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India's First Hydrogen-Powered Passenger Vessel

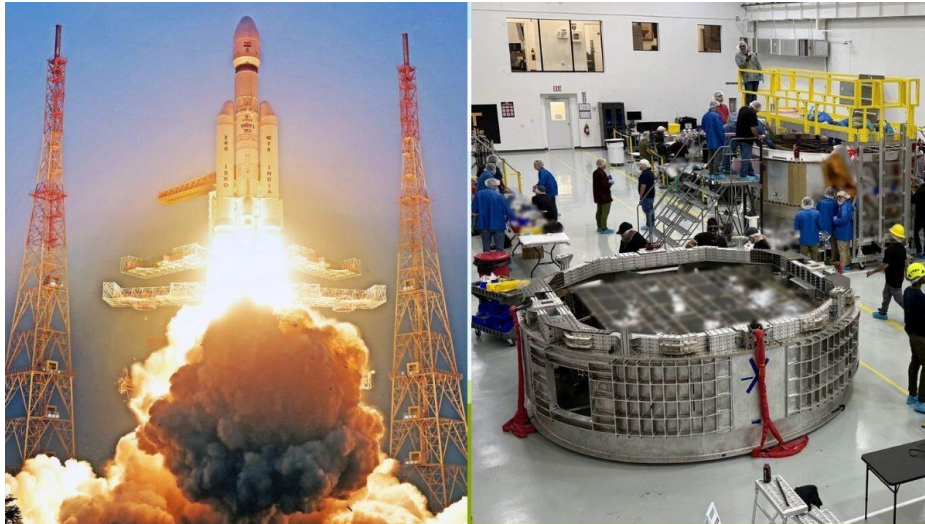
- India's first hydrogen-powered passenger vessel service has been launched in Varanasi, marking a significant step towards sustainable inland water transport. Built by Cochin Shipyard Ltd. (CSL) for the Inland Waterways Authority of India (IWAI), the vessel demonstrates fully indigenous hydrogen fuel cell propulsion in a maritime environment for the first time in the country.
- The maiden commercial run covered a five-kilometre stretch from Namohat to Lalita Ghat on the Ganga, designated as National Waterway-1. This inaugural journey carried a delegation of ministers and senior officials, ushering in a new era of clean waterborne mobility.
- Powered by a low-temperature Proton Exchange Membrane fuel cell system, the vessel converts stored hydrogen into electricity, emitting only water as a byproduct. This zero-emission technology positions it as a pioneer in sustainable maritime propulsion.
- Measuring 28 metres in length and 5.8 metres in width, the vessel accommodates a 10-member crew. It cruises at speeds between 12 and 20 kilometres per hour along the Ganga, incorporating comprehensive safety features.



ISRO's Heaviest-Ever Launch: Bluebird-6

- India's space agency, ISRO, is preparing to launch the heaviest American commercial satellite it has ever carried, the 6.5-tonne BlueBird-6, on 15 December from the Satish Dhawan Space Centre in Sriharikota.
- This mission underscores deepening Indo-US space collaboration, with ISRO's reliable LVM3 rocket—nicknamed 'Bahubali' for its power—deploying the satellite into low Earth orbit. The launch falls under New Space India Limited (NSIL), ISRO's commercial arm, which recently orbited India's own 4.4-tonne CMS-3 satellite on 2 November.
- BlueBird-6 belongs to AST Space Mobile, a Texas-based firm pioneering space-based cellular broadband networks. As the first 'Block-2' satellite in its series, it boasts the largest commercial phased array antenna in low Earth orbit, spanning nearly 2,400 square feet—3.5 times larger than predecessors BlueBirds 1-5 and offering tenfold data capacity.
- Each satellite can handle up to 10,000 MHz of bandwidth, partnering with mobile carriers to deliver direct-to-device services using licensed spectrum.
- This Block-2 model advances AST SpaceMobile's constellation plans through 2026, targeting non-continuous service to bridge digital divides in underserved areas. By providing fast broadband where terrestrial networks falter, it promises unhindered connectivity for remote regions.

- The LVM3, a three-stage vehicle, lifts payloads up to 8,000 kg to low Earth orbit or 4,000 kg to geosynchronous transfer orbit, proving its versatility. A human-rated variant will support India's Gaganyaan crewed mission in 2027. This follows other US collaborations, like the NISAR Earth-observation satellite launched in July.



Finland to procure AMRAAM Missiles from the US

- Finland said on Friday it would procure Advanced Medium Range Air-to-Air Missiles (AMRAAM) from the United States. Finland, which has a long border with Russia, in 2022 ordered 64 F-35 fighter jets made by U.S. defence group Lockheed Martin, with first deliveries planned for late next year.
- "The first missile deliveries will support the deployment of the F-35 fleet," the government said. "This procurement will give Finland the latest and most advanced variant of AMRAAM, which will improve our ability to respond to threats in our operating environment."
- The AMRAAM (Advanced Medium-Range Air-to-Air Missile, or AIM-120) is a combat-proven, radar-guided, beyond-visual-range (BVR) air-to-air missile used by U.S. and allied fighter jets for all-weather, day/night engagements, known for its "fire-and-forget" capability, allowing pilots to fire at multiple targets and then break away. Developed by Raytheon, it uses active radar for terminal guidance after initial inertial guidance and midcourse updates, with variants like the AIM-120D offering extended range (over 100 miles) and GPS. It's a successor to the AIM-7 Sparrow, making aerial combat more flexible and lethal.



Indian Army Moves Proposal For Acquiring 120 Km Long-Range Guided Pinaka Rockets

- As part of efforts to further strengthen its long-range artillery capabilities post Operation Sindoor, the Indian Army is looking to induct 120 km strike range Pinaka rockets in a proposal worth around Rs 2500 crore
- The rockets with the capability to strike targets at 120 kilometres would be developed by the Defence Research and Development Organisation, and the first trials are planned to be carried out in the near future, and then it would be developed with the Development-cum-Production Partners who would be chosen after a bidding process, defence officials told ANI.
- The Army's proposal for approval for the project is set to be taken up for clearance by the Defence Acquisition Council (DAC) very soon
- Earlier this year, the Ministry of Defence inked contracts with Economic Explosive Limited (EEL) and Munitions India Limited (MIL) for the procurement of Area Denial Munition (ADM) Type-1 (DPICM) and High Explosive Pre Fragmented (HEPF) Mk-1 (Enhanced) rockets respectively for PINAKA Multiple Launch Rocket System (MLRS) at a total cost of Rs 10,147 crore.
- In addition, a contract for upgrades in SHAKTI Software has also been signed with Bharat Electronics Limited (BEL). The contracts were signed in the presence of Defence Secretary Rajesh Kumar Singh.
- The Pinaka Multiple Launcher Rocket System (MLRS) is a long-range artillery weapon developed by the Defence Research and Development Organisation (DRDO).
- Known for its rapid response and precision, the Pinaka system enhances the Indian Army's capability in modern warfare.



REVIEW QUESTIONS

1. India's first hydrogen-powered passenger vessel has been launched on which National Waterway?

- A. National Waterway-2 (Brahmaputra)
- B. National Waterway-3 (West Coast Canal)
- C. National Waterway-1 (Ganga)
- D. National Waterway-4 (Krishna–Godavari)

ANSWER: C

2. Which propulsion technology is used in India's first hydrogen-powered passenger vessel?

- A. Solid Oxide Fuel Cell
- B. Proton Exchange Membrane Fuel Cell
- C. Lithium-ion Battery System
- D. Hybrid Diesel-Electric Engine

ANSWER: B

3. ISRO is set to launch the 6.5-tonne BlueBird-6 satellite using which launch vehicle?

- A. PSLV
- B. GSLV Mk-II
- C. LVM3 (Bahubali)
- D. SSLV

ANSWER: C

4. The Indian Army's proposal to induct 120 km range Pinaka rockets is expected to be cleared by which body?

- A. Cabinet Committee on Security (CCS)
- B. DRDO
- C. Defence Acquisition Council (DAC)
- D. Integrated Defence Staff (IDS)

ANSWER: C

5. The BlueBird-6 satellite is developed by which company?

- A. SpaceX
- B. Boeing
- C. Lockheed Martin
- D. AST Space Mobile

ANSWER: D

6. Who Is The Responsible Minister Of The Defence Acquisition Council?

- A. Home Minister
- B. Defence Minister
- C. External Affairs Minister
- D. PM

ANSWER: B

7. 'Air Independent Propulsion System' Is Inducted

- A. Helicopter
- B. UAV
- C. Submarine
- D. Destroyer

ANSWER: C

8. Regimental Centre of GARHWAL RIFLES Is In

- A. Happy Valley, Shillong, Meghalaya
- B. Ranikhet, Uttarakhand
- C. Lansdowne, Uttarakhand
- D. None of the above

ANSWER: C

9. Exercises B/w The India And UK Is Called:

- A. Desert Eagle
- B. SLINEX
- C. Indra
- D. Indradhanush

ANSWER: D

10. 'Nirdeshak' Ship Is built by

- A. MDL
- B. GRSE
- C. CSL
- D. DRDO

ANSWER: B

11. Netaji Subhash Chandra Bose Island Is Located At

- A. A&N
- B. Ladakh
- C. J&K
- D. Puducherry

ANSWER: A

12. V. O. Chidambaranar Port Trust Is Located In

- A. T.N
- B. M.H
- C. Goa
- D. A.P

ANSWER: A

13. Full-Form of ATAGS Is

- A. Adventure Towed Artillery Gun System
- B. Advanced To Artillery Gun System
- C. Advanced Towed Artillery Gun System
- D. Advanced Towed Artillery Gum System

ANSWER: C

14. At Which Of The Following Places Is The Heavy Vehicles Factory Located?

- A. Kanpur
- B. Khadki

- C. Avadi
- D. 24 Paraganas

ANSWER: C

15. Sofia Is The Capital Of

- A. Brunei
- B. Qatar
- C. UAE
- D. Bulgaria

ANSWER: D

16. "Prashata Ranvirta" Is A Motto Of

- A. Jammu And Kashmir Rifles
- B. Gorkha Regiment
- C. Punjab Regiment
- D. None

ANSWER: A

17. Exercises B/w India And Bangladesh Is Called:

- A. GARUDA SHAKTI
- B. SLINEX
- C. SAMPRITI
- D. Yudha Abhyas

ANSWER: C

18. Barrett M95 Is A

- A. Sniper Rifles
- B. Helicopter
- C. ATAGS
- D. ATGM

ANSWER: A

19. Astra Is A

- A. Air-to-air Missile
- B. Air-to-surface Missile
- C. Air-to-sea Missile
- D. None

ANSWER: A

20.What is the purpose of the 'SBI NAVECash Card'?

- A. To facilitate online transactions for naval personnel
- B. To facilitate offline transactions for naval personnel at sea
- C. To encourage more naval personnel to use debit cards
- D. To replace traditional debit cards for all Indians

ANSWER: B

