection and pre-emptive strikes difficult. The system can also be airlifted and rapidly deployed to forward locations.

Candida Auris

News: Scientists have discovered a genetic process which could unlock new ways to treat Candida auris which has shut down multiple hospital intensive care units.

About Candida Auris

Source – Surfacide

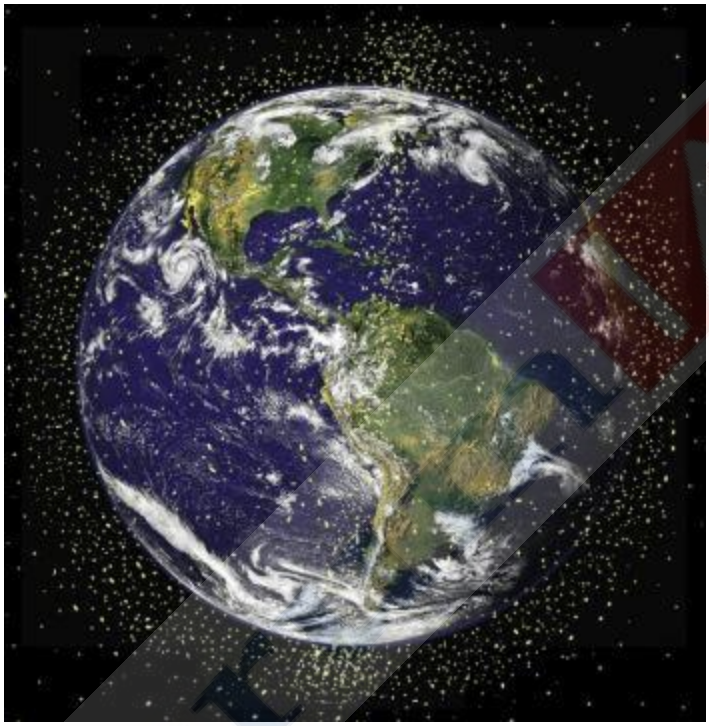
- Candida Auris (C. auris) is a fungus that can cause serious and potentially life-threatening illness.
- Some strains of Candida auris are resistant to multiple antifungal drugs, which makes infections difficult to treat.
- Candida auris most commonly spreads in hospitals and long-term care facilities.
- People usually acquire Candida auris from contaminated surfaces or from contact with infected or colonized individuals.
- Types of Infections caused: Candida auris can cause ear infections, wound infections, urinary tract infections and bloodstream infections that spread throughout the body.
- Symptoms
    - Symptoms of a Candida auris infection depend on the part of the body affected.
    - Common symptoms include fever and chills.
    - Some patients may experience lethargy or extreme tiredness.
    - It can cause low blood pressure and a high heart rate.
        - Some patients may have a low body temperature.
    - Ear infections caused by C. auris may cause pain, pressure, or a feeling of fullness in the ear.
- Transmission: Candida auris can pass from person to person.
    - Candida auris spreads through contact with infected or colonized individuals.
    - It can also spread through contact with contaminated surfaces or medical equipment.
    - The fungus can enter the body through medical devices such as central venous lines or breathing tubes.
    - It does not spread through the air.
- Diagnosis of Candida auris Infection: Candida auris infections are difficult to diagnose.
    - Special laboratory testing is required to identify the fungus accurately.
- Treatment and Management
    - Candida auris infections can usually be treated with echinocandin antifungal medications.
    - Some strains of Candida auris are resistant to available medications.

- Drug-resistant infections may require a combination of antifungal treatments.
- Early detection and appropriate therapy improve treatment outcomes.

Micrometeoroids and Orbital Debris (MMOD)

News: The MMOD threat gained attention after space debris hit China's Shenzhou-20 crewed vehicle, causing a minor crack in its return capsule window.

About Micrometeoroids and Orbital Debris (MMOD)



Source – NASA

- Micrometeoroids: These are naturally occurring, extremely small particles ranging from a few micrometres to about two millimetres in size.
  - Origin: Most originate from asteroid collisions in the asteroid belt, with some coming from comets.
  - Velocity: They travel at very high velocities.
- Orbital Debris: These are human-made objects in Earth's orbit that no longer serve any useful purpose.
  - Origin: They mainly come from exploded rocket stages, defunct satellites, accidental collisions, and anti-satellite weapon tests.
- Threats Posed by MMOD
  - The extreme velocity of MMOD means that even tiny fragments carry enough kinetic energy to cause critical damage or catastrophic failure to spacecraft systems.
  - Kessler Syndrome: Increasing debris density may trigger cascading collisions, known as the Kessler Syndrome, potentially making space travel impossible in certain orbits.
- Mitigation and management strategies
  - Space agencies use engineering models, tracking data, and software tools to assess MMOD risk and protect spacecraft using physical shielding such as Whipple shields.

- Large debris is tracked, and collision avoidance manoeuvres are performed when a risk is detected.

- International cooperation
  - Inter-Agency Space Debris Coordination Committee (IADC): An international forum for governmental bodies to coordinate efforts in space debris research.
  - ESA's Zero Debris Charter: Aiming for zero new space debris by 2030.
- Indian initiatives
  - Project NETRA (ISRO): An early warning system in space to detect debris and other hazards to Indian satellites.
  - ISRO System for Safe and Sustainable Space Operations Management (IS4OM): A dedicated facility to monitor and mitigate space debris.
  - POEM (PSLV Orbital Experimental Module): ISRO's initiative to use spent rocket stages as orbital platforms, reducing "dead" junk in orbit.

Chillai-Kalan

News: Chillai-Kalan began on December 21, 2025, bringing rain and snowfall across Kashmir after a prolonged dry spell in the Valley.

About Chillai-Kalan

Source – News X

- Chillai-Kalan is the forty-day period of the harshest winter cold in the Kashmir Valley.
- Naming: The term Chillai-Kalan comes from Persian and means "Major Cold".
- Duration: It generally begins on December 21 and continues until January 30.
- Climate: It is characterized by sub-zero temperatures, snowfall in higher altitude and rain in the plains, and freezing of water bodies like the Dal Lake.
- Three Phases
  - Chillai-Kalan (Big Cold): It is the main forty-day phase of extreme winter cold from December 21 to January 30.
  - Chillai-Khurd (Small Cold): It is a twenty-day period of comparatively moderate cold from January 31 to February 19.
  - Chillai-Bacha (Baby Cold): It is a ten-day phase of mild cold from February 20 to March 2.
- Significance: Expected rain and snowfall during Chillai-Kalan may end a dry spell of over two months, reduce suspended particulate matter build-up, improve air quality and ease rising respiratory problems .

- Cultural significance: The night of December 21 is observed in Persian tradition as Shab-e Yalda-"Night of Birth", or Shab-e Chelleh. – "Night of Forty".
- Ecological Significance: The heavy snowfall during this period is critical for replenishing glaciers, streams, and rivers, ensuring water security for the region during summer.

Anjadip – Anti-Submarine Warfare Shallow Water Craft

News: INS *Anjadip'* Anti-Submarine Warfare Shallow Water Craft) was delivered to the Indian Navy.

About INS Anjadip – Anti-Submarine Warfare Shallow Water Craft (ASW SWC)

- INS Anjadip is the third of eight Anti-Submarine Warfare Shallow Water Craft being inducted into the Indian Navy.
- Named after: The ship derives its name from Anjadip Island located off the coast of Karwar in Karnataka.
- Constructed by: INS Anjadip has been indigenously designed and constructed by Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.
- The vessel has been constructed in accordance with the Classification Rules of the Indian Register of Shipping.
- The ship is a reincarnation of the erstwhile INS Anjadip, a Petya class Corvette decommissioned in 2003.
- Features:
    - Size and propulsion: It is approximately 77 m in length, making it one of the largest shallow water combat vessels to be propelled by waterjet propulsion systems.
    - Operational role: The ship will strengthen Navy's Anti-Submarine, coastal surveillance and mine laying capabilities.
- Weapons: It is equipped with state of the art Lightweight Torpedoes, indigenously designed Anti-Submarine Rockets and shallow water SONAR, enabling effective detection and engagement of underwater threats.

India–New Zealand FTA

News: India and New Zealand concluded discussions on a free trade agreement to provide tariff-free access, attract investments, and expand bilateral trade.

About India–New Zealand FTA

Figure 10. Source – TOI

The India–New Zealand Free Trade Agreement is India's second bilateral trade agreement in the Oceania region after the India–Australia FTA.

- Key Takeaways of India–New Zealand FTA
  - Tariff Elimination: The FTA eliminates duty on 100% of Indian exports.
  - Investment Commitment: The agreement includes a USD 20 billion investment commitment over 15 years, strengthening long-term economic and strategic cooperation.
  - Trade Target: The FTA aims to double bilateral trade to USD 5 billion within five years.
  - Trade Growth: Merchandise trade grew from USD 873 million in 2023–24 to USD 1.3 billion in 2024–25, registering a 49% increase.
  - Export Performance: Indian merchandise exports reached USD 711 million in 2024–25, while services exports grew to USD 634 million, led by travel, IT, and business services.
  - Sectoral Gains: Zero-duty access benefits labour-intensive sectors such as textiles, apparel, leather, footwear, gems and jewellery, engineering goods, and processed foods.
  - Tariff Structure: India offered market access in 70.03% of tariff lines, with 30% immediate elimination and phased reduction for 35.60% over 3 to 10 years.
  - Sensitive Protection: Key products such as dairy, select agricultural goods, sugar, fats and oils, arms, and certain metals remain in the exclusion list.
  - Services Access: New Zealand made its best-ever services offer, including an annex on Health and Traditional Medicine Services.
  - Mobility Pathways: The FTA opens new routes through 5,000 skilled professional visas and 1,000 working holiday visas, benefiting Indian students and workers.