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ANNUAL STATUS OF EDUCATION REPORT (ASER) 2024

In News

- The **Annual Status of Education Report (ASER) 2024** revealed that enrolment in both government and private schools has returned to pre-pandemic levels.

Annual Status of Education Report(ASER)

- The word **aser** means 'impact' in **Hindustani**.

- It is a nationwide citizen-led household survey that provides a snapshot of children's schooling and learning in rural India.

  - It captures data from all children, including those who are not in school or are absent.

- It tracks children **aged 3 to 16 for schooling status**, and children aged **5 to 16** are tested for **basic reading and arithmetic abilities.**

- The survey is coordinated by ASER Centre and facilitated by the Pratham network.

- The first ASER survey was conducted in 2005 and repeated annually for 10 years (2005-2014).

- **2016 Onwards**: Shifted to an alternate-year model:

  - **Basic ASER Survey:** Conducted every alternate year to assess foundational learning in children.

  - **Gap Years:** Instead of a full survey, ASER explores specific age groups or new dimensions of children's learning using a different research lens.

Earlier Surveys

- **ASER 2017** focused on the activities, abilities, and aspirations of youth aged 14-18.

- **ASER 2019** targeted young children aged 4-8, assessing their cognitive, early language, and early numeracy skills.

- **ASER 2023** returned to the 14-18 age group, adding a focus on digital literacy.

- **ASER 2024** returned to the nationwide 'basic' format, covering almost all rural districts in India.

Focus

- Enrollment status was collected for all children aged 3-16.

- Children aged 5-16 were tested for basic reading and arithmetic skills.

- Older children (14-16) were asked about digital access and usage, and also completed smartphone-based tasks to assess digital abilities.

Key Findings: Recent Survey

- **Improvement in Learning:** The proportion of Class 3 students in government schools able to read a Class 2 text rose to 23.4% in 2024, up from 16.3% in 2022.

Assessing reading levels

The table shows the percentage of children in Classes 3 and 5 able to read a Class 2 text in government schools

Class 3: % children reading at Class 2 level

Year	%
2018	20.9
2022	16.3
2024	23.4

Class 5: % reading at Class 2 level

Year	%
2018	44.2
2022	38.5
2024	44.8

SOURCE: ASER(RURAL) 2024

  - Basic arithmetic skills also improved across both government and private schools.

  - For Class 3, two-thirds could not solve subtraction problems, and only 30.7% of Class 5 students could solve division problems. Class 8 students saw slight improvement, with 45.8% mastering basic arithmetic.

- **Regional Variations:** States like Uttar Pradesh, Bihar, Haryana, and Odisha saw notable gains in reading levels. Uttar Pradesh had the largest increase, with a 15-percentage-point rise in reading skills.

- **Government vs Private Schools:** Learning recovery has been stronger in government schools, while private schools still lag behind their pre-pandemic levels. Despite improvements, 30% of children still struggle with reading a Class 2 text.

- **Enrolment Trends:** School enrolment for children aged 6-14 is at 98.1%, close to pre-pandemic levels. However, government school enrolment, which rose during the pandemic, has dropped to 66.8% in 2024 from 72.9% in 2022. The proportion of underage children in Class 1 also declined to 16.7%, the lowest ever recorded.

- **Digital Literacy:** Smartphone access has increased significantly in rural areas, with 84% of households owning smartphones in 2024. Among teenagers, 57% use smartphones for educational purposes, but 76% use them for social media. There is a gender gap in smartphone use, with more boys reporting smartphone use and ownership than girls.

- **Factors Driving Learning Trends:** The report credits the National Education Policy (NEP) 2020 and the Nipun Bharat Mission for improvements in foundational literacy. Digital tools, especially smartphones, have played a key role in continuing education during and after the pandemic.

Suggestions

- The recovery in learning outcomes is evident, substantial gaps in literacy and numeracy persist, particularly in government schools.

- Efforts like the NEP 2020 and the use of digital tools continue to drive improvements, but challenges such as uneven access to educational resources and digital skills remain.

- School readiness programs and the increasing role of digital literacy are helping, but more work is needed to bridge these gaps.

Source :TH

UNION BUDGET

Context

- The Budget, tabled in Parliament by the Finance Minister, is the Government's blueprint on expenditure, taxes it plans to levy, which affect the economy and lives of citizens.

About

- The Union Budget of India, referred to as the **annual Financial Statement in Article 112** of the Constitution of India, is the annual budget of the Republic of India, presented each year by the Finance Minister.

- The budget has to be **passed by the House** before it can come into effect on April 1, the start of India's financial year.

- After being presented separately for 92 years, the Railway budget was merged in the Union Budget in 2017 and presented together on the recommendation of the Bibek Debroy Committee.

- In 2019, **Nirmala Sitharaman became the second woman** to have presented the budget after Indira Gandhi.

Components of Budget

- **There are three major components** — expenditure, receipts and deficit indicators.

- **Total Expenditure** can be **divided into capital and revenue expenditure.**
  - **Capital expenditure** is incurred with the purpose of increasing assets of a durable nature or of reducing recurring liabilities.
    - Expenditure incurred for constructing new schools or new hospitals are classified as capital expenditure as they **lead to creation of new assets.**
  - **Revenue expenditure** involves any expenditure that **does not add to assets or reduce liabilities.**
    - Includes expenditure on the payment of wages and salaries, subsidies or interest payments.

- **The receipts of the Government have three components** — revenue receipts, non-debt capital receipts and debt-creating capital receipts.
  - **Revenue receipts** involve receipts that are not associated with increase in liabilities and comprise revenue from taxes and non-tax sources.
  - **Non-debt receipts** are part of capital receipts that do not generate additional liabilities, it includes recovery of loans and proceeds from disinvestments.
  - **Debt-creating capital receipts** are ones that involve higher liabilities and future payment commitments of the Government.

- **Fiscal deficit** is the difference between total expenditure and the sum of revenue receipts and non-debt receipts.
  - It indicates how much the Government is spending in net terms.
  - **Positive fiscal deficits indicate** the amount of expenditure over and above revenue and non-debt receipts, it needs to be financed by a debt-creating capital receipt.

Implications of Budget on Economy

- **Economic Growth:** It stimulates growth through government spending on infrastructure, welfare, and reforms that boost private investment.

- **Inflation Control:** The budget's fiscal policies influence inflation through subsidy changes, tax adjustments, and debt management.

- **Fiscal Deficit and Debt:** A high fiscal deficit leads to increased borrowing and higher debt, affecting inflation and interest rates, while efforts to reduce it help fiscal stability.

- **Taxation and Reforms:** Changes in taxes affect consumer behavior, business investment, and government revenue. Reforms like GST and direct tax changes improve efficiency.

- **Employment:** Budget allocations for infrastructure, skill development, and welfare programs create jobs and reduce poverty.

- **Foreign Investment:** Favorable policies attract Foreign Direct Investment (FDI) by improving the ease of doing business.
- **Social Welfare:** Increases in welfare spending and subsidies help reduce poverty and improve living standards.
- **Stock Market Impact:** The budget influences market sentiment based on policy changes related to taxation, industry incentives, and reforms.
- **Sustainability:** Investments in green infrastructure and renewable energy promote sustainable growth and address environmental concerns.

Fiscal Rules
- Fiscal rules provide specific policy targets on the basis of which fiscal policy is formed.
- In India's case, its present fiscal rule is guided by the recommendations of the **N.K. Singh Committee Report.**
  - **It has three policy targets** — maintaining a specific level of debt-GDP ratio (stock target), fiscal deficit-GDP ratio (flow target) and revenue deficit-GDP ratio (composition target).

Source: TH

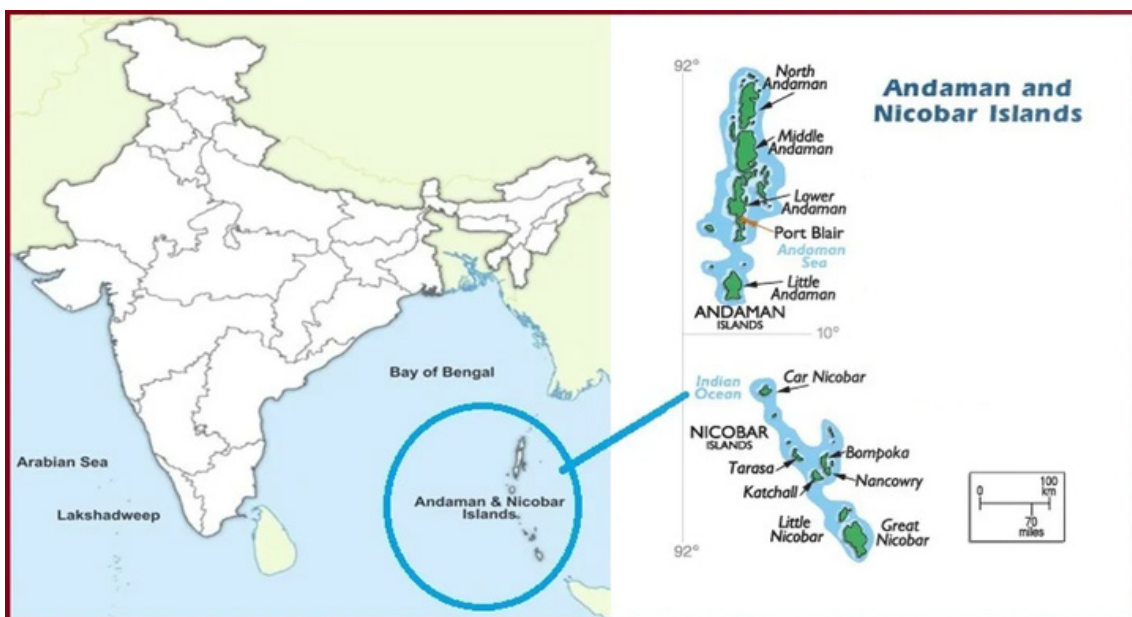# STUDY SHEDS LIGHT ON THE ORIGINS OF THE NICOBARESE PEOPLE

Context
- New study decodes **when the Nicobarese people came to the island.**

About
- Scientists believed the **Austroasiatic ancestors** of the Nicobarese community migrated to the island **more than 11,000 years ago.**
  - The new study showed that they arrived at the **island around 5,000 years ago.**
- Due to its **geographical isolation**, the ancient Nicobarese tribe has preserved its genetic identity without significant admixture with different populations.
  - By **comparing the differences in mutations** between the genetic ancestors and the migrated populations, the scientists were able to trace their time of arrival at the Nicobar Islands

Andaman and Nicobar Islands
- **Andaman and Nicobar Islands** is the **largest archipelago system in the Bay of Bengal.**
- It extends over an area of 8249 Sq. km comprising **572 islands of which 37 are inhabited.**
- The Andaman and the Nicobar Islands are **separated by the Ten Degree Channel, which is around 150 km wide.**
  - Though they're close to each other, the peoples of the two islands have **significantly different physical features,** which also differ from those of the people of mainland India.
- The Island groups have been the **home of aboriginal tribes,** namely, the Great Andamanese, Jarawa, Onge & Sentineles, all of Negrito Origin in the Andaman group of Islands.
  - The tribes in the Nicobar Islands are the **Nicobarese and the Shompen**.

Political Background of Nicobar

- **Post Independence:** The Government was keen to protect the interests of the Nicobarese and **did not allow outside traders to exploit the people.**
  - **The regulation for the Protection of Aboriginal Tribes** came into force in **1956** under which **entry to the Nicobar Islands was strictly restricted.**
- **In the late 1960s** 330 ex-defence presonnel were settled in some de-reserved areas of Great Nicobar island, where the Panchayat System exists at present.
- **On 1st August, 1974,** Nicobar group of islands was declared **a separate district** with its headquarters at **Car Nicobar,** where half of the population exists.
  - Except three Panchayats and one Panchayat Samiti in Great Nicobar, the rest of the District has its own local traditional Tribal Councils.

Facts Related to Andaman and Nicobar Islands

- The Southernmost Island is Great Nicobar whose **southernmost tip is only 150 km away from Sumatra, Indonesia.**
- The highest point is **Saddle Peak** in North Andaman (732 metre), **Mount Thullier** in Great Nicobar (642 metre).
- The **state animal of Andaman and Nicobar Islands** is **Dugong**, the gentle sea cow.
- **Pandunus or Nicobar Breadfruit** is a rare fruit found in the Andaman and Nicobar islands.
- **Barren Island** of the Andaman & Nicobar Island group is the only active volcano not just in India but the whole of South Asia.
- **Indira Point in Great Nicobar** is the Southern-most point of India.

Source: TH

INDIA-CHINA: 75TH ANNIVERSARY OF DIPLOMATIC TIES

Context

- In a significant development, India and China have announced the resumption of the **Kailash Mansarovar Yatra** this summer, coinciding with the **75th anniversary of their diplomatic ties.**

Historical Overview of India-China Relations

- **Early Diplomatic Engagements:** India was among the first countries to recognize the People's Republic of China in 1950, formally establishing **diplomatic ties on April 1, 1950.**

- It was initially characterized by **mutual goodwill,** embodied in the slogan '**Hindi-Chini Bhai Bhai**' *(India and China are brothers)*.

- **Key Milestones in Bilateral Relations:**
  - **Panchsheel Agreement (1954):** The five principles of peaceful coexistence laid a foundation for diplomatic engagement.
  - **Sino-Indian War (1962)**: This conflict over border disputes severely damaged relations.
  - **Normalization Efforts (1988-1993):** Prime Minister Rajiv Gandhi's 1988 visit to China marked a thaw, leading to agreements on peace and tranquility along the border.
  - **Bilateral Trade Boom (2000s):** Economic engagement surged, making China one of India's largest trading partners.
  - **Border Clashes and Standoffs (2017 & 2020):** The Doklam standoff (2017) and Galwan Valley clashes (2020) created fresh tensions.
  - **Recent Diplomatic Talks (2023-2024):** Efforts have been made to manage differences through diplomatic channels.

Recent Developments and Diplomatic Exchanges (75th Anniversary)

- **Foreign Secretary's Visit to China (2025):**
  - ◆ **Border stability:** Both nations agreed to maintain peace along the Line of Actual Control (LAC).
  - ◆ **Economic cooperation:** Trade and investment discussions took center stage.
  - ◆ **People-to-people exchanges:** Resumption of cultural programs and educational collaborations was discussed.
- **China's Emphasis on Stable Ties:** During these talks, China highlighted the importance of 'handling differences constructively' to maintain stable bilateral relations. The Chinese Foreign Ministry emphasized that both sides should work toward **de-escalation along the LAC**.
- **Restoration of Direct Air Connectivity:** India and China agree **to resume direct flight services** after five years. It is expected to enhance people-to-people exchanges and promote mutual understanding.

Challenges in India-China Relations

- **Border Disputes:** Despite diplomatic engagements, unresolved border disputes in Ladakh and Arunachal Pradesh continue to be a major irritant. The 2020 Galwan clashes remain a stark reminder of the volatility along the LAC.
- **Trade Deficit:** While **bilateral trade crossed $125 billion in 2024,** marking a **1.9% year-on-year increase**, India's trade deficit with China remains a concern.
  - ◆ India seeks better market access for its IT and pharmaceutical sectors in China.
- **Regional & Global Rivalry:** India's growing ties with the **QUAD alliance** (US, Japan, Australia) are viewed with suspicion by Beijing.
  - ◆ **China's Belt and Road Initiative (BRI)** conflicts with India's vision of regional connectivity, particularly in South Asia.

Road Ahead: Prospects for Future Cooperation

- **Strengthening Economic Ties:** Both countries can benefit from deeper engagement in sectors such as renewable energy, digital technology, and infrastructure development.
  - ◆ Trade agreements addressing the imbalance can foster stronger economic bonds.
- **Cultural and Educational Exchanges:** Encouraging student exchanges, tourism, and academic collaboration can improve people-to-people relations.
- **Diplomatic and Military Dialogue:** Sustained military and diplomatic talks are crucial for preventing conflicts.

- ◆ **Confidence-building measures (CBMs)** along the border can enhance trust.

Conclusion

- As India and China mark 75 years of diplomatic ties, their relationship remains a mix of cooperation and competition.
- While border tensions and trade issues pose challenges, economic collaboration and diplomatic engagement offer opportunities.
- The future of India-China relations will depend on how both nations balance strategic competition with economic and cultural engagement.

Source: ANI

TEAM INITIATIVE TO BOOST DIGITAL COMMERCE FOR MSMES

In News

- The Ministry of Micro, Small & Medium Enterprises (MSME), in collaboration with the **Open Network for Digital Commerce (ONDC)**, has launched the **MSME Trade Enablement and Marketing (TEAM) Initiative**.

Key Highlights

- **Budget:** ₹277.35 crore over three years (FY 2024-25 to FY 2026-27).
- **Target Beneficiaries:** 5 lakh MSEs (50% women-led enterprises).
- **Implementation Partner:** National Small Industries Corporation (NSIC).
- **Focus Areas:** Onboarding the Micro & Small Enterprises (MSEs) onto ONDC
  - ◆ Digital storefronts, integrated payment systems, and logistics support
  - ◆ Financial assistance for seller onboarding, catalogue creation & account management
  - ◆ Conducting 150+ workshops in Tier 2 & Tier 3 cities for MSMEs, especially SC/ST & women entrepreneurs
  - ◆ Strengthening linkages with PM Vishwakarma & Digital MSME schemes

Why TEAM Initiative?

- **Bridging MSMEs with Digital Commerce:** By integrating with ONDC, MSEs can expand their market presence and reduce operational barriers.
- **Formalizing MSMEs:** Helps establish digital transaction histories, enhancing credibility & trust among customers and financial institutions.
- **Empowering Startups & Tech Enablers:** The initiative allows startups to develop innovative solutions using the ONDC Network to support small businesses.

- **Enhanced Visibility:** Digital presence can improve brand visibility and attract new customers.
- **Improved Credibility:** Formalizing operations and establishing digital transaction histories can enhance trust and credibility with customers.

What is ONDC?

- **ONDC (Open Network for Digital Commerce)** is an initiative by the **Department for Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce, Government of India.
- It is designed to democratize digital commerce by breaking the dominance of a few large e-commerce platforms and creating an open, decentralized network where buyers and sellers can interact across multiple platforms seamlessly.
- **Key Features of ONDC**
    - **Interoperability:** Unlike traditional marketplaces (Amazon, Flipkart, etc.), ONDC allows buyers and sellers to interact across different apps without being restricted to a single platform.
    - **Decentralized Network:** ONDC is not a platform but a network where businesses and individuals can buy and sell across multiple e-commerce apps.
    - **Inclusivity for MSMEs & Startups:** Small businesses can join ONDC without needing their own website or app, helping them reach a wider audience.
    - **Competitive Pricing:** By eliminating middlemen and restrictive commission structures, ONDC allows sellers to offer better prices to consumers.
    - **Support for Multiple Sectors:** Initially focused on retail and food delivery, ONDC is expanding into logistics, mobility, wholesale trade, and more.

Source: ET

LIQUID PROPULSION SYSTEMS OF ISRO

Context

- Recently, ISRO appointed M. Mohan as director of Liquid Propulsion Systems Centre in Thiruvananthapuram.

About the Liquid Propulsion Systems

- Liquid propulsion systems use liquid propellants, such as **liquid oxygen (LOX) and liquid hydrogen (LH2),** to generate thrust.
- These systems are **preferred over solid propulsion systems** due to their higher efficiency,

controllability, and ability to be restarted multiple times.

ISRO's Liquid Propulsion Systems Centre (LPSC)

- It is a key facility under ISRO, responsible for the design, development, and realization of liquid propulsion stages for ISRO's launch vehicles.
- It has **two units** located in **Thiruvananthapuram (Valiamala) and Bengaluru**, each focusing on different aspects of liquid propulsion systems.

Recent Developments

- **Gaganyaan Mission:** ISRO has integrated advanced liquid propulsion systems into the **Crew Module** for the first uncrewed mission of the Gaganyaan project.
    - The **Crew Module Propulsion System (CMPS)** is a **bi-propellant** based **Reaction Control System (RCS)** designed for precise three-axis control (pitch, yaw, and roll) during the descent and re-entry phases.
- **Cryogenic Upper Stage:** ISRO has developed an indigenous cryogenic upper stage **for the Geosynchronous Satellite Launch Vehicle (GSLV)**.
    - It has significantly enhanced India's capabilities in launching heavier payloads into space.
- **Satellite Propulsion Systems:** The LPSC is responsible for developing propulsion systems for satellites, including monopropellant thrusters and components for satellite control and maneuvering.

Source: TH

═══ NEWS IN SHORT ═══

LIBIA LOBO SARDESAI AWARDED PADMA SHRI

In News

- **Libia Lobo Sardesai**, a 100-year-old freedom fighter, recently honored with the **Padma Shri** for her pivotal role in **Goa's liberation movement.**

About Libia Lobo Sardesai

- **Early Life & Inspiration:** Born on 25th May 1924 in Portuguese-ruled Goa.
    - Raised in Mumbai, she became actively involved in the Goan nationalist movement during her college years.
- **Role in Goa's Liberation:**
    - Underground Radio Station (1955-1961): Libia, along with Vaman Sardesai, operated

the 'Voice of Freedom of Goa', an underground radio station.

- It countered Portuguese propaganda, keeping the Goan people informed.
- **Enduring Hardships:** Worked from the jungles of Amboli and Castle Rock, facing harsh conditions, isolation, and threats from Portuguese authorities.
- **Historic Announcement:** On 19th December 1961, she flew over Panaji in an Indian Air Force plane, announcing Goa's liberation in Portuguese and Konkani.
- **Post-Independence Contributions:**
  - First Director of Tourism for Goa, Daman, and Diu, shaping the region's tourism industry.
  - Became the first practicing female lawyer in Goa, breaking gender barriers.
  - Founded the Women's Cooperative Bank, empowering women in financial independence.

Key Events in the Liberation Struggle

- **1954 Economic Blockade:** India exerted economic pressure, restricting Portuguese access to essential resources.
- **Operation Vijay (1961):** On 17th December 1961, India launched a final military operation to liberate Goa. Lt. Gen. J.N. Chaudhuri led Operation Vijay.
  - Within 48 hours, the Portuguese surrendered on 19th December 1961, marking Goa's official independence.

Source: TH

BOMB CYCLONE

In News

Storm Éowyn, a powerful **"bomb cyclone,"** brought severe winds to the British Isles, especially Ireland and Scotland.

- This intense storm has been compared to historic events like the Great Storm of 1987 and Storm Eunice in 2022.

About Bomb Cyclone

- It is a term used by meteorologists and it occurs when a **midlatitude** (the latitudes between the tropics and polar regions) cyclone rapidly intensifies, or strengthens, over a 24 hour period.
- This intensification is represented by a **drop in millibars,** a measurement of pressure used in meteorology.
  - This intensification happens when a cold air mass collides with a warm air mass, such as over warm ocean waters.

- It is also known as **Bombogenesis** and it can cause hurricane-force winds, heavy precipitation, and dangerous conditions, primarily during winter.

Source :DTE

USE FINGERPRINTS TO SOLVE CRIMES

In News

- In the ongoing investigation of a **knife attack on a Bollywood actor**, it remains unclear whether the **fingerprints collected from the crime scene** match the **arrested suspect**.

Fingerprint Use in Law Enforcement

- **Fingerprint Analysis Process:** Prints from the crime scene are compared to **suspect records**.
  - **Key Uses: Identifying prior criminal records** of arrested individuals.
    - **Matching crime scene prints** with suspects.
- **Legal Framework:**
  - **Criminal Procedure (Identification) Act, 2022**: Allows **storage of fingerprints** for individuals arrested for **serious crimes**.
- **Matching Process: Digital Analysis or Expert Verification**.
  - **Henry Classification System**:
    - Used by the **CID for fingerprint matching**.
    - A **10-point match** is considered **conclusive evidence**.
- **Challenges: Smudged or unclear prints** may lead to **inconclusive findings**.

Conclusion

- Fingerprint analysis remains a **crucial forensic tool** in criminal investigations, but **accuracy depends on print quality** and **method of verification**.

Source: TH

CERTIFICATE OF ORIGIN (ECOO) 2.0 SYSTEM

Context

- The Directorate General of Foreign Trade (DGFT) has launched the enhanced Certificate of Origin (eCoO) 2.0 System.

About

- It is designed **to simplify the certification process for exporters and enhance trade efficiency.**

- It offers multi-user access, which enables exporters to authorize multiple users under a single Importer Exporter Code (IEC).
  - It offers exporters seamless access to eCoO services, Free Trade Agreement (FTA) information, trade events, and other resources.
- **Significance:**
  - These certificates cater to goods not of Indian origin, intended for re-export, trans-shipment, or merchanting trade.
  - This initiative not only simplifies the certification process but also accelerates processing times, making it particularly beneficial for global supply chains involving intermediary trade through India.

Source: PIB

DEEPSEEK

Context

- China has developed DeepSeek AI models, DeepSeek-V3 and DeepSeek-R1.
  - This has emerged as strong contenders in the global AI landscape, performing on par with **ChatGPT** and other leading AI systems.

About DeepSeek

- **DeepSeek** is the name of a **free AI-powered chatbot,** developed by the Chinese AI company founded by entrepreneur Liang Wenfeng.
- **How is it Different?**
  - It was built at a **fraction of the cost of industry-leading models** like OpenAI - because it uses fewer advanced chips.
  - Its base model DeepSeek-R1 appears to have been trained via accurate sources while **introducing a layer of censorship**.
  - It surpasses models developed by tech giants Google, Meta, and Anthropic **in terms of overall quality**.
  - DeepSeek is also **faster than GPT 4,** more practical and, according to many experts, **even understands regional idioms and cultural contexts** better than its Western counterparts.

Large Language Model (LLM)

- A Large Language Model (LLM) is a type of AI trained to understand and generate human language.
- These models are built on deep learning techniques allowing them to process and generate text in a coherent, contextually appropriate manner.

- LLMs are used for various tasks, including text generation, language translation, and summarization.

Note: For Detailed Analysis about this you can refer our Daily News Decoded Video on NEXTIAS Youtube Channel

Source: IE

F11 BACTERIA

In News

- A new study has identified **Labrys portucalensis F11**, a strain of **aerobic bacterium from the Xanthobacteraceae family**, capable of breaking down and transforming at least three types of **per- and polyfluoroalkyl substances (PFAS).**

About F11 Bacteria

- The bacteria supports bioaugmentation in wastewater treatment & contaminated soil cleanup.
  - **Bioaugmentation is** a technique where specific microorganisms are introduced to degrade persistent pollutants in contaminated environments.
- It breaks the **carbon-fluorine bond in PFAS**, allowing degradation of toxic compounds.

About PFAS ('Forever Chemicals')

- A class of toxic, highly persistent synthetic chemicals resistant to grease, oil, water, and heat.
- They have one of the strongest carbon-fluorine bonds, making them extremely difficult to degrade.
- They are used in nonstick utensils, waterproof clothes etc.

Source: Earth

SILICON CARBIDE

In News

- Researchers at IIT-Madras have achieved a significant breakthrough in **extracting silicon carbide (SiC)** from simulated lunar soil.

About Silicon Carbide

- It is a synthetic crystalline compound composed of **silicon (Si) and carbon (C)**.
- It is renowned for its hardness, thermal stability, and chemical resistance, making it a critical material across various industries.

Source: BL

ORGANOPHOSPHATES

In News

- In Jammu and Kashmir, 17 deaths have been reported, likely due to poisoning from **organophosphates**, which are commonly used in pesticides.

About Organophosphates

- Organophosphates are chemical compounds used in herbicides, pesticides, insecticides, and nerve gas, formed through the **esterification of phosphoric acid and alcohol.**
- **Effects**: They work by inhibiting the enzyme acetylcholinesterase (AChE), causing an accumulation of acetylcholine (ACh) in the body.

- This leads to symptoms of cholinergic toxidrome, such as altered mental status, miosis, salivation, sweating, muscle weakness, and, in severe cases, respiratory failure.
- **Treatment** focuses on recognizing the toxidrome and administering atropine, a muscarinic antagonist, to counteract the effects.
    - Pralidoxime is used in some cases to reverse the bond between organophosphates and AChE, though it is time-sensitive and dependent on the type of organophosphate.

Source :IE

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