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1. Guidelines for Operationalization of Production Linked Incentive Scheme 2.0 for IT Hardware approved (July 17, 2023)

Guidelines-for-Operationalization-of-Production

Production Linked Incentive (PLI) Scheme 2.0 for IT hardware has been approved in an announcement made by PIB Delhi on July 14, 2023.

An Overview of the News

The plan, with a budget of ₹17,000 crore, aims to grow and expand the IT hardware manufacturing ecosystem in India.

About Production Linked Incentive Scheme 2.0:

- The Production Linked Incentive Scheme 2.0 is a government initiative aimed at boosting domestic manufacturing and attracting large investments in the value chain.
- The scheme provides a financial incentive to companies operating in specific target segments, such as Laptops, Tablets, All-in-One PCs, Servers, and Ultra Small Form Factor devices.

Eligibility and Implementation:

- To qualify for the PLI 2.0 Scheme, companies, both domestic and global, must meet the eligibility criteria specified in the scheme guidelines.
- Those meeting the criteria will receive support for manufacturing goods in India within the specified target segment.
- Companies will be classified as either domestic or global, determining their categorization as Hybrid (Global/Domestic).

Ranking and Selection Process:

- All applicants will undergo a comprehensive ranking process based on the eligibility criteria outlined in the scheme guidelines.
- The ranking will determine the selection of applicants in each category—global, hybrid, and domestic—taking into account their overall PLI projection and ranking.
- However, the final selection will be subject to the availability of the budget allocated for the scheme.

Tenure and Base Year:

- The incentives provided under the PLI 2.0 Scheme will be applicable for a period of six years.
- For calculating the net incremental sales of manufactured goods, the base year considered will be the financial year 2022-23.

Incentives Payout:

- The incentive granted to each company will depend on the net incremental sales of manufactured goods in the target segment compared to the base year.
- The maximum incentive amounts are capped at INR 45 billion for global companies, INR 22.50 billion for hybrid (global/domestic) companies, and INR 5 billion for domestic companies.
- These amounts serve as the upper limit for the incentives that can be received by companies under the scheme.

2. India's third moon mission Chandrayaan-3 successfully launched (July 15, 2023)

India's-third-moon-mission-Chandrayaan-3

On 14 July 2023, India successfully launched **Chandrayaan-3** with **LVM3-M4 rocket** from **Satish Dhawan Space Center in Sriharikota**.

An Overview of the news:

- With the success of ISRO's Chandrayaan-3 mission, India will be the fourth country after **Russia (Soviet Union), America and China** to have soft-landed on the Moon.
- ISRO launched Chandrayaan-1 in 2008. Chandrayaan-2 was launched in 2019. Chandrayaan-3 was launched from Sriharikota on 14 July 2023.

Propulsion Module, Lander and Rover of Chandrayaan-3:

- In Chandrayaan-2 where there were Orbiter, Lander and Rover. Whereas, Chandrayaan-3 has a propulsion module, lander and rover.
- The Lander + Rover of Chandrayaan-3 weighs about 250 kg more than the Lander + Rover of Chandrayaan-2.

How long will the missions last:

- While Chandrayaan-2 had a mission life of **7 years** (estimated), Chandrayaan-3's propulsion module is designed to work for **3 to 6 months**.
- Chandrayaan-3 will move towards the moon more quickly than Chandrayaan-2.
- 4 thrusters have been installed in the lander of Chandrayaan-3. After a journey of about 40 days, Chandrayaan-3 will reach the surface of the moon. Chandrayaan-2 took 42 days to reach the moon.

Mission Cost:

- The cost of launching this mission is **Rs 615 crore**. While it has cost Rs 500 crore to launch it.

Mission Objective:

- The Chandrayaan-3 mission aims to gather more information about the lunar surface. For this, four types of scientific instruments have been installed on the lander. Which mainly:

- - Earthquakes on the moon
 - Surface thermal properties,
 - Variation in plasma near the surface,
 - Attempt to measure the exact distance between the Moon and the Earth,
 - Will study the chemical and mineralogical composition of the lunar surface.

Mission Landing:

- The on-board computer decides how the landing will take place. The computer automatically takes decisions by estimating the location, height, velocity etc. according to its sensors.

Achievement of Chandrayaan-2:

- Data from the orbiter attached to Chandrayaan-2 detected the presence of **chromium, manganese and sodium** for the first time through remote sensing. It will also provide more information about the **magmatic evolution** of the Moon.

3. Megasiphon Thylacos, a new fossil species of tunicate discovered (July 14, 2023)

Megasiphon Thylacos, a new fossil species of tunicate discovered
Researchers recently described a new fossil species of tunicate called Megasiphon Thylacos

An Overview of the News

- The Megasiphon Thylacos fossil is about 500 million years old.
- The discovery suggests that the modern tunicate body plan was established shortly after the Cambrian explosion.
- The fossil provides insight into the sedentary, filter-feeding lifestyle of ancestral tunicates and their metamorphosis from tadpole-like larvae.

About Tunicates

- Tunicates, commonly known as sea squirts, are a group of marine animals.
- They spend most of their lives attached to surfaces such as docks, rocks or the bottom of a boat.
- There are about 3,000 species of tunicates in the world's oceans, mainly in shallow water habitats.
- The evolutionary history of tunicates dates back at least 500 million years.

Tunicate Lineage:

- **Ascidians:** Ascidians, often called "sea wasps", are one of the main tunicate lineages.
- They begin their lives as mobile, tadpole-like larvae.

- As they mature, they undergo metamorphosis and turn into barrel-shaped adults with two siphons.
- Ascidiarians spend their adult lives attached to the ocean floor.
- **Appendicularians:** The Appendicularias represent another Antrakha dynasty.
- They retain their tadpole-like appearance even when they become adults.
- They float freely in the upper water.
- They appear to be more distantly related to vertebrates than to ascidians.

Physical Characteristics and Feeding Mechanism:

- The body of adult tunicates is usually barrel-shaped.
- They have two siphons coming out of their body.
- A siphon draws water along with the food particles using suction.
- The other siphons the filtered water back out.

4. Bard Chatbot: Google's AI-powered Conversational Tool (July 14, 2023)

Bard-Chatbot-Google's-AI-powered-Conversational-Tool

Alphabet, the parent company of Google, has introduced Bard Chatbot, an advanced artificial intelligence (AI) chatbot.

An Overview of the News

- Google's parent company Alphabet is launching its artificial intelligence chatbot Bard in Europe and Brazil.
- Users can communicate with Bard Chatbot in 40 different languages, including nine Indian languages.

Customizable Responses:

- Bard allows users to personalise the tone and style of its responses.
- Users can choose from options such as simple, long, short, professional, or casual, tailoring the chatbot's communication style to their preference.

Enhanced Functionality:

- Users can pin or rename conversations, enabling easy access and organisation.
- The export code feature allows users to integrate Bard's capabilities into various platforms.
- Users can incorporate images into prompts, expanding the chatbot's capabilities beyond text-based interactions.

Understanding Generative AI:

- Generative AI (GenAI) is the underlying technology powering Bard Chatbot.
- GenAI is capable of producing diverse data types, including images, videos, audio, text, and 3D models.
- It learns patterns from existing data to generate new and unique outputs, closely mimicking human creativity.

Applications of Generative AI:

- Generative AI technology, like that used in Bard Chatbot, finds applications across various industries.
- Gaming industry: GenAI enables the creation of realistic and immersive gaming experiences.
- Entertainment industry: It can generate complex content like videos, music, and graphics.
- Product design: Generative AI assists in the creation of innovative and unique designs for products.

5. Chandrayaan-3 vs. Chandrayaan-2: A Comparison of India's Moon Missions (July 13, 2023)**Chandrayaan-3-vs.-Chandrayaan-2-A-Comparison-of-India's-Moon-Missions Why in News?**

India's third mission to the moon - Chandrayaan-3 - will take off on 14th July, 2023. The mission aims to achieve what its predecessor - Chandrayaan-2 could not - land softly on the lunar surface and explore it with a rover. A last-minute glitch led to the failure of the lander's (Vikram) soft landing attempt after a successful orbital insertion.

About The Chandrayaan-3 Mission:

- Chandrayaan-3 ("mooncraft") is a planned 3rd lunar exploration mission by the ISRO to demonstrate end-to-end capability in safe landing (through the lander Vikram) and roving (through the rover Pragyan) on the lunar surface.
- Unlike Chandrayaan-2, it will not have an orbiter, and its propulsion module will behave like a communications relay satellite.

Comparing Chandrayaan 2 and 3 Missions:

- Chandrayaan-2 and Chandrayaan-3 have similar objectives of landing on the moon and exploring its surface with a rover.
- However, there are several changes and improvements in the mission design of Chandrayaan-3 based on the lessons learned from Chandrayaan-2's failure.

Changes in the Mission Design:

- **Expanded Landing Area:** Chandrayaan-3 has been given instructions to land safely anywhere in a 4kmx2.4km area, unlike the specific 500mx500m patch targeted by Chandrayaan-2.
- **Increased Fuel Capacity:** The lander in Chandrayaan-3 has been provided with more fuel to travel longer distances to the landing site or an alternate landing site.
- **Enhanced Landing Site Determination:** Instead of relying solely on pictures taken during descent, high-resolution images from Chandrayaan-2's orbiter have been used to feed the lander with location information.
- **Modified Lander Structure:** Changes have been made to the lander's physical structure, including the removal of one thruster, strengthening of the legs for higher velocity landings, and the addition of more solar panels.

Chandrayaan-3 Payloads:

- **Propulsion Module:** It carries the Spectro-polarimetry of Habitable Planet Earth (SHAPE) payload to search for smaller habitable planets.
- **Lander Payloads:** Chandrayaan-3's lander carries four payloads - Radio Anatomy of Moon Bound Hypersensitive ionosphere and Atmosphere (RAMBHA), Chandra's Surface Thermophysical Experiment (ChaSTE), Instrument for Lunar Seismic Activity (ILSA), and Langmuir Probe (LP).
- **Rover Payloads:** The rover, Pragyan, is equipped with the Alpha Particle X-ray Spectrometer (APXS) and Laser Induced Breakdown Spectroscopy (LIBS) for analysing the elemental composition near the landing site.

How will the Mission be Implemented?

- The mission will be implemented by launching the lander-rover configuration into a 100-km lunar orbit using a propulsion module.
- Once safely on the moon, the lander module (Vikram) will deploy the rover (Pragyan) to perform in-situ chemical analysis of the lunar surface.

Different Kinds of Moon Missions that have been Launched so far:

- Moon missions can be categorized into flybys, orbiters, impact missions, landers, rovers, and human missions.
- Chandrayaan-3 falls under the landers and rovers category, aiming for a soft landing and mobile exploration on the lunar surface.

6. Inauguration of 'Sagar Sampark' DGNSS by Sarbananda Sonowal (July 13, 2023)

Inauguration-of-'Sagar-Sampark'-DGNSS-by-Sarbananda-Sonowal

Sarbananda Sonowal, the Union Minister of Ports, Shipping and Waterways, inaugurated the

'Sagar Sampark' Differential Global Navigation Satellite System (DGNSS) to strengthen the maritime sector in India.

An Overview of the News

Background and Importance of the DGNSS System:

- The DGNSS system is a terrestrial-based enhancement system that corrects errors and inaccuracies in the Global Navigation Satellite System (GNSS), providing more accurate positioning information.
- It helps mariners navigate safely and reduces the risk of collisions, groundings, and accidents in port and harbour areas.

Enhancing Maritime Sector Capability with 'Sagar Sampark':

- The launch of 'Sagar Sampark - Differential Global Navigation Satellite System' at six locations enhances the capability of the Directorate General of Lighthouses and Lightships (DGLL) in the field of Radio Aids to Marine Navigation.
- This initiative reflects the Ministry's commitment to innovation, infrastructure development, and strengthening the Indian Maritime sector.

Benefits of the DGNSS System for Safe Navigation:

- The DGNSS system provides more accurate information to ships, enabling safe navigation and efficient movement of vessels.
- It significantly improves the accuracy of GPS positioning by reducing errors caused by atmospheric interferences, satellite clock drift, and other factors.

Fulfilling International Obligations and Standards:

- The DGNSS system aligns with the international obligations of the International Maritime Organization (IMO), Safety of Life at Sea (SOLAS), and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).
- It serves as an important Radio Aid to Navigation, ensuring compliance with international standards.

Advanced Features of the DGNSS System:

- The DGNSS system incorporates multiple satellite constellations, including GPS and Global Navigation Satellite System (GLONASS), increasing availability and redundancy.
- It utilizes modern technology receivers and advanced software to transmit corrections, improving positioning accuracy within a range of 5 meters.

Improved Error Correction and Positioning Accuracy:

- The latest DGNSS system achieves higher accuracy in GPS positioning by significantly reducing errors.

- It corrects atmospheric interferences, satellite clock drift, and other factors that affect accuracy.
- The system's error correction accuracy has been improved from 5 to 10 meters to less than 5 meters for 100 nautical miles from the Indian coastlines.

7. Dell joins Intel to launch AI Skills Lab in India (July 12, 2023)

Dell Technologies and Intel collaborated to set up an AI lab at Lord's Institute of Engineering and Technology in Telangana.

An Overview of the News

- The primary goal of this partnership is to address the digital skills gap and empower students by incorporating Intel's 'AI for Youth' program into their educational curriculum.
- The initiative aims to equip students with the expertise required for the job market of the future and make them industry ready.
- The program focuses on enhancing the capabilities of selected faculty members through training provided by Intel, which includes over 170 hours of AI curriculum.
- The training includes various activities such as **bootcamps, AI-thons and virtual showcases designed to train students in the field of AI.**

AI Skills Lab

- The partnership aims to set up an AI skills lab on campus, fostering an environment that supports artificial intelligence initiatives.
- Students will be provided with the necessary resources and tools to create solutions with a social impact.
- The lab uses a Dell Optiplex, which empowers students to do projects in various AI domains such as **computer vision, natural language processing (NLP), OpenVino, and Intel's Neural Compute Stick 2.**
- In collaboration with the Lord's Institute, innovative projects will be developed, focusing on NLP, computer vision and statistical data analytics.
- These projects are designed to leverage AI technologies to make a real-time impact on society, solve social challenges and drive positive change.

8. ESA launches 'Euclid Space Telescope' to review solar system bodies (July 8, 2023)

ESA-launches-'Euclid-Space-Telescope

The **European Space Agency (ESA)** has launched the specially designed **Euclid Space Telescope** to review solar system bodies and obtain new information.

An Overview of the news:

- Through this telescope, the scientist will prepare a three-dimensional map of billions of galaxies spread over a wide area of 10 billion light years of the universe.
- Also, it is expected that its observations will help in solving the mysteries of dark matter and dark energy.
- This teslascope is named after the **Greek mathematician Euclid**.
- This telescope will be installed at a distance of about 1.5 million kilometers from the Earth by going to the second Lagrange Point (L2) and from there it will also be able to observe those waves which are difficult to reach the surface of the Earth.
- The goal of the Euclid teslascope is to create the most accurate three-dimensional map of the universe by observing billions of galaxies that span an area of 10 billion light-years.
- The age of this campaign has been kept at six years.
- Through this detailed map, scientists will be able to collect a lot of data to solve the mystery of the expansion of the universe and will get a lot of information about its development.
- In the past, the James Webb Space Telescope has also been established near the Lagrange 2 point.

Uses of Euclid Telescope:

- Euclid consists of a 1.2 m diameter principal mirror, a near infrared spectrometer, and a photometer. It is heavy about 2 tons heavy.
- Through this, pictures of space, spectroscopy, and photometry can be obtained in the near infrared spectrum.
- A sunshield will act to protect the telescope from solar radiation and keep its temperature constant for accurate measurements.
- This telescope will make important contributions to the study of human resources, global health, climate change, and oceans.

9. Facebook's Meta Launches 'Twitter Killer' Social Network Threads (July 6, 2023)

Facebook's Meta Launches 'Twitter Killer' Social Network Threads

Instagram maker Meta recently launched a new social media platform called Threads.

An Overview of the News

- Threads aims to capitalise on the perceived volatility of Twitter, which is currently owned by billionaire Elon Musk.
- The app is now available in over 100 countries and can be downloaded from the Apple App Store and Google Play Store.
- Similar to Twitter, threads allow users to share short text messages that can be liked, reposted, and replied to by other users.
- Threads does not include direct messaging features, which differentiates it from Twitter.
- On threads, users can create posts with up to 500 characters and can also share links, photos and videos of up to five minutes.

About Meta

- Founded - **February 2004, Cambridge, Massachusetts, United States**
- Founder - **Mark Zuckerberg**
- Headquarters - **Menlo Park, California, United States**

10. GSI discovers India's largest natural arch in Odisha (July 1, 2023)

GSI-discovers-India's-largest-natural-arch-in-Odisha

The Geological Survey of India (GSI) discovered a "Natural Arch" in Odisha's Sundergarh Forest Division.

An Overview of the News

- This natural arch originated approximately 184 million years ago during the Lower to Middle Jurassic period.
- The GSI has proposed a Geo Heritage tag for the arch, which aims to become the largest natural arch in India with this recognition.

Description:

- This oval shaped arch has a base length of 30 meters and a height of 12 metres.
- The maximum height and width of the natural arch are 7 meters and 15 meters respectively.

Protection of Geo-Heritage Sites:

- The conservation of geo-heritage sites including Sundergarh Natural Arch requires special attention and protection.
- GSI declares these sites as National Geological Monuments and protects them.
- Collaboration with State Governments to implement necessary measures for safety and maintenance.

Geo-Heritage Sites:

- Geo-Heritage Sites (GHS) have rare and exceptional geological, geomorphological, mineralogical, petrological and paleontological features.
- Landmarks may include natural rock formations, caves, and other significant geological formations.
- GSI plays a key role in identification, declaration and protection of GHS in collaboration with State Governments.

About Geological Survey of India (GSI)

- It is a **scientific agency of India.**

- Its parent organization is the **Ministry of Mines with Pralhad Joshi as its Union**
- **Minister.**
 - Establishment - **1851**
 - Headquarters - **Kolkata, West Bengal**