



**SAMUNDRAGYAAN EDUCATION FOUNDATION**

Incorporated Under Section 8, Act 2013, MCA, Govt. of India

# CURRENT RAPID FIRE

CURRENT AFFAIRS MAGAZINE - APRIL 2024

**GRANDMASTER D GUKESH**





## AGNI-PRIME MISSILE

The new generation ballistic missile **Agni-Prime** was **successfully** flight-tested by the **Strategic Forces Command (SFC)** along with the **Defence Research and Development Organisation (DRDO)** from the **Dr APJ Abdul Kalam Island** off the coast of **Odisha**.

### • TYPE

- Nuclear-capable advanced variant of the Agni class

### • DESIGN

- Two-stage canisterised missile
- Maximum range: **1,000 to 2,000 km**
- Lighter than earlier Agni missiles
  - At least **50% lighter than Agni 3**
- New guidance and propulsion systems

### • TRANSPORT & STORAGE:

- Road and rail transportable
- Longer storage capability
- Reduced preparation and launch time

### • BALLISTIC MISSILES

#### LAUNCH & TRAJECTORY:

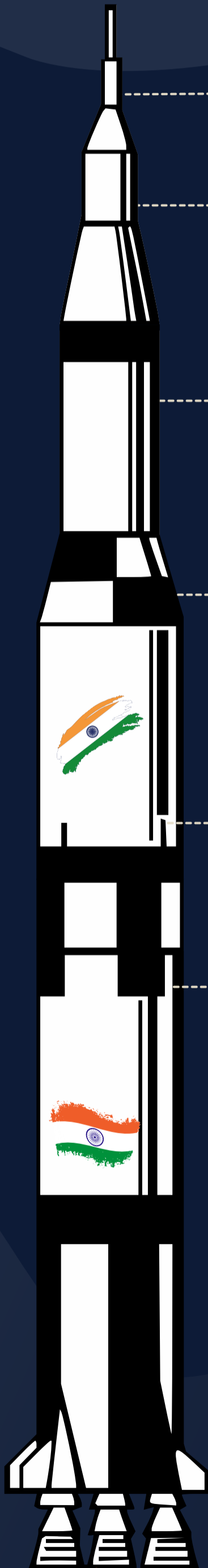
- Launched into upper layers of earth's atmosphere
- Can travel outside the atmosphere
- Warhead detaches and falls towards target

### • CHARACTERISTICS:

- Rocket-propelled
- Self-guided
- Can carry conventional or nuclear munitions

### • LAUNCH PLATFORMS:

- Aircraft
- Ships
- Submarines
- Land





# ASEAN FUTURE FORUM

RECENTLY, INDIA'S EXTERNAL AFFAIRS MINISTER PARTICIPATED IN THE FIRST 'ASEAN FUTURE FORUM'.

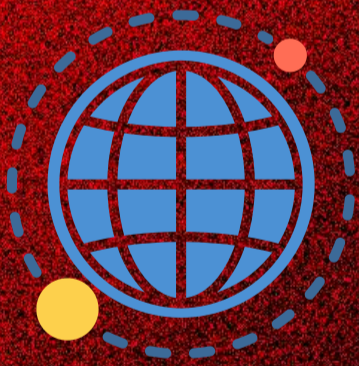
## ASEAN Future Forum

- Platform for ASEAN and its partners to share new ideas and policy recommendations. First forum themed "Toward fast and sustainable growth of a people-centered ASEAN Community."
- Held in Hanoi, Vietnam.



## 2023

- Proposed by Vietnam at the 43rd ASEAN Summit in 2023.



- Aims to create a common platform for ASEAN member states, partner countries, and ASEAN people to contribute to shaping the bloc's development.

## 1967

- Established in 1967 with the signing of the Bangkok Declaration.
- Founding members: Indonesia, Malaysia, Philippines, Singapore, and Thailand. Presently comprises 10 member states: Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Laos, Myanmar, Cambodia, and Vietnam.





# C-Dome

Israel for the first time deployed its ship-mounted defence system, called the C-Dome.

01.

## C-Dome Overview:

- Naval version of **Israel's Iron Dome air defense system.**
- Shields against rocket and missile attacks at sea.
- Operational since **2022, unveiled in 2014.**
- Mounted on Sa'ar 6-class corvettes (German-made warships).
- Uses Iron Dome's interceptor missile.
- Integrated into the **ship's radar for target detection.**
- Provides full-circular vessel protection against modern maritime threats.

02

## Iron Dome Key Facts:

- **Israel's** air missile defense system for **short-range rockets.**
- Operational since **2011.**
- Developed by **Rafael Advanced Defense Systems and Israel Aerospace Industries.**
- Capable of handling multiple rockets simultaneously.

### Features:

- Powered by **missile-defense batteries.**
- All-weather capabilities for day and night operation.
- Launches various interceptor missiles.
- Range of interception: about **40 miles or less.**
- Can be deployed on ships or land.
- Requires reloading for continuous interception.

### Operates through:

- Radar for rocket detection.
- Command-and-control system for threat assessment.
- Interceptor missile to destroy incoming rockets



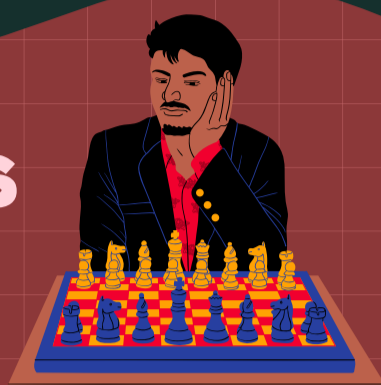


# CANDIDATES CHESS TOURNAMENT 2024

India's **17-year-old** Grandmaster **D Gukesh** recently made history by winning the **Candidates Chess Tournament in Toronto**

**1**

## Candidates Chess Tournament:



- Final event in the World Championship cycle before the World Championship match. Organized by the International Chess Federation (FIDE) since 1950. Occurs every two years since 2013.
- Currently, an eight-player, double round-robin event.

**2**

## Importance



- Second most important tournament in the World Championship cycle.
- Winner plays the reigning world champion in the championship match.
- Main objective of other tournaments in the cycle is to qualify for the Candidates Tournament.



**3**

## Qualification Methods:

- Runner-up in the previous World Championship match.
- Top three finishers of the FIDE World Cup.
- Top two finishers of the FIDE Grand Swiss tournament.
- Winner of the FIDE Circuit.





# CLEAN ENERGY TRANSITIONS PROGRAMME



Recently, the International Energy Agency (IEA) published the Clean Energy Transitions Programme annual report 2023.



## ABOUT CLEAN ENERGY TRANSITIONS PROGRAMME:



- It is the IEA's flagship initiative launched in 2017 for accelerating progress toward a global net zero energy system.

- Its goals are in line with the objectives of the 2015 Paris Agreement and the Sustainable Development Goals established by the United Nations.
- It leverages the insights and influence of the world's leading energy authority to accelerate clean energy transitions, particularly in emerging and developing economies



## KEY FACTS ABOUT IEA:

- It's an autonomous organization within the OECD that collaborates with governments and industry to create a secure and sustainable energy future worldwide. It was founded in 1974 to ensure the security of oil supplies. It was created in response to the 1973-1974 oil crisis and consists of 31 member countries and eleven association countries





# DIGITAL INDIA TRUST AGENCY

**THE RESERVE BANK OF INDIA IS CONSIDERING ESTABLISHING A DIGITAL INDIA TRUST AGENCY (DIGITA) TO COMBAT CYBER FRAUD AND ILLEGAL LENDING APPS.**

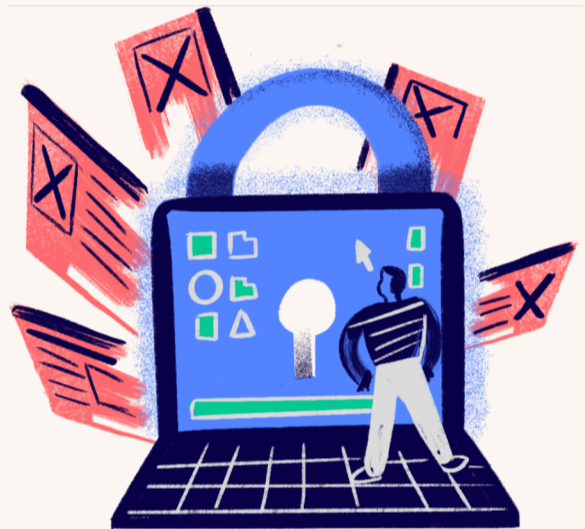


## Responsibilities

- Stop illegal lending apps from emerging
- Verify digital lending apps
- Maintain public register of verified apps

## Verification:

- Apps without "verified" tag from DIGITA considered unauthorized



## Significance:

- Important checkpoint against online financial fraud

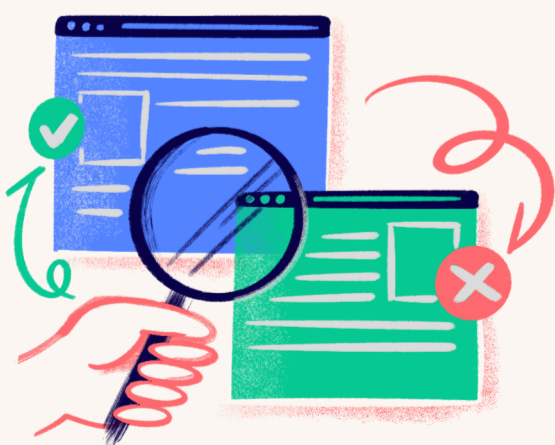
## What is Digital Lending?

- Remote and automated lending via digital technologies
- Involves lender, lending service provider (including digital lending platforms), and borrower



## Process:

- It involves lending through web platforms or mobile apps, utilising technology in customer acquisition, credit assessment, loan approval, disbursement, recovery and associated customer service.





## DOXXING



In recent, doxxing incidents are increasing over internet across the globe.

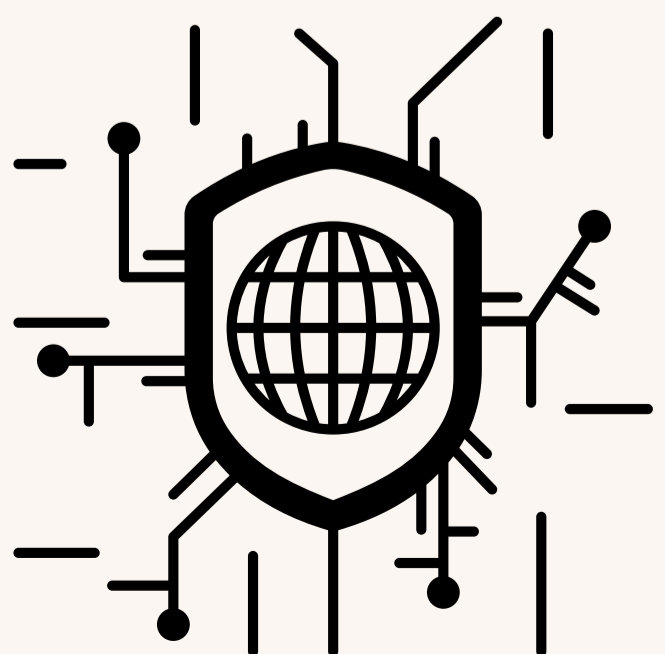
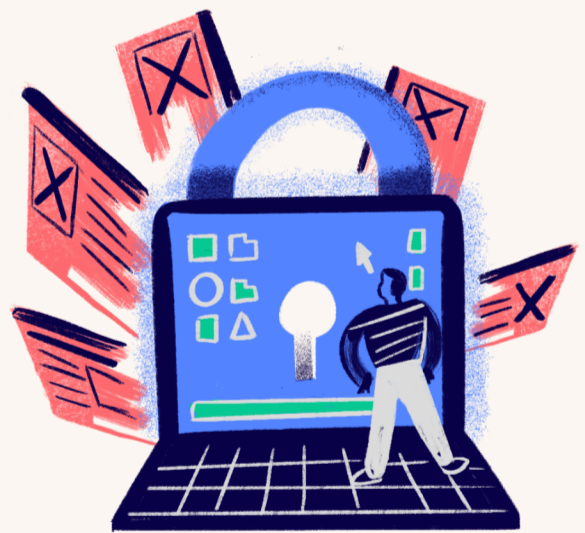


### Prevention Measures:

- **Passwords:** Use strong, unique passwords; avoid repetition across platforms.
- **Multi-factor Authentication:** Set up where possible.
- **Social Media:** Avoid posting revealing photos of neighborhoods, houses, keys, landmarks.
- **Reporting:** Use National Cyber Crime Reporting Portal online.

### Doxxing

- **Origin:** Derived from "dropping dox".
- **Definition:** Online harassment by publishing an individual's personal information without consent.
- **Information Revealed:** Full name, address, phone number, workplace, and other sensitive data.
- **Purpose:** Expose, threaten, intimidate; can lead to physical harm, stalking, or job loss.
- **Methods:** Often obtained illegally via hacking or theft.







# EUVICHOL-S

RECENTLY, THE WORLD HEALTH ORGANIZATION (WHO) HAS PREQUALIFIED A NEW ORAL VACCINE FOR **CHOLERA** CALLED **EUVICHOL-S**.



- Euvichol-S is an inactivated oral vaccine for cholera, the third in its vaccine family on the WHO prequalification list.

- It's a simplified version of Euvichol-Plus, another oral cholera vaccine.



- Other vaccines in this family include Euvichol and Euvichol-Plus.

- Cholera, caused by *Vibrio cholerae*, is an acute diarrhoeal disease.



- Symptoms include severe acute watery diarrhoea, vomiting, and leg cramps.



# GPT-4 VISION

Following its launch, OpenAI's ChatGPT has evolved by leaps and bounds and also recently announced API access to GPT-4 with Vision



## OVERVIEW

OpenAI's multimodal AI model, combining **image, text, and audio inputs**.

## FUNCTION

- Enables visual question answering (VQA) by analyzing image inputs
- Type: **Large Multimodal Model (LMM)**.



## FEATURES

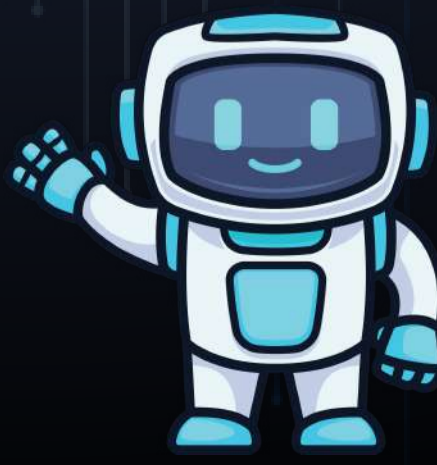
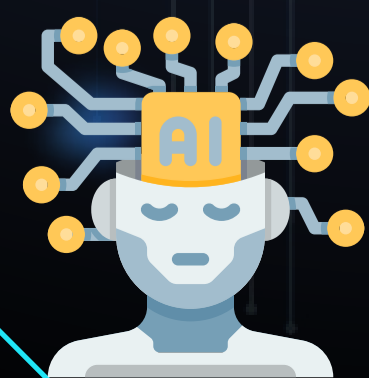
- Processes visual content: photographs, screenshots, documents.
- Identifies objects in images, interprets data in graphs, charts, etc.
- Interprets handwritten and printed text within images.

## ADVANCEMENT

- Bridges gap between **visual understanding and textual analysis**.

## APPLICATIONS

- **Researchers:** Assists in interpreting **historical documents and manuscripts**.
- **Web Developers:** Converts visual designs or sketches into website code.
- **Data Analysts:** Unlocks insights from visual data and graphics.





# Indian laurel tree

Recently, forest department authorities in Andhra Pradesh's **Alluri Sitharama Raju** district cut the bark of an **Indian laurel tree**, with water gushing out.

## ABOUT INDIAN LAUREL TREE:

### SCIENTIFIC NAME:

- **Terminalia elliptica** (syn. **T. tomentosa**)



### HABITAT

- Dry and moist deciduous forests in southern India up to **1000 m**.



### DISTRIBUTION

- Southern and Southeast Asia, including India, Nepal, Bangladesh, Myanmar, Thailand, Laos, Cambodia, and Vietnam



### WOOD USES:

- Furniture, cabinetwork, joinery, paneling, boat-building, railroad ties, decorative veneers, musical instruments.



- **Leaf Uses:** Food for **Antheraea paphia** (silkworms) producing tussar silk.
- **Dye and Tanning:** Bark and fruit yield pyrogallol and catechol for leather dyeing and tanning.

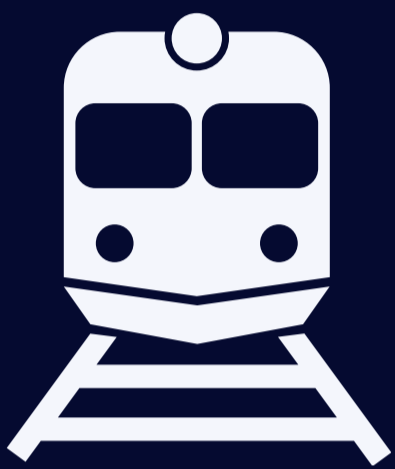
### FACT:

- **Medicinal Uses:** Bark treats diarrhoea; contains extractable oxalic acid.



# KAVACH COLLISION SYSTEM

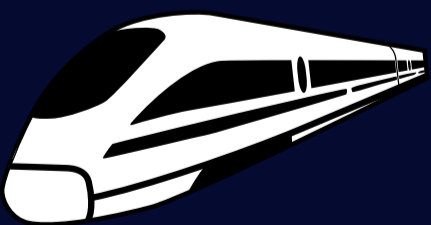
RECENTLY, **THE SUPREME COURT** APPRECIATES STEPS TAKEN BY **RAILWAYS** TO ROLL OUT **KAVACH ANTI-COLLISION SYSTEM**.



- Indigenously developed **Automatic Train Protection (ATP) system**.
- Developed by **Research Design and Standards Organisation (RDSO)** in collaboration with the **Indian industry**.



- Operates on **Safety Integrity Level-4 (SIL-4)** standards.
- Uses **high-frequency radio communication**.
- Prevents trains from passing signals at **Red (danger)** to avoid collisions.



- **Activates train's braking system** automatically for speed restriction violations.
- Supports train operations during adverse weather like dense fog.
- Based on continuous update of **Movement authority principle**.





## Hume AI

Recently, a **New York-based research lab and technology company Hume**, has introduced what can be called the **'first conversational AI with emotional intelligence'**.

### ABOUT HUME AI

- It is the **world's first emotionally intelligent voice AI**. It accepts live audio input and returns both generated audio and transcripts augmented with measures of vocal expression.
- It is essentially an API that is powered by its **proprietary empathic large language model (eLLM)**.
- By processing the tune, rhythm and timbre of speech, **EVI** unlocks a variety of new capabilities, like knowing when to speak and generating more empathic language with the right tone of voice.

### LARGE LANGUAGE MODEL

- It is a type of **artificial intelligence (AI) program that can recognize and generate text, among other tasks**.
- They are trained on huge sets of data—hence the name "**large**". They are built on machine learning: specifically, a type of **neural network called a transformer model**.
- In simpler terms, an **LLM is a computer program** that has been fed enough examples to be able to recognize and interpret human language or other types of complex data.



# KHAVDA RENEWABLE ENERGY PARK

Adani Green Energy Ltd (AGEL) recently established the world's largest renewable energy park in Gujarat's Khavda region.

## About Khavda Renewable Energy Park:

### 01. Location

- Khavda, Gujarat's Kutch region.

### 02. Size & Capacity

- World's largest renewable energy park spanning 538 sq km (five times the size of Paris)
- Capacity: 45 GW predominantly from solar energy.

### 03. Solar Radiation & Wind Speed

- Solar Radiation: Second-best in India after Ladakh.
- Wind Speed: Five times that of the plains.

### 04. Security

- Security: Buffer zone manned by Border Security Force (BSF); 1 km from Pakistan border.

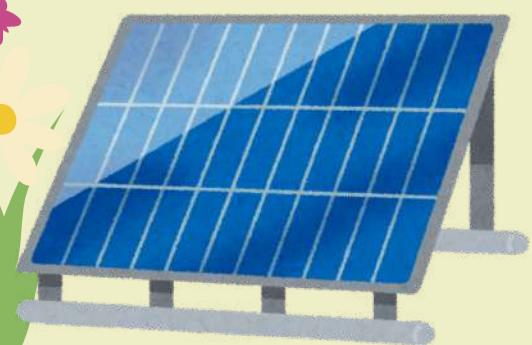
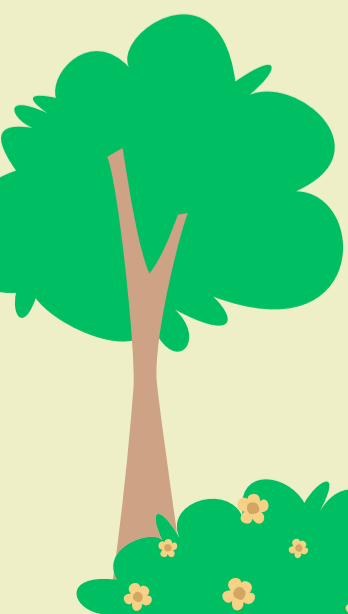
### 05. Investment

AGEL to invest Rs 1.5 lakh crore for 30 GW clean electricity.

- Solar: 26 GW
- Wind: 4 GW

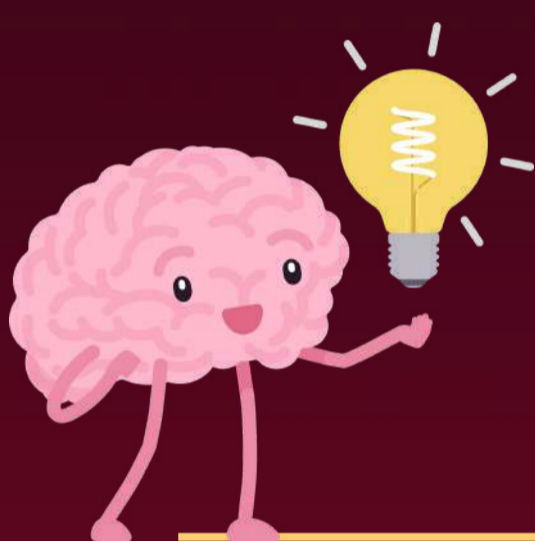
### 06. Electricity Generation:

- Projected to produce 81 billion units.
- Can power nations like Belgium, Chile, and Switzerland.





# LAB-GROWN MINIBRAINS



## Lab-grown Minibrains (Brain Organoids):

- Miniature, simplified models of **full-size human brains**.
- Often referred to as "**minibrains**."

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## Creation Process:

- Grown from stem cells, which can develop into any cell type.
- Stem cells sourced from adult human cells or rarely, human embryonic tissue.
- Adult cells treated with chemicals to revert them into induced pluripotent stem cells (iPSCs).
- iPSCs embedded in a protein-rich matrix or **grown atop a 3D scaffold to form a 3D shape**.



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## Applications:

- Basic research.
- Drug development.
- Computer science advancements.



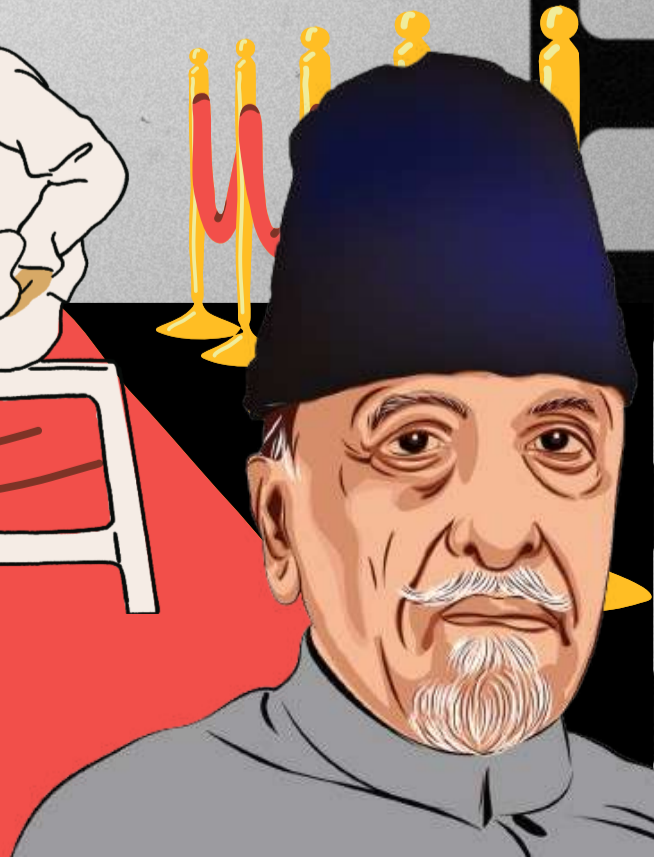


# Lalit Kala Akademi

Recently, the **Ministry of Culture** has curtailed the powers of the **Lalit Kala Akademi (LKA)** Chairman, barring him from taking any “administrative actions”.

## About Lalit Kala Akademi:

- Inaugurated on **5th August 1954** by **Maulana Abul Kalam Azad**
- Registered under the **Societies Registration Act 1860**
- Preserves and documents a collection reflecting contemporary, modern, folk, and tribal art in India
- India's national academy of fine arts established by the **Government of India**
- Promotes understanding of Indian art globally
- Organizes Visual Art promotions through **Cultural Agreements and Exchange Programmes**
- Funded by the **Ministry of Culture**
- Headquarters in **New Delhi**
- Regional centres in **Chennai, Lucknow, Kolkata, Bhubaneswar, and Garhi**







# LLAMA 3



Recently, **Meta** introduced its most capable Large Language Model (LLM), the Meta Llama 3.

## Llama 3:

- Introduced by **Meta AI** in **February 2023**. Considered the most sophisticated language model with enhanced performance and AI capabilities.
- Based on **Llama 2** architecture, available in **8B and 70B parameter sizes**.
- Both sizes include a base model and an instruction-tuned version for specific tasks.
- Instruction-tuned version designed for AI chatbots to hold conversations.
- Supports context lengths of **8,000 tokens** for extensive interactions and complex input handling.
- Compatible with Facebook, Instagram, WhatsApp, Messenger, and the web.
- Integrated into the Hugging Face ecosystem for developers.
- Currently available in English across the US on WhatsApp.



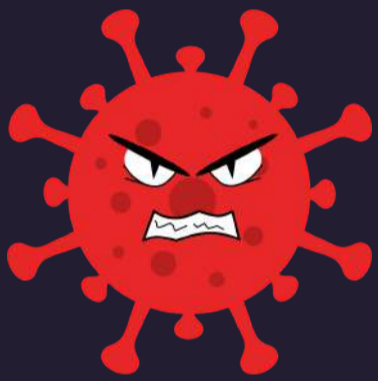
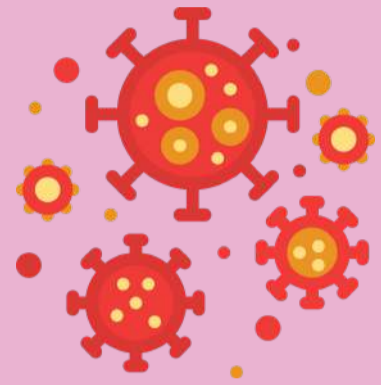


# Marburg Virus Disease (MVD)

Experts worry that the world's deadliest cave, Kitum, located in Mount Elgon National Park in Kenya, may be home to the next pandemic, the Marburg virus.

## Marburg Virus Disease (MVD)

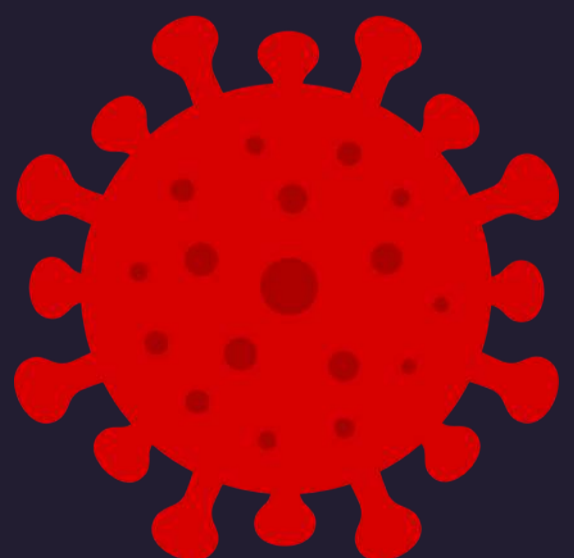
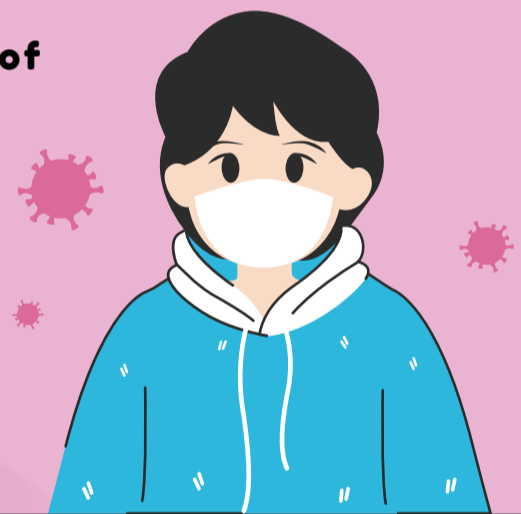
- Rare but severe hemorrhagic fever caused by Marburg virus.
- Genetically unique zoonotic RNA virus of the filovirus family, related to Ebola virus.
- Initial transmission from prolonged exposure to mines or caves inhabited by Rousettus bats.
- Human-to-human transmission via direct contact with infected bodily fluids or contaminated surfaces



- Symptoms include sudden onset fever, chills, headache, myalgia, rash, nausea, vomiting, and severe complications like organ failure.
- Average case fatality rate around 50%, varying from 24% to 88% in past outbreaks.
- No specific treatment; supportive care with rehydration and symptomatic treatment improves survival.

## Viral Hemorrhagic Fevers (VHFs):

- Group of diseases caused by various families of viruses.
- Affect multiple organ systems, damage cardiovascular system, and reduce body's ability to function.
- Some VHFs cause mild illnesses, while others can be severe and life-threatening.
- Most VHFs have no known cure or vaccine.





# MICROPLASTICS

Researchers recently created a plant-based polymer that biodegrades at microplastic level.



## Microplastics

- **Definition:**
  - Plastic particles **<5 mm in diameter**
  - Different from "macroplastics" (e.g., bottles, bags)

- **Sources:**
  - Commercial products (cosmetics, clothing)
  - Breakdown of larger plastics



## Composition:

- Carbon and hydrogen polymer chains
- Contains chemicals like **phthalates, PBDEs, TBBPA**

## Environmental Impact:

- Persistent accumulation
- Ingested by marine organisms
- Air pollution source
- Difficult for water treatment to remove



## Polymers

### Definition:

- Long chains of repeating molecules

## Types:

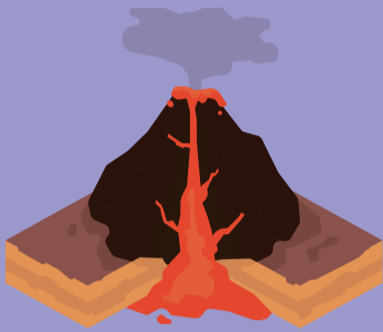
- **Synthetic:** plastics (e.g., rubber, polyester)
- **Natural:** rubber, wood (e.g., isoprene)





# Mount Erebus

Mount Erebus, an active volcano in Antarctica, has been in the news for spewing gold dust worth \$6000 every single day.

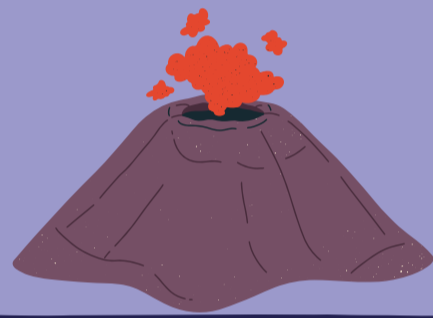


## Mount Erebus

- Located on Ross Island, Antarctica.
- Most southerly active volcano on Earth.
- Stratovolcano with a conical shape and layers of lava, tephra, and volcanic ash.

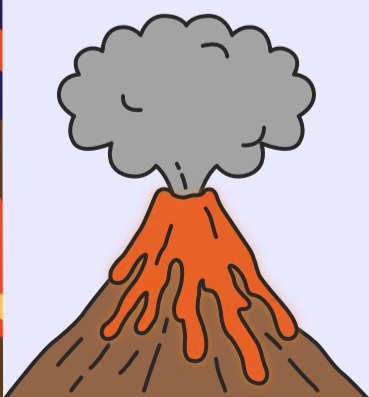
## Volcanic Eruptions

- Known for its persistent lava lake active since at least 1972.
- Engages in Strombolian eruptions, occasionally spewing molten rock bombs.
- Monitored by researchers using satellites due to its remote location.



## Stratovolcanoes:

- Tall, steep, and cone-shaped volcanoes.
- Found above subduction zones, often in volcanic regions like the Ring of Fire.
- Comprise about 60% of Earth's individual volcanoes.
- Erupt cooler and more viscous lavas like andesite and dacite.
- Viscous lavas lead to explosive eruptions due to high gas pressures.
- Typically composed of equal parts lava and pyroclastic material.





# MOUNT RUANG

Mount Ruang initiated its eruption recently, propelling an ash cloud upwards of a mile into the sky.

- Located in North Sulawesi province, Indonesia.
- Stratovolcano with a summit at 10,932 feet above sea level.
- Has a caldera approximately two miles wide.

## Stratovolcano:

- Tall, steep, and cone-shaped volcano.
- Typically found above subduction zones.
- Common in volcanic regions like the Ring of Fire around the Pacific Ocean.
- Comprises about 60% of Earth's individual volcanoes.
- Erupts cooler and more viscous lavas like andesite and dacite.
- High gas pressures due to viscous lavas often lead to explosive eruptions.
- Composed of approximately equal parts lava and pyroclastic material.





# myCGHS app



Recently, the secretary of the Ministry of Health and Family Welfare launched the myCGHS app.

## myCGHS App

### Overview:

- Designed to enhance access to **Electronic Health Records for CGHS beneficiaries**
- Developed by **National Informatics Centre (NIC) Himachal Pradesh and NIC Health Team**

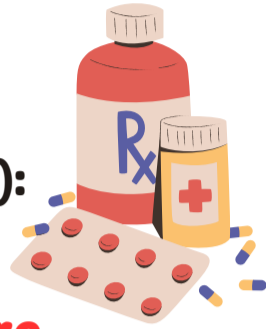
### Features:

- Booking and cancellation of online appointments
- Downloading CGHS card and index card
- Accessing lab reports from CGHS labs
- Checking medicine history
- Checking medical reimbursement claim status
- Accessing referral details
- Locating nearby wellness centers

### Central Government Health Scheme (CGHS):

#### Overview:

- Provides **healthcare facilities to Central Government employees and pensioners**
- Enrolled members receive reimbursement and cashless facilities

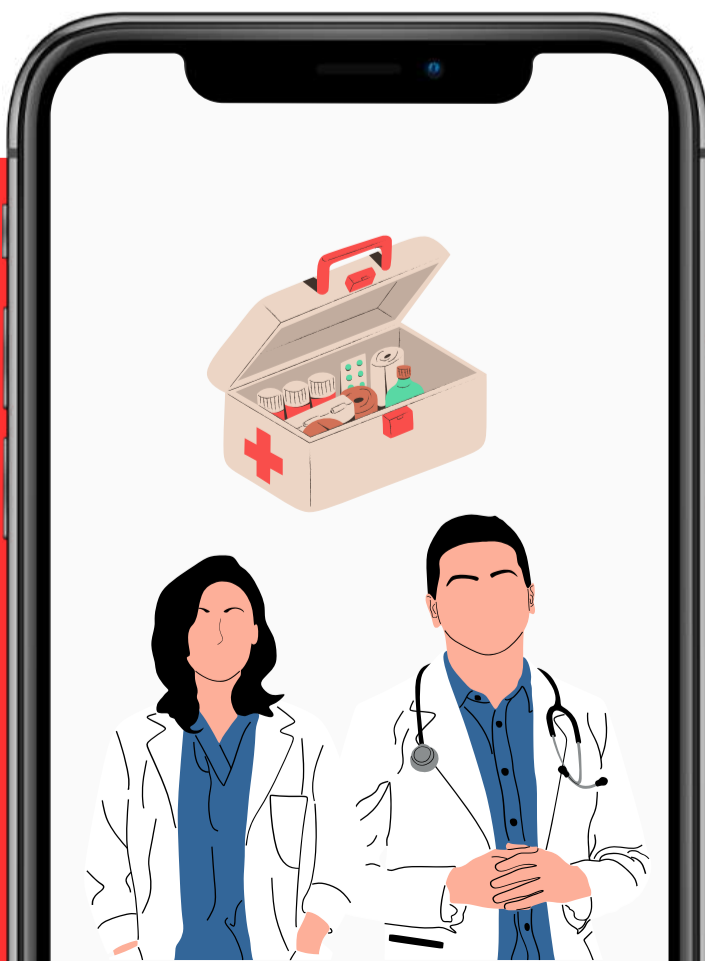
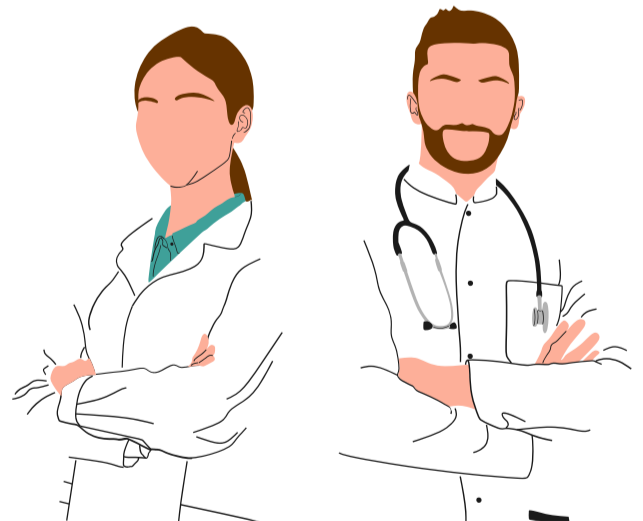


#### Coverage:

- Includes **Allopathy, Homeopathy, Ayurveda, and Unani systems of medicine**

#### Hospital Treatment:

- Beneficiaries can undergo **treatment at any empanelled private hospital**



### Security:

- **2-factor authentication**
- **mPIN functionality**
- **Ensures confidentiality and integrity of user data**



# OPERATION MEGHDOOT

## What in News

The Indian Army recently commemorated 40 years since 'Operation Meghdoot' began for securing the Siachen Glacier.

## Operation Meghdoot:

- Code-name for the Indian Armed Forces operation to capture Siachen Glacier.
- Launched on April 13, 1984.
- Response to Pakistan's "cartographic aggression" in Ladakh.
- Aimed to pre-empt Pakistan Army's seizure of Sia La and Bilafond La passes.
- First assault on the world's highest battlefield.
- Demonstrated seamless coordination between Indian Army and Air Force.
- Resulted in Indian troops gaining control of the entire Siachen Glacier.

## Strategic Importance of Siachen Glacier:

- Highest militarised zone, located at around 20,000 feet in the Karakoram Mountain range.
- Dominates Shaksgam Valley (ceded to China by Pakistan in 1963) to the north.
- Controls routes from Gilgit Baltistan to Leh from the west.
- Dominates ancient Karakoram Pass in the east.
- Observes nearly the entire Gilgit Baltistan to the west, an Indian territory occupied by Pakistan in 1948.





# OptiDrop Platform

Recently, the **Centre for Cellular and Molecular Platforms (C-CAMP)** in **Bengaluru** has developed a new platform called **OptiDrop**.



## OVERVIEW:

- **Microfluidic chip-based platform**
- **Simplifies and reduces cost of studying single cells**
- **Enables precise and cost-effective single cell analysis in droplets**

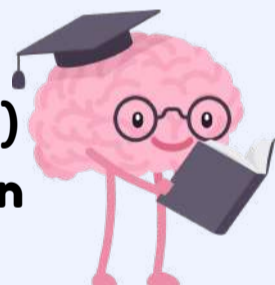
## UNIQUE FEATURES:

- **Live data visualization**
- **Smaller data footprint**
- **'Closed' system design to prevent external contamination**



## SUPPORT

- **Research supported by:**
  - **Biotechnology Industry Research Council (BIRAC)**
  - **Department of Science and Technology (DST)**
  - **Ministry of Human Resource Development (MHRD)**



## WHAT IS C-CAMP?

- **Initiative supported by Department of Biotechnology**
- **Catalyst for cutting-edge research and innovation in life sciences since 2009**
- **Promote entrepreneurship and innovation**







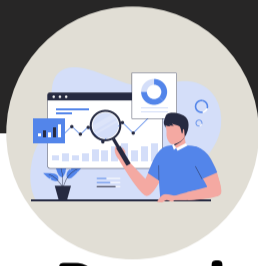
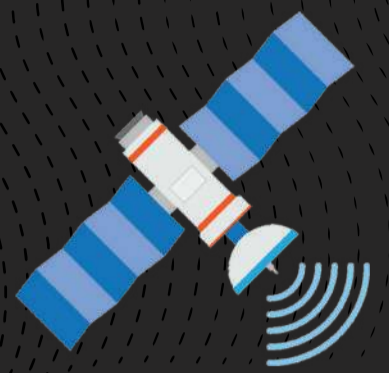
# PRATUSH TELESCOPE

Astronomers are looking forward to posting high-resolution telescopes on the moon and in orbit around it, including one from India called PRATUSH.



## Overview

- Probing Reionization of the Universe using Signal from **Hydrogen (PRATUSH)**
- Radio telescope to be sited on the moon's far side



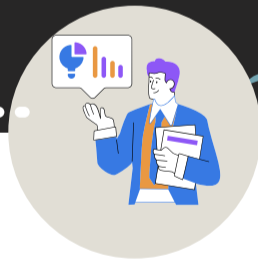
## Development:

- Built by **Raman Research Institute (RRI)** in Bengaluru
- Collaboration with **Indian Space Research Organisation (ISRO)**



## Launch

- Initially placed into **Earth's orbit by ISRO**
- Fine-tuning before launching towards the moon



## Main Roles

- Detect signals from **first stars and galaxies**
- Reveal cosmic dawn of the universe
- Study nature and light of the **first stars**



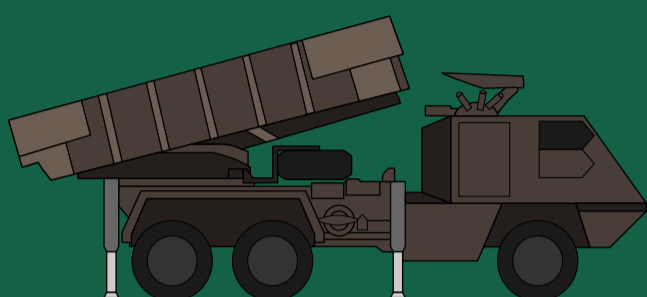
## Features

- Wideband frequency-independent antenna
- Self-calibrating analog receiver
- Digital correlator to **capture radio noise**



## Project Akashteer

The Indian Army has initiated the induction of control and reporting systems under 'Project Akashteer' to bolster its air defense capabilities.



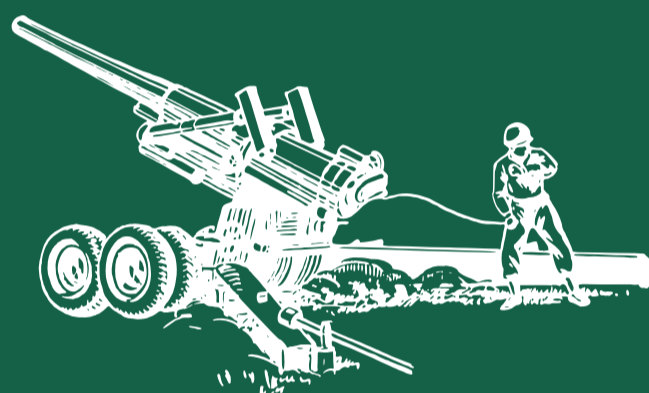
### PROJECT AKASHTEER:

#### OBJECTIVE

- Automate air defense control and reporting processes
- Digitize to enhance situational awareness and control

#### FUNCTIONALITY

- Monitor low-level airspace over battle areas
- Control Ground Based Air Defence Weapon Systems



#### AKASHTEER COMMAND AND CONTROL SYSTEMS:

##### Developer:

- Developed by Bharat Electronics Limited (BEL)
- Part of 'Atmanirbhar Bharat' initiative

##### Design & Capability:

- Vehicle-based and mobile control centers
- Operational in challenging communication environments



#### EFFICIENCY AND INTEGRATION

- Digitizes Air Defence Control and Reporting
- Swift response to threats, minimizes friendly fire risk

##### Automation:

- Signifies a leap towards complete automation of air defense operations



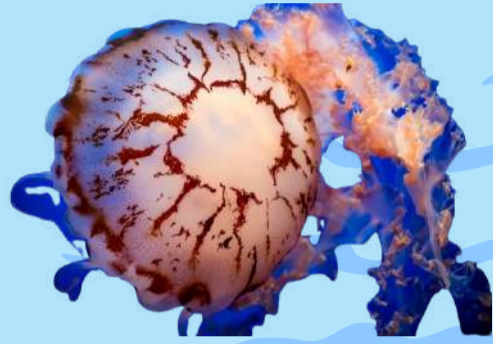


# PURPLE-STRIPED JELLYFISH

Recently, a bloom of venomous mauve stinger or purple-striped jellyfish was reported by marine researchers across the **Visakhapatnam coast**.

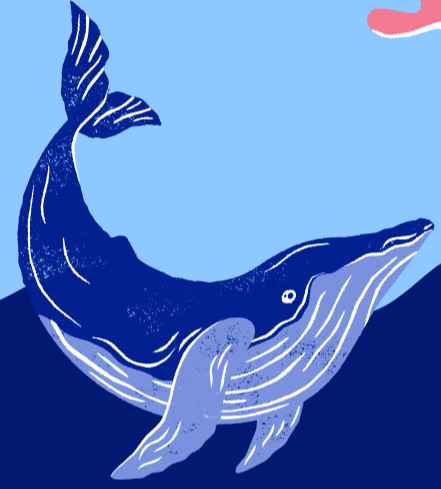
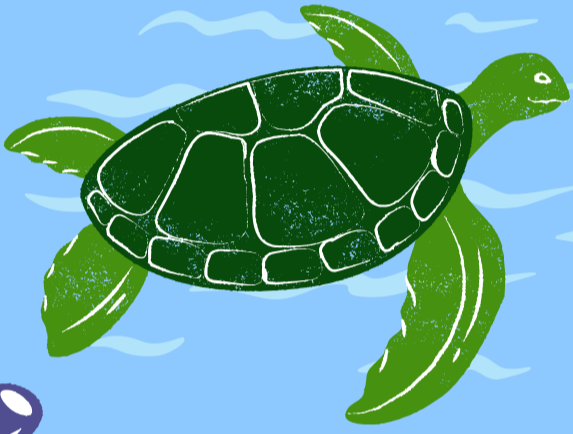
## APPEARANCE

- Blue-purple (mauve) color
- Globe-shaped umbrella with orangey-brown warts



## HABITAT

- Pelagic or open ocean
- Can survive in benthic and temperate coastal areas



## DISTRIBUTION

- Worldwide in tropical and warm-temperature seas
- Mainly in Indo-Pacific, Atlantic Ocean, and Mediterranean Sea



## UNIQUE FEATURES:

- Stingers on tentacles and bell
- Bioluminescent, producing light in the dark



## JELLYFISH BLOOM:

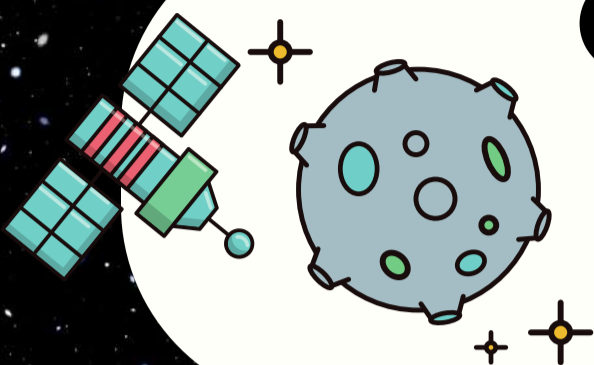
- Population increase due to higher reproduction rate
- Frequently reported with rising ocean temperatures causing substantial growth





## QUEQIAO-2

CHINA NATIONAL SPACE ADMINISTRATION (CNSA) RECENTLY SAID ITS LAUNCH OF THE QUEQIAO-2 SATELLITE WAS A "COMPLETE SUCCESS".

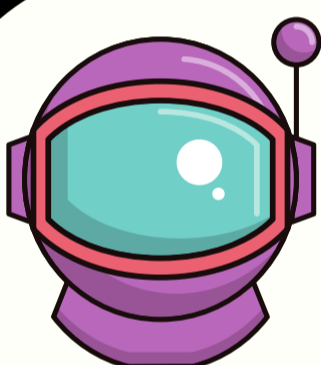
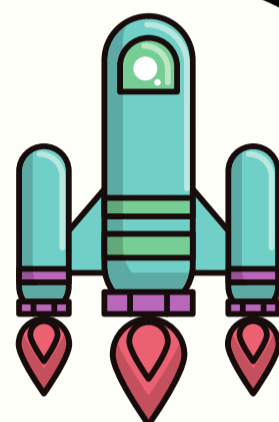


### Purpose

- Relay satellite to bridge communications between **Earth and lunar probes on the far side of the moon until 2030.**

### Antenna

- **4.2-meter-diameter parabolic antenna, one of the largest beyond Earth orbit**

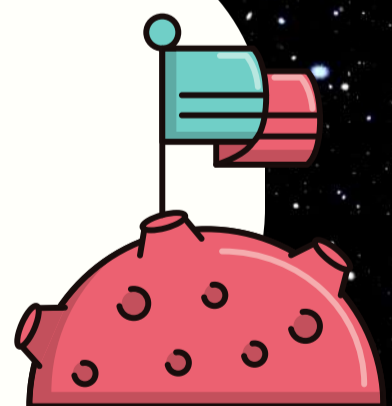


### Missions Supported

- **Chang'e-6 lunar far-side sample return mission.**
- **Future Chang'e-7 and -8 lunar missions.**

### Science Payloads

- **Extreme Ultraviolet Camera (EUC).**
- **Grid-based Energetic Neutral Atom Imager (GENA).**
- **Lunar Orbit VLBI EXperiment (LOVEX), a very long baseline interferometer.**



### Experimental CubeSats:

- **Tiandu-1 and Tiandu-2.**
- **Orbit the Moon to test navigation and communication technologies.**





# RAKHIGARHI

The NCERT recently introduced certain revisions to the history syllabus of Class 12 students, highlighting that Harappans were based out in Rakhigarhi.

## LOCATION

- Archaeological site in **Hisar district, Haryana**
- **27 km from Ghaggar river, Ghaggar-Hakra river plain**

- Dates back to about **6500 BCE**.
- One of the oldest and largest cities of the **Indus Valley or Harappan Civilization**.
- One of the five largest townships of the Harappan civilization on the Indian sub-continent.

## HISTORICAL SIGNIFICANCE:

## FINDINGS

- **Seven identified** archaeological mounds.
- Evidence of occupation during **Early and Mature Harappan periods**.
- Site abandoned during the **Late Harappan period**.
- Mature Harappan phase revealed a planned township with mud-brick and burnt-brick houses and proper drainage.
- Ceramic industry represented by **red ware: dish-on-stand, vase, jar, bowl, beaker, perforated jar, goblet, and handis**.
- Animal sacrificial pits and fire altars indicate Harappan ritual systems.
- Important find: **cylindrical seal with five Harappan characters and an alligator symbol**.
- Few extended burials found, likely from medieval times





## S.A.R.A.H.



**RECENTLY, THE WORLD HEALTH ORGANIZATION (WHO) ANNOUNCED THE LAUNCH OF S.A.R.A.H., A DIGITAL HEALTH PROMOTER PROTOTYPE.**

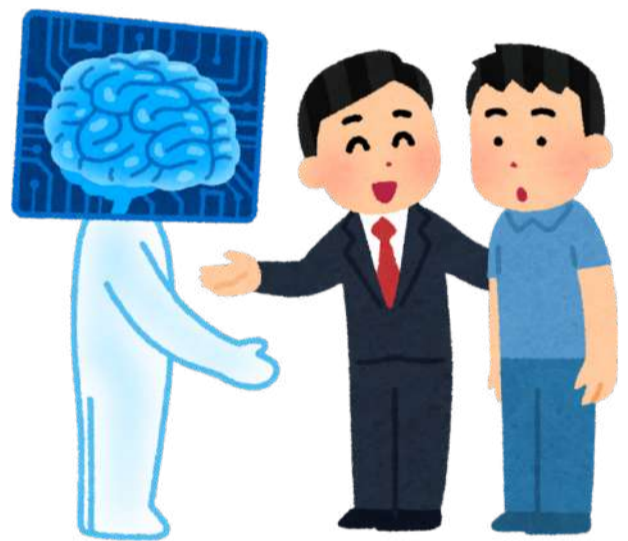
### ORIGIN

- Launched by the **World Health Organisation (WHO)**
- **Digital health promoter prototype**



### AI CAPABILITIES:

- **Empathetic responses powered by generative AI**
- **Real-time responses instead of pre-set algorithms**



### FEATURES

- **Information on major health topics:**
  - **Healthy habits**
  - **Mental health**
- **Understanding risk factors for leading causes of death:**
  - **Cancer**
  - **Heart disease**



### ACCESSIBILITY

- **Available 24/7**
- **Supports 8 languages**
- **Accessible on any device**



# SEBI Complaint Redress System (SCORES 2.0)

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## The internet revolution

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## Advances in technology

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## The rise of Social Media

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## Cybersecurity in the digital age

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## Looking towards the future

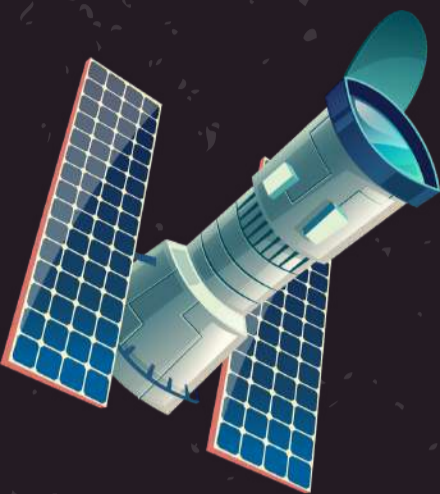
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# TSAT-1A

Tata Advanced Systems Limited (TASL) recently announced the successful deployment in space of its sub-metre resolution optical satellite, TSAT-1A, by SpaceX's Falcon 9 rocket.



## TSAT-1A OVERVIEW:

- Optical sub-metre-resolution Earth observation satellite.
- Built by Tata Advanced Systems Limited (TASL) in collaboration with Satellogic Inc.

## DEVELOPMENT AND LAUNCH:

- Assembled at TASL's AIT plant in Vemagal, Karnataka.
- Launched by SpaceX's Falcon 9 from Kennedy Space Center, Florida, US.



## FEATURES

- Capable of capturing military-grade imagery with sub-meter resolution.
- Equipped with multispectral and hyperspectral imaging capabilities.
- Greater collection capacity, wider dynamic range, and low-latency data delivery.

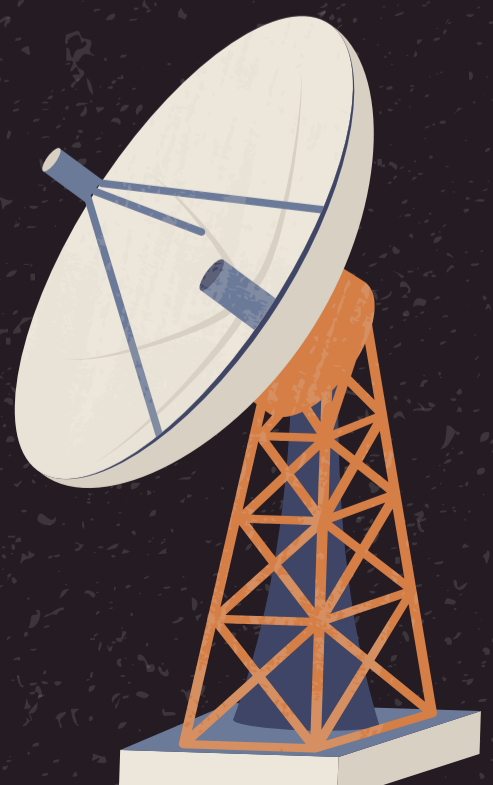
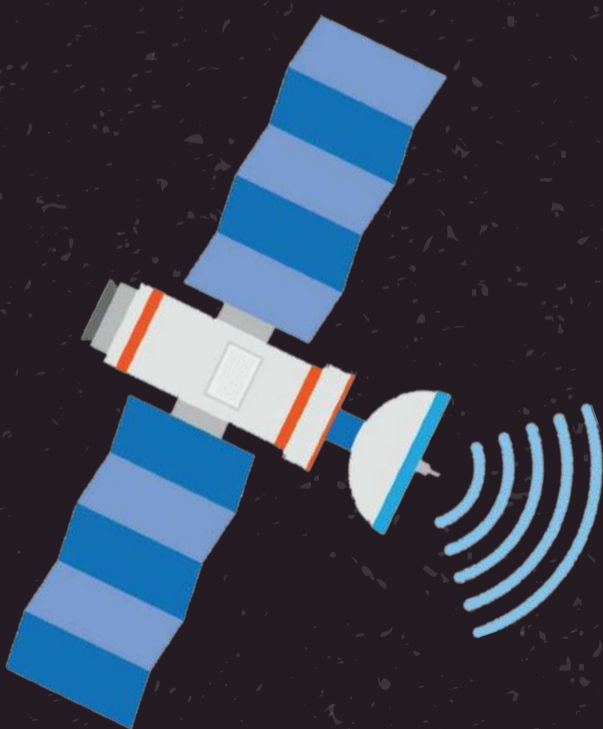


## APPLICATIONS

- Used by Indian defense forces for discreet information gathering.
- Data shared with friendly nations to enhance preparedness, response capabilities, and strategic decision-making.

## SIGNIFICANCE

- First private sector initiative in India for building a military spy satellite, complementing ISRO's efforts.







# VOTER VERIFIABLE PAPER AUDIT TRAIL (VVPAT)

The **Supreme Court** recently sought responses from the **Election Commission of India (ECI)** and the Centre on a plea seeking a **comprehensive count VVPAT slips in elections.**



## VVPAT

- Introduced in **2014 Lok Sabha elections in India**
- Independent system with **two parts:**
  - VVPAT Printer
  - VVPAT Status Display Unit (VSDU) attached to EVMs
- Allows voters to verify votes cast as intended



## Verification Process:

- Slip printed when vote cast with **candidate's serial number, name, and symbol**
- Exposed for **7 seconds**, then cut and dropped into sealed VVPAT drop box
- Slips used to verify **EVM** results by polling officials, not voters
- VVPAT slips considered more authoritative than EVM tallies for verification
- Voter verification done in extreme cases of fraud or miscalculation
- ECI can request VVPAT verification in response to complaints



## Counting and Connectivity:

- VVPAT slips counted in randomly-selected polling stations per constituency
- EVMs and VVPATs are separate entities, not network-connected
- Developed by **Electronics Corporation of India Limited (ECIL)** and **Bharat Electronics Ltd (BEL)**





# WHITE RABBIT COLLABORATION

**CERN, the European Organization for Nuclear Research, recently launched White Rabbit Collaboration.**

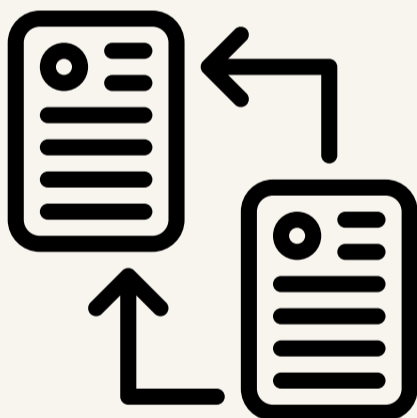
## Overview



- Developed at **CERN** in collaboration with institutes and companies
- Synchronizes devices in accelerators to sub-nanoseconds
- Establishes common notion of time across a network

## Features

- **White Rabbit Switches** provide sub-nanosecond synchronization accuracy
- Replaces dedicated hard-wired timing systems
- Achieves sub-nanosecond accuracy in **Ethernet-based networks**



## Applications:

- Provides timing and synchronization to distributed electronic systems
- Enables both **timing and real-time data transfer**

## Objective

- Maintain high-performance open-source technology
- Facilitate technology uptake by industry



## Services

- Provides dedicated **support and training**
- Facilitates R&D projects between entities
- Establishes testing ecosystem to foster trust in products





# WIGNER CRYSTAL

Scientists have for the first time successfully visualized the elusive Wigner crystal, a strange kind of matter that is made **entirely of electrons**.



## DEFINITION

Solid phase of electrons predicted by **Eugene Wigner in 1934**.

## FORMATION

- Electrons arrange into a crystal-like lattice due to mutual repulsion.
- Occurs at low densities and extremely cold temperatures.
- Potential energy dominates kinetic energy, making spatial arrangement crucial.



## NATURE

- Follows quantum physics laws, with electrons behaving more like waves than particles.

## STABILITY

- Stable at **extremely low densities**.
- Increased density leads to melting due to increased kinetic energy.



## OBSERVATION

- Difficult to observe experimentally.
- Fragile and sensitive to environmental factors.



## MISCELLANEOUS IN NEWS

### EXO-ATMOSPHERIC MISSILES

Recently, Israel said its air-defence system involving exo-atmospheric interceptors destroyed '99% of missiles' fired by the Islamic Republic of Iran. These are also known as anti-ballistic missiles (ABMs).

### INDIGENOUS TECHNOLOGY CRUISE MISSILE

Recently, Defence Research and Development Organisation (DRDO) conducted a successful flight-test of Indigenous Technology Cruise Missile (ITCM)..

### DURGA-2

The Defence Research and Development Organisation (DRDO) is reported to be testing a prototype of its DURGA-2 (Directionally Unrestricted Ray Gun Array) system.

### EXERCISE POORVI LEHAR (XPOL)

- The Indian Navy recently conducted Exercise Poorvi Lehar on the East Coast. It is a maritime exercise conducted by the Indian Navy along the East Coast, under the operational direction of the Flag Officer Commanding-in-Chief, Eastern Naval Command.

### CRYSTAL MAZE 2

- The Indian Air Force (IAF) has successfully carried out a test firing of the Crystal Maze 2 missile. Also referred to as ROCKS, it is an air-launched medium-range ballistic missile. It is of Israeli origin.



## MISCELLANEOUS IN NEWS

### ARMY TACTICAL MISSILE SYSTEMS

- The United States recently confirmed providing long-range Army Tactical Missile Systems (ATACMS) to Ukraine to aid its war effort against Russia. It is manufactured by the US defense company Lockheed Martin. It is 24/7, all-weather, surface-to-surface, inertially guided ballistic missile.

### EX- AYUTTHAYA

- Exercise Ayutthaya is the bilateral exercise between the Indian Navy and the Royal Thai Navy (RTN).
- The exercise's name translates to "The Invincible One" or "Undefeatable".

### PARIVARTAN CHINTAN

- Chief of Defence Staff Gen Anil Chauhan to chair maiden 'Parivartan Chintan' being held in New Delhi. The 'Parivartan Chintan' will be the 1st ever conference of the heads of all Tri- Services (Indian Army, Navy and Airforce) Institutions.
- Hosted by - Ministry of Defence.

### RBI CELEBRATES 90 YEARS OF SERVICE

- The Reserve Bank of India (RBI), the nation's central banking institution, is entering its 90th year on April 1st, 2024. To mark this significant occasion, Prime Minister Narendra Modi is attending the event at Mumbai's National Centre for the Performing Arts.

### HARDIK SINGH AND SALIMA TETE

- Hardik Singh and Salima Tete were named the Players of the Year for 2023 in the men's and women's categories, respectively, at the sixth annual Hockey India Awards.



## MISCELLANEOUS IN NEWS

### ROHAN BOPANNA AND MATT EBDEN

- The top-seeded duo of Rohan Bopanna from India and Matthew Ebden from Australia won the Men's Doubles Title at the Miami Open. In an exciting final, they defeated the second seeds Ivan Dodig and Austin Krajicek with a score of 6-7(3), 6-3, [10-6].

### DOSTI-16

- Indian Coast Guard ship Samarth and ICGS Abhinav along with Sri Lanka Naval Ship Samudura are participating in the exercise 'DOSTI-16' while Bangladesh.

### MATABARI PERA PRASAD

- Three traditional products from Tripura have recently received the prestigious Geographical Indication (GI) tag. The products are Matabari pera prasad and Rignai pachara textiles and Risa. With this, Tripura now has 4 GI Protected products.

### GAGAN SHAKTI

- The Indian Air Force (IAF) was showcasing its might and capability to carry out high-octane operations during the 'Gagan Shakti-2024' exercise "in a realistic environment" from April 1-10. The exercise involves all air force bases and assets scattered across the country.

### ONE VEHICLE, ONE FASTAG

- The National Highways Authority of India (NHAI) has introduced the 'One Vehicle, One FASTag' norm, which aims to prevent the use of a single FASTag for multiple vehicles or linking multiple FASTags.



## MISCELLANEOUS IN NEWS

### ARTIFICIAL SUN

- Scientists in South Korea have set a new world record using the Korea Superconducting Tokamak Advanced Research (KSTAR) device, an "artificial sun" nuclear fusion reactor.

### JUAN VICENTE PÉREZ

- Juan Vicente Pérez was a man from Venezuela who lived a very, very long life. He was born on May 27, 1909, in a town called El Cobre.

### PARAM VIR CHAKRA GARDEN

- Tamil Nadu Governor R.N. Ravi inaugurated the Param Vir Chakra garden and Aikyam exhibition at the Kanchi Mahaswami Vidya Mandir in Tambaram.

### KATHIYA GEHU

- Bundelkhand region in Uttar Pradesh, locally known as Kathiya Gehu, has been granted the prestigious Geographical Indication (GI) tag. This is the first farm produce from Uttar Pradesh to receive this honor.

### FIRST GENE THERAPY FOR CANCER

- The President of India, Smt Droupadi Murmu, launched India's first home-grown gene therapy for cancer at IIT Bombay on April 4, 2024.



## MISCELLANEOUS IN NEWS

### NATO CELEBRATES 75 YEARS

- The North Atlantic Treaty Organization (NATO) is marking its 75th anniversary this year. The alliance, founded in 1949

### DIGI YATRA SYSTEM

- The Manohar International Airport in Mopa, Goa, has become the 14th airport in India to launch the Digi Yatra system.

### THE IDEA OF DEMOCRACY'

- Renowned author Sam Pitroda has written a new book titled 'The Idea of Democracy', which explores the current state of democracy and its potential challenges in countries.

### BILQUIS MIR

- Bilquis Mir, a canoeist from Jammu and Kashmir, is set to make history as the first woman from India to represent the country as a jury member at the Summer Olympics in Paris.

### VISHWAKARMA AWARD

- GAIL wins the 15th CIDC Vishwakarma Award for the Barauni - Guwahati Natural Gas Pipeline project, connecting North-East India to the National Gas Grid.





## MISCELLANEOUS IN NEWS

### MIRAJ'S SITARS AND TANPURAS

- Miraj's Sitar and Tanpuras Awarded Geographical Indication Tags. The small town of Miraj in Maharashtra's Sangli district is known for its craftsmanship in making musical instruments, particularly sitars and tanpuras.

### IGLA-S MANPADS

- In a significant move, the Indian Army has acquired Iglas Man Portable Air Defence Systems (MANPADS) from Russia to enhance its Very Short Range Air Defence (VSHORAD) capabilities.

### MANOJ PANDA

- Manoj Panda's appointment fills vacancy in the Sixteenth Finance Commission allowing it to commence its crucial work, including discussions with stakeholders and formulating financial recommendation.

### HARDEST GEEZER

- Briton, nicknamed 'Hardest Geezer', becomes first person to run length of Africa. British national Russ Cook, known as the "Hardest Geezer," has successfully completed a challenging trek that took him over 352 days to finish.

### YOGA MAHOTSAV

- The 'Yoga Mahotsav' was held in Pune, Maharashtra, to mark the 75-day countdown to the International Day of Yoga. Organized by the Morarji Desai National Institute of Yoga and the National Institute of Naturopathy, Ministry of Ayush.



## MISCELLANEOUS IN NEWS

### JOHN ALFRED TINNISWOOD

- Guinness World Records (GWR) has shared a video of the world's oldest living man, 111-year-old John Alfred Tinniswood, from England.

### SIMON HARRIS

- Simon Harris, at 37, becomes Ireland's youngest Prime Minister, succeeding Leo Varadkar. His rapid political ascent within Fine Gael culminates in a pledge for unity and focus on core values.

### UPI IN NEPAL

- PhonePe Partners with eSewa, HAN Pokhara to Promote UPI in Nepal. PhonePe, eSewa, and HAN Pokhara join forces to promote UPI during Nepal's Fewa New Year Festival, aiming to boost digital transactions.

### GOPI THOTAKURA

- Gopi Thotakura, an accomplished Indian pilot, is set to make history as the first Indian tourist to journey into space with Blue Origin's NS-25 mission.

### RASHMI KUMARI

- Rashmi Kumari has etched her name deeper into the annals of Indian carrom history by claiming her 12th National Carrom Championship title.



## MISCELLANEOUS IN NEWS

### ROHIT SHARMA

- India and Mumbai Indians star batter Rohit Sharma has become the first Indian cricketer to smash 500 sixes in the T20 format.

### AMITABH BACHCHAN

- Amitabh Bachchan to be Honoured with the Prestigious Lata Deenanath Mangeshkar Award

### DINESH KUMAR TRIPATHI

- The Government of India has appointed Vice Admiral Dinesh Kumar Tripathi, PVSM, AVSM, NM, currently serving as the Vice Chief of the Naval Staff, as the next Chief of the Naval Staff with effect from the afternoon of April 30, 2024.

### VARANASI'S TIRANGA BARFI

- Varanasi's Tiranga Barfi and Dhalua Murti Metal Casting Craft Receive GI Tag. This remarkable achievement sets a new record for the highest number of GI tags associated with a particular state in India.

### FIRST HINDI RADIO BROADCAST

- India-Kuwait Relations Strengthened with Inaugural Hindi Radio Broadcast. Kuwait's Ministry of Information launched the first Hindi radio broadcast in Kuwait, fostering stronger ties between India and Kuwait through cultural exchange.



## MISCELLANEOUS IN NEWS

### SHOMPEN TRIBE

- Shompen tribe, one of India's Particularly Vulnerable Tribal Groups (PVTGs), exercised their democratic right for the first time by casting votes in the Andaman and Nicobar Lok Sabha constituency.

### KISS HUMANITARIAN AWARD 2021

- Ratan Tata, Chairman Emeritus of Tata Group, receives the prestigious KISS Humanitarian Award 2021 at a private ceremony in Mumbai, recognizing his global humanitarian efforts.

### SUDHIR KAKAR

- Sudhir Kakar, the "Father of Indian Psychology", Passes Away
- The world lost Sudhir Kakar, a renowned writer, cultural critic, and the "Father of Indian Psychology," who passed away at the age of 85.

### RANDEEP HOODA

- Randeep Hooda Honoured with Lata Deenanath Mangeshkar Award
- In a prestigious ceremony held at Mumbai's Dinanath Mangeshkar Natyagrih, actor Randeep Hooda was bestowed with the Lata Deenanath Mangeshkar Award.

### INDIA'S NUCLEAR TITANS'

- External Affairs Minister S. Jaishankar received a copy of the book 'India's Nuclear Titans,' edited by Soumya Awasthi and Shrabana Barua.



## MISCELLANEOUS IN NEWS

### ADANI'S VIZHINJAM PORT

- Adani's Vizhinjam Port Approved as India's First Transshipment Hub. Adani Group's Vizhinjam Port in Kerala has received approval from the government to operate as India's inaugural transshipment port.

### YUVRAJ SINGH

- The International Cricket Council (ICC) has announced the appointment of Indian cricket legend Yuvraj Singh as an ambassador for the upcoming ICC Men's T20 World Cup 2024.

### PANDIT LACCHU MAHARAJ AWARD

- Noted Hindi film superstars Hema Malini and Saira Banu, along with other prominent personalities from the fields of art and culture, will be honoured with the prestigious Pandit Lacchu Maharaj Award.

### 3D PRINTED DUMMY BALLOT UNIT

- IIT Guwahati and SVEEP collaborated to unveil a 3D-printed dummy ballot unit, aiming to educate citizens about voting intricacies, boost confidence, and enhance democratic participation.

### SIXTH SCHEDULE OF CONSTITUTION

- Recently, noted environmentalist Sonam Wangchuk, sat on a hunger strike, demanding statehood for Ladakh and its inclusion under the Sixth Schedule.



## MISCELLANEOUS IN NEWS

### MEN5CV VACCINE

- Nigeria has taken a historic step in the fight against meningitis, becoming the first country in the world to introduce a new, highly effective vaccine called Men5CV

### DRAGONFLY MISSION

- Recently, NASA confirmed Dragonfly rotorcraft mission to Saturn's organic compound-rich moon Titan with a budget of \$3.35 billion and a launch date set for July 2028.

### EUVICHOL-S

- Recently, the World Health Organization (WHO) has prequalified a new oral vaccine for Cholera called Euvichol-S.

### EXERCISE POORVI LEHAR (XPOL)

- The Indian Navy recently conducted Exercise Poorvi Lehar on the East Coast. It is a maritime exercise conducted by the Indian Navy along the East Coast, under the operational direction of the Flag Officer Commanding-in-Chief, Eastern Naval Command

### RAJA RAVI VARMA

- The first true copy of the painting Indulekha by Raja Ravi Varma will be unveiled at the Kilimanoor Palace, Kerala. He was an Indian painter and artist. He is considered one of the greatest painters in the history of Indian art.



## MISCELLANEOUS IN NEWS

### SHALLOWFAKES

- With the Lok Sabha elections scheduled, social media platforms are abuzz with misinformation, mostly in the form of shallow fakes. Like deepfake, shallowfake is also an act of morphing people's pictures and using them for malicious activities

### AGNIBAAN SORTED

- For the second time, the launch of AgniKul 'Agnibaan SOrTeD' has been postponed. It is the world's first single piece 3D printed semi-cryogenic rocket engine.

### CDP-SURAKSHA PLATFORM

- Government of India has come up with a new digital platform called CDP-SURAKSHA to disburse subsidies to horticulture farmers under the Cluster Development Programme (CDP).

### WORLD CYBERCRIME INDEX

- Following three years of intensive research, an international team of researchers has compiled the first ever 'World Cybercrime Index'. Russia tops the list, followed by Ukraine, China, the USA, Nigeria and Romania.
- India captured the number 10 spot in the rankings.

### EXERCISE DUSTLIK-2024

- It is an annual joint military exercise between the Indian Army and the Uzbekistan Army. It is conducted alternately in India and Uzbekistan. The exercise was conducted at Termez in Uzbekistan.

# ECONOMY RAPID FIRE

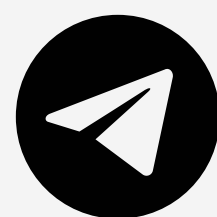
## INFOGRAPHICS NOTES



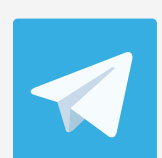
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