Testwale Current Affairs PDF

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1. India unveils the world's first AI-powered anti-drone system – Indrajal by Grene Robotics (Sept. 5, 2023)

Hyderabad-based robotics company Grene Robotics developed Indrajal, an innovative autonomous anti-drone system powered by artificial intelligence (AI).

An Overview of the News

- The Indrajal system is the first of its kind in India and is designed to protect critical facilities such as nuclear installations and oil rigs, as well as large areas, potentially entire cities, from various drone threats.

Key Features of Indrajal - Autonomous Drone Defense Dome:

- This revolutionary system named "Indrajal" got global recognition.
- It offers an impressive coverage range of up to 4,000 square km per unit, providing comprehensive protection against a variety of drones.
- Indrajal uses cutting-edge technology and is a significant advancement in drone defense technology.

Importance of "Made in India" Indrajal:

- Indrajal has been completely developed in India, showcasing the country's capabilities in technology and defense.
- This is a result of Indian talent and resources, highlighting the country's growing strength in the region.

Modular Design with AI Integration:

- Indrajal has a modular design similar to Lego blocks, consisting of 12 different layers of technology, all powered by artificial intelligence.
- It provides 360-degree protection with real-time capabilities to detect, identify, classify, track, and neutralize threats.
- Systems can respond to threats in a very short time frame, with threat lifetimes ranging from 30 seconds to a few minutes.

Unique Positioning as a Wide-Area Counter-Unmanned Aircraft System (C-UAS):

- Indrajal is the world's only wide-area counter-unmanned aircraft system (C-UAS).
- It offers an integrated security solution that effectively addresses mobile threats, which traditional static defense systems struggle to combat.

2. ISRO's Aditya L1 Solar Mission Successfully Completes Second Earth Orbit Maneuver (Sept. 5, 2023)

The Indian Space Research Organization (ISRO) announced the successful completion of the second Earth orbit-raising maneuver for the Aditya L1 solar mission.

An Overview of the News

- ISRO's **Telemetry, Tracking, and Command Network (ISTRAC)** carried out the operation.
- As a result of this maneuver, the **Aditya L1 spacecraft moved from its previous orbit, which was 282 by 40,225 km around the Earth, to a new orbit of 245 by 22,459 km around the Earth.**
- The Aditya L1 mission will undergo a total of four Earth-orbital maneuvers before being placed in a transfer orbit towards its destination, the Lagrange point L1. The process is expected to take 125 days.
- The **third Earth-bound maneuver is scheduled for 2:30 a.m. on September 10.**
- The primary objective of the Aditya L1 mission is **to provide valuable information about the solar corona and to make in-situ observations of the solar wind at the L1 point, which is located approximately 1.5 million kilometers from Earth.**
- The mission was **successfully launched on 2 September using the Polar Satellite Launch Vehicle C57.**

Objectives and scope of Aditya L1 mission

- The primary objective of the Aditya L1 mission is **to conduct a comprehensive study of the solar wind and the Sun's atmosphere.**
- The satellite carries seven different payloads to observe different layers of the Sun, including the **photosphere, chromosphere, and outermost corona.**
- The mission aims **to enhance our understanding of several solar phenomena, such as coronal heating, coronal mass ejection (CME), pre-flare and flare activities, as well as the dynamics of solar weather.**
- Additionally, the mission will contribute to the investigation of particle and field propagation within the interplanetary medium.

Indian Space Research Organization (ISRO):

- It was established on **15 August 1969.**
- It is the national space agency of India. It launched its space rocket from the Satish Dhawan Space Center in Sriharikota, Andhra Pradesh.
- Headquarters - **Bengaluru**

- Chairman - **S Somnath**

3. PM announces full capacity operation of India's largest domestically built 700 MW nuclear power plant at Kakrapar (Sept. 3, 2023)

On August 31, 2023, Prime Minister Narendra Modi announced the commencement of full-capacity operations at India's largest domestically built 700 MW nuclear power plant located at Kakrapar in Gujarat.

An Overview of the News

- The nuclear facility at Kakrapar is the largest nuclear facility of its kind to be built entirely within India.
- Initially, the **Kakrapar Atomic Power Project (KAPP)** started commercial operations on 30 June but was operating at 90% capacity.
- It reached its maximum operational capacity on 31 August.

Nuclear power development in Kakrapar and all over India:-

- Nuclear Power Corporation of India Limited (NPCIL) is responsible for the construction of two 700 MW Pressurized Heavy Water Reactors (PHWR) at Kakrapar in Gujarat.
- Kakrapar also has **two power plants of 220 MW each.**
- NPCIL currently operates **23 commercial nuclear power reactors.**

Future plans and projects:-

- KAPP Unit 4 had achieved 97.56% progress as of July while commissioning activities were in progress.
- NPCIL has plans to build 16 more PHWRs of 700 MW each across the country and has secured financial and administrative approvals for these projects.
- Other 700 MW nuclear power plant projects are in progress at **Rawatbhata, Rajasthan (RAPS 7 & 8), and Gorakhpur, Haryana (GHAVP 1 & 2).**
- The government has approved the construction of 10 indigenously developed PHWRs in fleet mode at four locations: **Gorakhpur (Haryana), Chutka (Madhya Pradesh), Mahi Banswara (Rajasthan), and Kaiga (Karnataka).**

4. India's Aditya-L1 Solar Observatory Mission Launched Successfully (Sept. 2, 2023)

On 2 September 2023, India's first solar observatory mission, Aditya-L1, was successfully launched from the Sriharikota Space Centre.

An Overview of the News

- The mission took off at sharp 11:50 a.m., setting off on a 125-day journey to study the Sun.
- The PSLV C57, an XL version with extended strap-on motors and higher fuel capacity, was used for this mission.
- All flight parameters were normal, ensuring a safe start of the mission.
- Aditya L1 will reach the Lagrange 1 point in four months, where unique gravitational forces are at work.

Objectives and scope of Aditya L1 mission

- The primary objective of the Aditya L1 mission is t**o conduct comprehensive studies of the solar winds and the Sun's atmosphere.**
- The satellite carries seven different payloads whose task is **to observe different layers of the Sun, including the photosphere, chromosphere and the outermost corona.**
- The mission aims to increase our understanding of many solar phenomena, such as **coronal heating, coronal mass ejections (CMEs), pre-flare and flare activities, as well as solar weather dynamics.**
- Additionally, the mission will contribute to the investigation of particle and field propagation within the interplanetary medium.

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Important Points:

- Since 1999, India has successfully launched 431 foreign satellites from 36 different countries using its indigenous rockets.
- Most of these satellite launches were done using the PSLV (Polar Satellite Launch Vehicle) rocket.
- Notably, the **PSLV rocket** achieved a remarkable feat by **deploying 104 satellites into orbit in a single flight.**

5. ISRO's Chandrayaan-3 Pragyan Rover Confirms Presence of Sulfur on Moon (Aug. 31, 2023)

The Indian Space Research Organization (ISRO) confirmed the presence of sulfur on the Moon's surface through the Pragyan rover module of Chandrayaan-3.

An Overview of the News

- This important discovery is the result of in-situ recordings made near the Moon's south pole.
- The confirmation of sulfur has essential implications for understanding the elemental composition of the Moon and its geological history.

About Pragyan Rover

- **Lunar Rover:** Pragyan is a lunar rover designed by the Indian Space Research Organization (ISRO) as a component of the lunar exploration project Chandrayaan-3.
- **Previous attempt:** In an earlier attempt, an earlier version of the rover was included in the Chandrayaan-2 mission. Launched on July 22, 2019, the rover was lost along with its lander Vikram due to an accident on the Moon on September 6.
- **Chandrayaan-3 Launch:** The next mission, Chandrayaan-3, was launched on July 14, 2023. It carried updated versions of both the Vikram lander and the Pragyan rover.
- **Successful Landing:** The Chandrayaan-3 mission was crowned with success when its Vikram lander and Pragyan rover successfully landed around the Moon's south pole on August 23.

6. World's first ethanol-powered car unveiled by Union Minister Nitin Gadkari (Aug. 29, 2023)

Union Minister Nitin Gadkari unveiled the world's first car that runs entirely on ethanol in New Delhi, marking a historic moment for India's energy landscape.

An Overview of the News

- The car is the **first Stage-II BS-VI electrified flex-fuel vehicle**, which runs entirely on ethanol as a fuel source.
- Currently, India's oil import bill stands at Rs 16 lakh crore, which highlights the need to curb this expenditure.
- Addressing environmental concerns, Minister Gadkari underlined the need for sustainable solutions, stressing that 40 percent of pollution is generated from the transport sector.
- Ethanol blending not only reduces pollution but also has the potential to increase India's agricultural growth by 12 to 20 percent, thereby creating several employment opportunities.

Significant Benefits of Ethanol Blending

- **Financial savings:** Estimated annual savings of Rs 35 thousand crore in import cost through the implementation of 20 percent ethanol blending.

- **Exceeding targets:** India achieved 10 percent ethanol blending ahead of its 2022 target, leading to a revised target of 20 percent ethanol blending by 2026, five years ahead of the original target of 2030.
- **Accelerated timeline:** To further promote ethanol blending, the government has accelerated its timeline and increased the target of achieving 20 per cent ethanol blending in petrol from 2030 to 2025.
- **Nationwide Availability:** There is a plan to make 20 percent ethanol blended petrol (E20) widely accessible across India by 2025.

Advances in ethanol blending and its benefits

- **History of Biofuel Blending:** Government efforts to integrate biofuel blending began earlier, with a limited success rate of 1.53 percent under the previous administration.
- **Remarkable progress:** The present government has increased the ethanol blending from 1.53 percent to 10.17 percent by July 2022, which shows substantial progress in this initiative.
- **Empowering farmers:** Ethanol blending has contributed to farmers earning Rs 82,000 crore, in line with Prime Minister Narendra Modi's vision of a self-reliant India.
- **Flex-Fuel Technology:** The newly introduced flex-fuel technology allows higher levels of ethanol blending in petrol, over 20 percent. The technology aims to reduce carbon emissions, promote sustainable mobility, and reduce dependence on conventional fuel sources.

Minister of Petroleum and Natural Gas - **Hardeep Singh Puri**

7. Aditya-L1 Space Observatory: Studying the Sun from Space (Aug. 29, 2023)

The Indian Space Research Organization (ISRO) is set to launch Aditya-L1, India's first space-based observatory designed to study the Sun.

An Overview of the News

- The launch is scheduled for 2 September 2023 at 11:50 a.m. from the **Sriharikota Space Station in Andhra Pradesh.**
- ISRO will use the **Polar Satellite Launch Vehicle-C57 (PSLV-C57)** for the Aditya L1 mission.
- The satellite will be placed in a halo orbit around the Lagrange point L1 within the Sun-Earth system, which is located approximately **1.5 million kilometers from Earth.**
- The journey to reach the Lagrange point is estimated to take about four months.
- A major advantage of this halo orbit around the L1 point is that it provides an unobstructed view of solar activity, without interference from astronomical events such as eclipses.

Objectives and Scope of Aditya L1 Mission

- After the success of Chandrayaan 3, ISRO has launched the ambitious **Aditya L1 mission.**
- The primary objective of the Aditya L1 mission is **to conduct a comprehensive study of the solar wind and the Sun's atmosphere.**
- The satellite will carry seven different payloads aimed at observing different layers of the Sun, including the **photosphere, chromosphere, and outermost corona.**
- The mission aims **to enhance our understanding of several solar phenomena, such as coronal heating, coronal mass ejection (CME), pre-flare and flare activities, as well as the dynamics of solar weather.**
- Additionally, the mission will contribute to the investigation of particle and field propagation within the interplanetary medium.

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8. First ABDM Microsite Launched in Mizoram (Aug. 26, 2023)

National Health Authority (NHA) inaugurated the ABDM microsite in Aizawl, Mizoram as part of the 100 microsites project.

An Overview of the News

- The objective of the ABDM microsite is **to accelerate the adoption of Ayushman Bharat Digital Mission (ABDM) across India.**
- Mizoram is the lead state operating the ABDM microsite.
- The initiative aims to transform health facilities including **private clinics, small hospitals, and laboratories** into ABDM-enabled establishments that provide digital health services.

Appointment of Interfacing Agency in Mizoram

- The implementation of the ABDM microsite in Aizawl has been entrusted to **"Youth for Action"** appointed as the interfacing agency.
- His role includes overseeing the successful execution of the ABDM microsite at Aizawl.

Significance of the 100 Microsites Project

- CEO of NHA underlines the paramount importance of the 100 microsites project under ABDM.
- This initiative has the potential to revolutionize healthcare digitization and encourage active participation of small and medium-scale healthcare providers.

Enhanced Patient Experience

- Patients can seamlessly link their health records with **Ayushman Bharat Health Accounts (ABHA).**
- Access and sharing of health records is facilitated through ABDM-enabled personal health record (PHR) applications on mobile devices.

Learning from Pilot Projects

- Previous pilot projects in Mumbai, Ahmedabad, and Surat have contributed to shaping the architecture of the wider 100 Microsites project under ABDM.
- States like **Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, Maharashtra, and Chhattisgarh** are also making significant progress in implementing ABDM microsites.

9. Law Minister Arjun Ram Meghwal launches Tele-Law 2.0 (Aug. 26, 2023)

Law Minister Arjun Ram Meghwal launched Tele-Law- 2.0 on August 25, 2023, in New Delhi.

An Overview of the News

- The Department of Justice (DOJ) hosted the Tele-Law 2.0 event at **Siri Fort Auditorium, New Delhi.**
- The event marks the **achievement of helping 5 million citizens** and highlights the use of technology in providing **pre-litigation advice to the public.**
- Tele-law services are being integrated with legal representation services under the **Nyaya Bandhu (Pro Bono)** program.
- This integration streamlines access to **legal advice, assistance, and representation through a unified registration process on the Tele-Law platform.**
- The event recognizes and honors frontline workers who play a vital role in providing legal services directly to the people.
- The event has been organized by the Department of Justice in association with CSC e-Governance Services India Limited.
- The event is in line with the government's vision to strengthen the legal aid ecosystem and ensure equitable access to justice for all.

Important components of organizing include:

- Screening of a documentary showing the journey of tele-law from **2017 to 2022.**
- "Tele-Law-2.0" is being launched, which combines the **Tele-Law and Nyay Bandhu** apps, Also an e-tutorial has been released.
- Unveiling of **“Voices of Beneficiaries”**, a compilation of firsthand experiences shared by people who have benefited from Tele-Law.
- Presenting the **"Achievers Catalogue",** which acknowledges outstanding performers such as Paralegal Volunteers, Village Entrepreneurs, Panel Lawyers, and State Coordinators for the years **2022-2023 and April to June 2023.**

10. India declares August 23 as National Space Day in honor of Chandrayaan-3's moon landing (Aug. 26, 2023)

On 26 August, Prime Minister Narendra Modi announced the designation of 23 August as National Space Day in honor of India's Chandrayaan-3 moon landing.

An Overview of the News

- The specific spot where Chandrayaan-3 landed on the Moon will be named **'Shivshakti'**, and the spot where Chandrayaan-2 landed will be called **'Tiranga Point'.**
- PM Modi made this announcement during his visit to the ISRO Telemetry Tracking and Command Network Mission Control Complex in Bengaluru, Karnataka.

Chandrayaan-3 Achievements:

- On 23 August 2023, Chandrayaan-3 achieved a historic feat by becoming the first mission to land on the South Pole of the Moon.
- Mission goals included a **safe lunar landing, rover maneuverability, and the performance of scientific experiments on-site.**
- India has now joined the ranks of the United States, Russia, and China in successfully landing on the Moon.

Objectives of Chandrayaan-3:

- Chandrayaan-3 is set to operate on the lunar surface for one lunar day (equivalent to 14 Earth days).
- The Pragyan rover will detect, conduct experiments, and transmit the data to the lander within a radius of 500 meters around the landing site.
- The Vikram lander will relay data and images to the orbiter, which will then transmit them back to Earth.
- Both the lander and the rover carry advanced scientific instruments for a variety of lunar investigations including terrain analysis, mineralogical composition, surface chemistry, atmospheric studies, and water/resource exploration.

Additional Payloads and Studies:

- The propulsion module that propelled the lander and rover into a 100 km lunar orbit contains the SHAPE payload.
- SHAPE (Spectro-Polarimetry of the Habitable Planet Earth) is designed to study the spectral and polarimetric characteristics of Earth from the orbit of the Moon.

Chandrayaan-1

- Chandrayaan-1 was the first Indian lunar probe launched by ISRO.
- It was part of the Chandrayaan program and was launched in October 2008 and the mission lasted till August 2009.
- Chandrayaan-1 consisted of a Lunar Orbiter and an Impactor.
- The Lunar Orbiter conducted scientific research and collected data about the Moon.
- The objective of the mission was to make a detailed map of the Moon's surface and study its composition.
- Chandrayaan-1 had advanced instruments to test the presence of water ice and minerals.
- The spacecraft carried both Indian and international scientific payloads.
- Chandrayaan-1 made important discoveries including evidence of water molecules on the lunar surface.

Chandrayaan-2:

- India's second lunar exploration mission developed by ISRO.
- Components: Lunar Orbiter, Vikram Lander, and Pragyan Rover.
- Scientific Objective: Study the composition of the lunar surface and find lunar water.
- Launch: July 22, 2019, from Satish Dhawan Space Centre.
- Landing Site: Intended for the south polar region of the Moon at a latitude of 70°S.
- Planned Landing Date: September 6, 2019
- Landing Result: The lander crashed due to a software glitch.

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