

18 July 2025

Question 1. Consider the following statements regarding India's Semiconductor Mission:

- (a) Provides the Northeast region with direct access to the sea via Chittagong port.
- (b) Significantly reduces the logistical dependence on the narrow and vulnerable Siliguri Corridor for transport to the Northeast.
- (c) Facilitates the movement of armed forces to the India-Myanmar border more efficiently.
- (d) Promotes cultural exchange and tourism between the peoples of Tripura and Bangladesh.

Answer: (b)

- The most critical strategic significance of the Akhaura-Agartala rail link is that it provides an alternative and much shorter route for goods and people to travel between mainland India (e.g., from Kolkata) and the Northeast, specifically Tripura.
- This bypasses the Siliguri Corridor, often called the "chicken's neck," which is a narrow strip of land that is strategically vulnerable.
- **Statement (a)** is a potential future benefit if connectivity is extended to the ports, but not the primary significance of this specific link itself.
- **Statement (c)** is a possible secondary benefit, but the primary driver is economic and logistical.
- **Statement (d)** is a positive outcome, but not the primary strategic importance.

18 July 2025

Question 2. The term 'Green Ammonia', recently in the news, refers to ammonia that is produced:

- (a) Using natural gas as a feedstock, but with carbon capture and storage technology.
- (b) Through a biological process using nitrogen-fixing bacteria in an industrial setting.
- (c) Using hydrogen derived from the electrolysis of water, powered by renewable energy sources.
- (d) As a by-product of organic farming, and a designated 'green' fertilizer.

Answer: (c)

Green ammonia is defined by the source of the hydrogen used in its production. The process involves two main steps:

- **Green Hydrogen Production:** Using renewable energy (like solar or wind) to power an electrolyser that splits water into hydrogen and oxygen.
- **Haber-Bosch Process:** Synthesizing this "green hydrogen" with nitrogen (separated from the air) to produce ammonia (NH₃). Because the entire process is powered by renewables, the resulting ammonia is termed 'green' and is a carbon-free energy carrier and chemical. Statement (a) describes 'blue' ammonia.

18 July 2025

Question 3. The National Deep Tech Startup Policy (NDTSP) was launched to primarily address which of the following challenges in the Indian startup ecosystem?

- (a) The lack of service-based and SaaS startups in metropolitan cities.
- (b) The difficulty in securing quick, short-term returns for venture capitalists.
- (c) The shortage of patient capital and long gestation periods required for R&D-intensive startups.
- (d) The over-regulation of e-commerce and consumer tech platforms.

Answer: (c)

The NDTSP is specifically designed to support 'deep tech' startups. Unlike consumer tech or SaaS startups, deep tech ventures are built on significant scientific or engineering innovation. Their main challenges are:

- Long Gestation Periods: They take many years of R&D before they have a marketable product.
- High Capital Requirement: They need substantial funding for research, prototyping, and testing.
- Lack of 'Patient Capital': Traditional Venture Capital often seeks quick returns, which is not suitable for deep tech.
- The policy aims to solve these specific problems by providing access to long-term R&D grants and creating a dedicated fund-of-funds, thereby addressing the shortage of patient capital.

18 July 2025

Question 4. The recent joint maritime surveillance satellite launched by India and France is a significant development for India's 'SAGAR' doctrine. Which of the following activities will it most effectively help monitor?

1. Illegal, Unreported, and Unregulated (IUU) fishing.
2. Extra-regional naval activity in the Indian Ocean Region.
3. Plastic pollution and marine debris concentration.
4. Submarine movements in deep-sea trenches.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 1, 2, and 3 only
- (d) 4 only

Answer: (a)

The news specifies that the satellite is equipped with Synthetic-Aperture Radar (SAR) and Automatic Identification System (AIS) payloads.

- AIS tracks ships that are broadcasting their identity. SAR can detect metal vessels (even those with their AIS turned off, so-called 'dark ships') day and night, and through clouds.
- This makes it highly effective for tracking (1) IUU fishing (often done by 'dark ships') and (2) extra-regional naval vessels to maintain Maritime Domain Awareness.
- While some remote sensing can detect plastic pollution (3), it is not the primary function of a SAR/AIS-based surveillance satellite.
- Detecting submerged submarines (4) is primarily an acoustic (sonar) function and cannot be done effectively by a radar satellite from space.

18 July 2025

Question 5. With reference to the FAME-III scheme, what is the key strategic shift in focus compared to its earlier phases?

- (a) It exclusively provides subsidies for the purchase of private electric cars.
- (b) It prioritizes the subsidization of public and commercial electric vehicles over private vehicles.
- (c) It withdraws all support for charging infrastructure to focus solely on vehicle manufacturing.
- (d) It aims to import fully built electric vehicles to meet demand quickly.

Answer: (b)

- The news report clearly states that a key shift in FAME-III is its sharpened focus on subsidizing public and commercial electric vehicles, such as e-buses, e-trucks, and delivery vehicles.
- While subsidies for private vehicles continue in a rationalized manner, the priority has shifted.
- This is a strategic move because commercial vehicles have higher utilization rates, leading to greater per-vehicle reduction in emissions and fuel consumption, maximizing the scheme's impact.