Career Launcher UPSC CSAT

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1. Operation Sindoor

- Operation SINDOOR emerged as a calibrated military response to an evolving pattern of asymmetric warfare, one that increasingly targets unarmed civilians along with military personnel.
- The terrorist attack on tourists in Pahalgam in April 2025 served as grim reminder of this shift.
- India's response was deliberate, precise, and strategic.
- Without crossing the Line of Control or international boundary, Indian forces struck terrorist infrastructure and eliminated multiple threats.
- However, beyond tactical brilliance, what stood out was the seamless integration of indigenous hi-tech systems into national defence.
- Whether in drone warfare, layered air defence, or electronic warfare, Operation SINDOOR marks a milestone in India's journey towards technological self-reliance in military operations.

Air Defence Capabilities: Tech as the First Line of Protection

- On the night of 07-08 May 2025, Pakistan attempted to engage a number of military targets in Northern and Western India including Awantipura, Srinagar, Jammu, Pathankot, Amritsar, Kapurthala, Jalandhar, Ludhiana, Adampur, Bhatinda, Chandigarh, Nal, Phalodi, Uttarlai, and Bhuj, using drones and missiles.
- These were neutralised by the Integrated Counter UAS (Unmanned Aerial Systems) Grid and Air Defence systems.
- Air Defence systems detect, track, and neutralise threats using a network of radars, control centres, artillery, and both aircraft- and ground-based missiles.
- On the morning of May 8, the Indian Armed Forces targeted Air Defence Radars and systems at a number of locations in Pakistan. An Air Defence system at Lahore was neutralised.

Performance of Systems

- As part of Operation SINDOOR, the following were used:
    - Battle-proven AD (Air Defence) systems like the Pechora, OSA-AK and LLAD guns (Low-level air defence guns).

Indigenous systems such as the Akash, which demonstrated stellar performance

- AKASH is a Short Range Surface to Air Missile system to protect vulnerable areas and vulnerable points from air attacks.
- The AKASH Weapon System can simultaneously engage Multiple Targets in Group Mode or Autonomous Mode.
- It has built in Electronic Counter-Counter Measures (ECCM) features. The entire weapon system has been configured on mobile platforms.
- India's Air Defence Systems, combining assets from the Army, Navy, and primarily the Air Force, performed with exceptional synergy.
- These systems created an impenetrable wall, foiling multiple attempts by Pakistan to retaliate.
- The Integrated Air Command and Control System (IACCS) of the Indian Air Force brought all these elements together, providing the net-centric operational capability vital for modern warfare.

Offensive Actions with Pinpoint Accuracy

- India's offensive strikes targeted key Pakistani airbases- Noor Khan and Rahimyar Khan with surgical precision. Loitering munitions were used to devastating effect, each finding and destroying high-value targets, including enemy radar and missile systems.
- Loitering munitions also known as "suicide drones" or "kamikaze drones", are weapons systems that can hover or circle a target area, searching for a suitable target before attacking.
- All strikes were executed without loss of Indian assets, underscoring the effectiveness of our surveillance, planning, and delivery systems. The use of modern indigenous technology, from long-range drones to guided munitions, made these strikes highly effective and politically calibrated.
- Indian Air Force bypassed and jammed Pakistan's Chinese-supplied air defence systems, completing the mission in just 23 minutes, demonstrating India's technological edge.

Evidence of Neutralized Threats

- Operation SINDOOR also produced concrete evidence of hostile technologies neutralized by Indian systems:
  - Pieces of PL-15 missiles (of Chinese origin)
  - Turkish-origin UAVs, named "Yiha" or "YEEHAW"
  - Long-range rockets, quadcopters and commercial drones
- These were recovered and identified, showing that despite Pakistan's attempts to exploit advanced foreign-supplied weaponry, India's indigenous air defence and electronic warfare networks remained superior.

Performance of Systems: Air Defence Measures of the Indian Army

Preparedness and Coordination:

- Since precise strikes on terrorists were conducted without crossing the Line of Control or International Boundary, it was anticipated Pakistan's response would come from across the border.
- A unique blend of Counter Unmanned Aerial Systems, Electronic Warfare assets, and Air Defence Weapons from both Army and Air Force

Multiple defensive layers from the International Boundary inward:

- Counter Unmanned Aerial Systems
- Shoulder-Fired Weapons
- Legacy Air Defence Weapons
- Modern Air Defence Weapon Systems
- This multi-tier defence prevented Pakistan Air Force attacks on our airfields and logistic installations during the night of May 9-10.
- These systems, built over the last decade with continuous government investment, proved to be force multipliers during the operation.
- They played a crucial role in ensuring that both civilian and military infrastructure across India remained largely unaffected during enemy retaliation attempts.

ISRO's contribution:

- At an event on May 11, ISRO Chairman V Narayanan mentioned that At least 10 satellites are continuously working round-the-clock for the strategic purpose to ensure the safety and security of the citizens of the country.
- To ensure the safety of the country, the nation has to serve through its satellites. It has to monitor its 7,000 km seashore areas.
- It has to monitor the entire Northern part continuously.

The Business of Drone Power: A Rising Indigenous Industry

- The Drone Federation India (DFI), is a premier industry body representing over 550 drone companies and 5500 drone pilots.
- DFI's vision is to make India a global drone hub by 2030, and it promotes the design, development, manufacturing, adoption and export of Indian drone and counter-drone technology worldwide.
- DFI enables ease of doing business, promotes the adoption of drone technology, and hosts several programs like Bharat Drone Mahotsav.

Some companies involved in the drone space are:

Alpha Design Technologies (Bengaluru):

- Partnered with Israel's Elbit Systems to build SkyStriker.
- Tata Advanced Systems offers a full range of integrated solutions across Defence & Security and has served as a trusted partner to India's armed forces for over six decades
- Paras Defence & Space Technologies operates within the Defence and Space segments, distinguished by Indigenously Designed Developed and Manufactured (IDDM) capabilities
- IG Drones is a Drone Technology Company for manufacturing and R & D of Drones specialized in defence and other industry applications along with provider of drone related services like drone surveying, mapping & inspection by industry experts.
- The company has partnered with Indian Army, Government of India , multiple State Governments, among others.

Drones at the Centre of Modern Warfare

- The integration of drone warfare into India's military doctrine owes its success to years of domestic R&D and policy reform. Since 2021, the ban on imported drones and the launch of the PLI (Production Linked Incentive) scheme have catalyzed rapid innovation.
- The scheme of Production Linked Incentive for drones and drone components of Ministry of Civil Aviation was notified on 30th September, 2021 with a total incentive of Rs 120 crores spread over three Financial Years (FYs), FY 2021-22 to FY 2023-24.
- The future lies in autonomous drones with AI-driven decision-making, and India is already laying the groundwork.
- Defence exports crossed the record figure of about Rs 24,000 crore in Financial Year 2024-25.
- The aim is to increase the figure to Rs 50,000 crore by 2029, and make India a developed nation and the world's largest defence exporter by 2047.

- Make in India continues to power the growth of the defence sector.
- India has emerged as a major defence manufacturing hub, driven by the "Make in India" initiative and a strong push for self-reliance.
- In FY 2023–24, indigenous defence production reached a record ₹1.27 lakh crore, while exports soared to ₹23,622 crore in FY 2024–25, a 34-fold increase from 2013–14.
- Strategic reforms, private sector involvement, and robust R&D have led to the development of advanced military platforms like the Dhanush Artillery Gun System, Advanced Towed Artillery Gun System (ATAGS), Main Battle Tank (MBT) Arjun, Light Specialist Vehicles, High Mobility Vehicles, Light Combat Aircraft (LCA) Tejas, Advanced Light Helicopter (ALH), Light Utility Helicopter (LUH), Akash Missile System, Weapon Locating Radar, 3D Tactical Control Radar, and Software Defined Radio (SDR), as well as naval assets like destroyers, indigenous aircraft carriers, submarines, frigates, corvettes, fast patrol vessels, fast attack craft, and offshore patrol vessels.
- The government has backed this growth with record procurement contracts, innovations under iDEX, drives like SRIJAN, and two Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu.
- Key acquisitions such as LCH (Light Combat Helicopters) Prachand helicopters and the ATAGS (Approval for Advanced Towed Artillery Gun System) highlight the shift towards indigenous capability.
- With targets of ₹3 lakh crore in production and ₹50,000 crore in exports by 2029, India is firmly positioning itself as a self-reliant and globally competitive defence manufacturing power.

QUESTIONS

1. What distinguishes Operation SINDOOR in terms of India's national security doctrine?

A. It was India's first full-scale war post-Kargil.

B. It represented a tri-service punitive action with ethical and intelligence-led precision.

C. It was a maritime-only operation initiated by the Indian Navy.

D. It involved covert operations conducted solely by the RAW and NSG.

2. Which of the following airbases were directly targeted by the Indian Air Force during Operation SINDOOR?

A. Sargodha and Peshawar

B. Chaklala and Gwadar

C. Nur Khan and Rahimyar Khan

D. Karachi and Lahore

3. Which combination of systems formed part of India's multi-layered air defence during Operation SINDOOR?

A. BrahMos, Arjun MBT, and LCA Tejas

B. Pechora, OSA-AK, and Akash

C. Prithvi, Nirbhay, and S-400

D. Arjun MBT, Pinaka, and Trishul

2. Maharana Pratap Birth Anniversary 2025

- Maharana Pratap was a renowned Rajput ruler whose name is synonymous with bravery.
- His defiance of Akbar, as well as the bravery of his loyal horse, Chetak, are well known.
- He was born on May 9, 1540. When others recognised Akbar's supremacy, Maharana Pratap stood firm against the Mughal Empire.
- Every year, Rajasthan celebrates the birth anniversary of Maharana Pratap with great fanfare and opulence.
- The Hindu calendar is used to celebrate Maharana Pratap Jayanti. Maharana Pratap Jayanti will be observed on May 29 this year, according to Drik Panchang.

Maharana Pratap Birth Anniversary 2025: History

- Maharana Udai Singh II, the Mewar king at the time, was his father. As the oldest of 25 siblings, Pratap was referred to as the Crown Prince. He became the heir apparent to the Mewar throne after his father's death.
- Mewar King Maharana Pratap and Akbar's army, under the command of Rajput ruler Raja Mansingh, engaged in combat at the Battle of Haldighati. Maharana Pratap earned a tremendous deal of respect and admiration for his bravery, even though he was eventually forced to retire.

Maharana Pratap Birth Anniversary 2025: Significance and Celebration

- Maharana Pratap Jayanti is more than just a commemoration of the birth of a historical person; it is a celebration of his pride, bravery, and the will to fight against oppression.
- A motivation that endures is Maharana Pratap's unshakeable dedication to his beliefs and his realm.

Early Life of Maharana Pratap:

- **Born:** May 9, 1540, in Kumbhalgarh Fort, Rajasthan.
- **Father:** Maharana Udai Singh II, founder of Udaipur.
- **Mother:** Maharani Jaiwanta Bai.
- **Succession:** Became the ruler of Mewar in 1572 after the death of his father.
- During his time, most Rajput rulers had accepted the suzerainty of Mughal emperor Akbar.
- Maharana Pratap, however, refused to submit to the Mughals, becoming a symbol of Rajput pride and resistance.

Major Battles and Military Campaigns

1. Battle of Haldighati (1576)

- **Date:** June 18, 1576
- **Location:** Haldighati Pass near Gogunda (present-day Rajsamand, Rajasthan)
- **Opponents:** Maharana Pratap vs. Mughal forces led by Man Singh I of Amber (a Rajput general under Akbar)

Strength:

- **Mewar:** ~20,000 troops (mainly Rajputs and Bhils)
- **Mughals:** ~80,000 (some estimates say less, ~10,000-20,000 including cavalry and infantry)

Outcome:

- Technically a Mughal tactical victory (they held the battlefield),
- But Maharana Pratap escaped and continued his guerrilla resistance.
- **Famous Steed:** Chetak, Pratap's horse, became legendary for saving his master even while mortally wounded.

2. Guerrilla Warfare and Reclamation

- After Haldighati, Pratap retreated into the Aravalli hills and adopted guerrilla tactics.
- Over the next decade, he recaptured most of Mewar, including important areas like Kumbhalgarh, Gogunda, and Udaipur, though he could never regain Chittorgarh (held by Mughals).
- **Unyielding Resistance:** Never accepted Mughal dominance, unlike many contemporary Rajput rulers.
- **Revival of Mewar:** Despite losing battles, he rebuilt and administered Mewar from scratch, establishing a new capital at Chavand.
- **Guerrilla Warfare Mastery:** Innovatively used the hilly terrain to wage a war of attrition against the Mughal forces.
- **Inspiration to Future Generations:** Symbol of Hindu Rajput pride, freedom, and courage.

Administration and Reforms

- Established Chavand as the new capital and rebuilt Mewar's economy and administration.
- Promoted agriculture, reconstruction of temples, and local industries.
- Encouraged local alliances with tribal groups like Bhils, who played a key role in his military success.

Death and Legacy

- **Died:** January 29, 1597, at the age of 56, due to injuries from a hunting accident.

Legacy:

- Remembered as a national hero in India.
- Government of India issued stamps and memorials in his honor.

Famous Memorials

- Moti Magri Memorial, Udaipur
- Statue at Haldighati
- Chetak Samadhi, a monument for his loyal horse

Popular Quotes

- **Known for saying:** "I prefer the freedom of living in forests to the luxury of slavery in the Mughal court."
- His sacrifices and simple forest life with his family are remembered as symbols of integrity and patriotism.

4. Which of the following best captures the strategic shift employed by Maharana Pratap after the Battle of Haldighati?
   A. He sought a peace treaty with Akbar to protect his people.
   B. He formed a joint Rajput-Mughal confederation to govern Mewar.
   C. He adopted guerrilla tactics and reclaimed territories while avoiding direct confrontation.
   D. He surrendered Chavand to the Mughals but retained Kumbhalgarh.

5. Which statement best explains the paradox of the Battle of Haldighati's outcome?
   A. The Mughals won diplomatically but lost militarily.
   B. The Rajputs were outnumbered but defeated the Mughals decisively.
   C. Though the Mughals won the battlefield, Maharana Pratap's escape preserved his long-term resistance.
   D. The battle was a draw, and both armies withdrew.

6. Which of the following tribal communities played a key role in Maharana Pratap's resistance efforts?
   A. Gonds
   B. Bhils
   C. Meenas
   D. Santhals

3. National Technology Day 2025

- National Technology Day 2025 was observed across India on May 11, commemorating the country's significant achievements in science and technology.
- This annual observance marks the anniversary of the 1998 Pokhran-II nuclear tests, a pivotal moment that established India as a nuclear power and showcased its indigenous technological capabilities.

Significance of May 11

- On May 11, 1998, India conducted a series of five nuclear tests under Operation Shakti at the Pokhran Test Range in Rajasthan.
- These tests demonstrated India's ability to develop thermonuclear and fission bombs, enhancing national security and global standing.
- Additionally, the same day witnessed the successful test flight of the Hansa-3, India's first indigenous aircraft developed by the National Aerospace Laboratories, and the test firing of the Trishul missile by the Defence Research and Development Organisation (DRDO).
- These milestones collectively led to the declaration of May 11 as National Technology Day by then Prime Minister Atal Bihari Vajpayee in 1999 .

Celebrations and Initiatives

Government Acknowledgment:

- Prime Minister Narendra Modi commemorated the day by recalling the historic Pokhran nuclear tests and emphasizing India's progress toward self-reliance and global leadership in science and technology.
- He praised the contributions of Indian scientists and innovators in empowering the nation and securing its global stature.

IIT Delhi's 'Jigyasa' Initiative:

- The Indian Institute of Technology (IIT) Delhi launched a new science outreach program called 'Jigyasa' aimed at bridging the gap between scientific research and the public.
- The initiative seeks to demystify complex scientific concepts and present them in accessible formats, promoting scientific curiosity and inspiring future scientists.

Gumla Tech Quest:

- In Gumla district, a three-day technology festival called 'Gumla Tech Quest' was organized to promote awareness about the importance of science and technology among students and the public.
- The event featured workshops on using technology in education, demonstrations of cutting-edge technologies like robotics and 3D printing, and various scientific exhibits .

"YANTRA – Yugantar for Advancing New Technology, Research & Acceleration"

- The Technology Development Board (TDB), under the Department of Science and Technology (DST), Government of India, unveiled the official theme for National Technology Day 2025 — "YANTRA – Yugantar for Advancing New Technology, Research & Acceleration."
- The word YANTRA, deeply rooted in India's scientific and cultural heritage, represents not just mechanical ingenuity but also symbolic power — of systems, synergy, and scalable solutions.
- Yugantar, meaning an epochal shift, is emblematic of the country's momentum in transitioning from technology adaptation to global technology leadership.
- National Technology Day commemorates the momentous events of 11th May 1998, when India conducted successful nuclear tests under Operation Shakti, and saw the maiden flight of the indigenously developed Hansa-3 aircraft.
- In recognition of these achievements, then Prime Minister Atal Bihari Vajpayee declared 11th May as National Technology Day.
- Over the years, National Technology Day has evolved into a flagship occasion for honouring scientific excellence, showcasing industrial innovations, and reinforcing the partnership between science, society, and industry.
- This year's celebrations will be held on 11th May 2025 under the aegis of TDB-DST.
- The event will bring together policymakers, scientists, technocrats, industry leaders, academic institutions, and startup founders to deliberate on accelerating India's technological journey through deep-tech, precision engineering, and transformative R&D.

India's Nuclear Capability:

1. First Nuclear Test:

- India conducted its first nuclear test, called "Smiling Buddha," on May 18, 1974, at Pokhran, Rajasthan.
- This marked India's entry into the group of nuclear-capable states.

2. Declared Nuclear Weapons State:

- India formally declared itself a nuclear weapons state after a series of tests in May 1998 (Pokhran-II).
- These tests confirmed India's ability to produce nuclear weapons and delivery systems.

3. Nuclear Doctrine:

- India adheres to a doctrine centered on:
  A. **No First Use (NFU):** India pledges not to use nuclear weapons unless first attacked by an adversary using nuclear weapons.
  B. **Massive Retaliation:** In the event of a nuclear attack, India commits to retaliating with a punitive and overwhelming response.
  C. **Credible Minimum Deterrence:** India maintains a nuclear arsenal sufficient to deter adversaries but does not aim for parity with other nuclear powers.

4. Nuclear Triad:

- India has developed a nuclear triad, i.e., the capability to launch nuclear weapons from land, air, and sea:
  - **Land-based:** Agni series of ballistic missiles (Agni I to Agni-V).
  - **Air-based:** Modified fighter aircraft such as Mirage 2000 and Sukhoi Su-30MKI.
  - **Sea-based:** INS Arihant-class nuclear-powered ballistic missile submarines (SSBNs) armed with K-15 and K-4 SLBMs.

5. Civilian and Military Separation:

- In 2005, India signed a landmark civil nuclear agreement with the U.S. (123 Agreement), which led to the separation of civilian and military nuclear facilities.
- India placed its civilian reactors under International Atomic Energy Agency (IAEA) safeguards.

6. Nuclear Suppliers Group (NSG):

- India is not a member of the NSG but has received a waiver (2008) allowing it to engage in nuclear commerce due to its strong non-proliferation record.

7. Strategic Forces Command (SFC):

- The SFC is responsible for managing India's nuclear arsenal and ensuring secure command and control.
- India's nuclear capability is designed for deterrence and defense, and it continues to evolve in terms of technology and doctrine, including developments in hypersonic delivery systems and missile defense.

QUESTIONS

Fill in the Blank:

7. Which of the following technological milestones did not occur on May 11, 1998, the date now commemorated as National Technology Day?

A. Successful nuclear tests under Operation Shakti
B. Test firing of the Trishul missile
C. Maiden flight of India's Hansa-3 aircraft
D. Launch of the Mars Orbiter Mission (Mangalyaan)

8. The theme of National Technology Day 2025, "YANTRA – Yugantar for Advancing New Technology, Research & Acceleration", symbolically represents which of the following concepts?
   A. India's need to catch up with global technological trends
   B. Mechanical development only in the defense sector
   C. India's transition from technology adaptation to technology leadership
   D. Restricting technological research to elite scientific institutions

9. Which of the following best describes the purpose of IIT Delhi's 'Jigyasa' initiative launched on National Technology Day 2025?
   A. A government-backed scheme to commercialize indigenous weapons
   B. A joint Indo-French project on AI and robotics
   C. A public outreach program aimed at simplifying scientific concepts for wider audiences
   D. A certification course for engineering students in nuclear physics

4. India witnesses a steady downward trend in maternal and child mortality towards achievement of SDG 2030 targets

- As per the Sample Registration System (SRS) Report 2021 released by the Registrar General of India (RGI), India has continued to witness a significant improvement in key maternal and child health indicators.
- As per the Special Bulletin on Maternal Mortality in India, 2019-21 based on the Sample Registration System (SRS), the Maternal Mortality Ratio (MMR) of the country has shown a marked reduction, declining by 37 points from 130 per lakh live births in 2014–16 to 93 in 2019–21.
- Similarly, as per the Sample Registration System Statistical Report 2021, the downward trend of child mortality indicators continued.
- The Infant Mortality Rate (IMR) of the country has declined from 39 per 1000 live births in 2014 to 27 per 1000 live births in 2021.
- Neonatal Mortality Rate (NMR) has declined from 26 per 1000 live births in 2014 to 19 per 1000 live births in 2021.
- Under-Five Mortality Rate (U5MR) has declined from 45 per 1000 live births in 2014 to 31 per 1000 live births in 2021.
- The Sex Ratio at Birth improves from 899 in 2014 to 913 in 2021. Total Fertility Rate is consistent at 2.0 in 2021, which is a significant improvement from 2.3 in 2014.

As per SRS 2021 Report

- Eight (8) States have already attained SDG target of MMR (<=70 by 2030): Kerala (20), Maharashtra (38), Telangana (45), Andhra Pradesh (46), Tamil Nadu (49), Jharkhand (51), Gujarat (53), Karnataka (63).

- Twelve (12) States/UT have already attained SDG target of U5MR (<=25 by 2030): Kerala (8), Delhi (14), Tamil Nadu (14), Jammu & Kashmir (16), Maharashtra (16), West Bengal (20), Karnataka (21), Punjab (22), Telangana (22), Himachal Pradesh (23), Andhra Pradesh (24) and Gujarat (24).
- Six (6) States/ UT have already attained SDG target of NMR (<=12 by 2030): Kerala (4), Delhi (8), Tamil Nadu (9), Maharashtra (11), Jammu & Kashmir (12) and Himachal Pradesh (12).
- Further, India's Progress in reduction of Maternal and Child mortality indicators outpaces Global Averages.
- As per the current United Nation Maternal Mortality Estimation Inter-agency Group (UN-MMEIG) Report 2000-2023, India's MMR has reduced by 23 points from 2020 to 2023.
- By this achievement, MMR of India has now declined by 86% compared to global reduction of 48% over the past 33 years from 1990 to 2023.
- India is among the top performer countries with reduction in Child Mortality Rates.
- As per the Report, India achieved a 78% decline in the Under-Five Mortality Rate (U5MR) surpassing the global reduction of 61%; 70% decline in the Neonatal Mortality Rate (NMR) compared to 54% globally, and 71% decline in the Infant Mortality Rate (IMR) compared to 58% globally, over the past 33 years from 1990 to 2023.
- These sustained improvements are a result of strategic interventions and unwavering commitment of the Government of India.
- The Government's flagship health schemes are seamlessly integrated to guarantee dignified, respectful, and high-quality healthcare services—completely free of cost, with zero tolerance for denial of care.
- Ayushman Bharat, the world's largest health assurance initiative, provides annual health coverage of up to ₹5 lakh per family, ensuring financial protection and access to essential services.
- Focused interventions ensure that every pregnant woman is entitled to free institutional delivery, including caesarean sections, along with complimentary transport, medication, diagnostics, and nutrition support in public health facilities.
- To ensure inclusive and equitable access, the Ministry has significantly strengthened health infrastructure by establishing Maternity Waiting Homes, Maternal and Child Health (MCH) Wings, Obstetric High Dependency Units (HDUs)/Intensive Care Units (ICUs) Newborn Stabilization Units (NBSUs), Sick Newborn Care Units (SNCUs), Mother-Newborn Care Units, and dedicated programs for the screening of birth defects.
- Key clinical practices such as the administration of antenatal corticosteroids for preterm labor, use of Continuous Positive Airway Pressure (CPAP), and structured follow-up for hearing and vision screening contribute to improved newborn survival outcomes.
- These measures support approximately 300 lakh safe pregnancies and 260 lakh healthy live births annually.
- A core priority is ensuring that quality healthcare services reach every corner of the country.
- This is being addressed through facility-based quality certification, enhancement of healthcare workers' skills, and robust supervisory mechanisms.
- Special emphasis is placed on training and deploying skilled birth attendants, midwives, and community health workers to deliver essential maternal and child health services.
- The Ministry is also reinforcing health data systems and real-time surveillance for maternal, newborn, and child health through digital platforms, thereby facilitating data-driven, evidence-based policy decisions.

Sustainable Development Goals

- **Goal 1.** End poverty in all its forms everywhere
- **Goal 2.** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- **Goal 3.** Ensure healthy lives and promote well-being for all at all ages
- **Goal 4.** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- **Goal 5.** Achieve gender equality and empower all women and girls
- **Goal 6.** Ensure availability and sustainable management of water and sanitation for all
- **Goal 7.** Ensure access to affordable, reliable, sustainable and modern energy for all
- **Goal 8.** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- **Goal 9.** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- **Goal 10.** Reduce inequality within and among countries
- **Goal 11.** Make cities and human settlements inclusive, safe, resilient and sustainable
- **Goal 12.** Ensure sustainable consumption and production patterns
- **Goal 13.** Take urgent action to combat climate change and its impacts
- **Goal 14.** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- **Goal 15.** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- **Goal 16.** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- **Goal 17.** Strengthen the means of implementation and revitalize the global partnership for sustainable development

QUESTIONS

10. Which of the following sets includes only those Indian states that have already achieved the SDG 2030 targets for all three indicators—Maternal Mortality Ratio (MMR ≤70), Under-5 Mortality Rate (U5MR ≤25), and Neonatal Mortality Rate (NMR ≤12)?

A. Kerala, Maharashtra, Tamil Nadu

B. Kerala, Delhi, Maharashtra

C. Kerala, Tamil Nadu, Andhra Pradesh

D. Kerala, Tamil Nadu, Jammu & Kashmir

11. India's decline in maternal and child mortality indicators since 1990 surpasses global averages. Which of the following pairs correctly matches the indicator with India's performance versus the global average?

A. MMR – 71% (India), 48% (Global)

B. IMR – 58% (India), 71% (Global)

C. NMR – 70% (India), 54% (Global)

D. U5MR – 61% (India), 78% (Global)

12. Which of the following best explains the combined impact of clinical and infrastructure reforms on India's maternal and child health outcomes, as reflected in recent SRS data?

A. Expansion of private hospitals and midwifery training programs only

B. Strengthening of referral chains through telemedicine platforms

C. Deployment of skilled birth attendants, MCH wings, and use of CPAP and antenatal steroids

D. Focus on home deliveries with support from ASHA workers and untrained dais

5. IWAI sets up its new office in Srinagar; launches initiatives to develop river navigation infrastructure in J&K

- In a move that is set to strengthen the Inland Water Transport (IWT) sector in the Union Territory of Jammu and Kashmir, Inland Waterways Authority of India (IWAI) under the Ministry of Ports, Shipping and Waterways sets up its new office in Srinagar's Transport Bhawan.
- IWAI has signed a Memorandum of Understanding (MoU) with the government of Union Territory of Jammu and Kashmir to develop river navigation infrastructure in three national waterways in the Union Territory i.e. NW-26 (River Chenab), NW-49 (River Jhelum), NW-84 (River Ravi).
- The Authority will now start the development works under the framework of the MoU.
- These works include setting up of floating jetties at ten locations in Jammu and Kashmir, development of navigational fairway by dredging wherever required, night navigational aids and regular hydrographic surveys for safe plying of vessels in these waterways.
- Under the dynamic leadership of Prime Minister Shri Narendra Modi and the able guidance of Minister of Ports, Shipping and Waterways Shri Sarbananda Sonowal, IWAI has made several infrastructural interventions to develop waterways as a robust engine of growth.
- With proactive steps like developing IWT terminals and related infrastructure, IWAI is working towards utilizing the immense potential of rivers across the country.
- The partnership between IWAI and Jammu and Kashmir government is a significant step that promises to promote eco-tourism in the union territory while also stimulating local economy.

India's inland waterways

- India's inland waterways are a vast network of rivers, canals, backwaters, and creeks, totaling around 14,500 kilometers.

- The National Waterways Act, 2016 identified 111 of these waterways as "National Waterways" for enhanced shipping and navigation.

Key aspects of Indian waterways:

Extensive Network:

- India boasts a significant length of navigable waterways, including rivers like the Ganga, Brahmaputra, and Kaveri, as well as canals and backwaters.

National Waterways:

- The 111 designated National Waterways (NWs) are crucial for inland water transport, promoting shipping and navigation.

Inland Waterways Authority of India (IWAI):

- Established in 1986, IWAI is responsible for developing, regulating, and maintaining the NWs.

Jal Marg Vikas Project (JMVP):

- This project aims to improve the navigability of the Ganga-Bhagirathi-Hooghly river system (National Waterway 1).

Major Rivers and Canals:

- **National Waterway 1:** Ganga-Bhagirathi-Hooghly river system (1620 km).
- **National Waterway 2:** Brahmaputra River (from Sadiya to Dhubri).
- **National Waterway 3:** Kollam-Kottappuram stretch on Champakara canal and Udyogmandal canal.
- **National Waterway 4:** Connects Krishna and Godavari rivers (Kakinada to Pondicherry).

1. Cost-Effective Transportation

- Inland waterways are significantly more fuel-efficient and cost-effective than road and rail transport.

One litre of fuel can move:

- 105 ton-km by waterways,
- 85 ton-km by railways,
- 24 ton-km by road.

2. Environmentally Friendly

- Waterways are the least polluting mode of transport.
- They help reduce carbon emissions, noise pollution, and traffic congestion on roads.

3. Decongests Road and Rail Networks

- By shifting bulk cargo movement to waterways, it reduces the burden on India's overstretched rail and road networks, improving efficiency and lifespan of these modes.

4. Boosts Trade and Connectivity

- Waterways connect rural and urban markets, especially in areas with underdeveloped road infrastructure.
- Enhance domestic trade and regional connectivity, especially with neighboring countries like Bangladesh, Nepal, Bhutan, and Myanmar.

5. Supports Economic Growth

- Inland waterways promote the growth of ports, logistics hubs, and industries along riverbanks.

- It contributes to job creation in sectors like shipping, shipbuilding, logistics, and tourism.

6. Promotes Tourism and Cultural Heritage

- Many rivers are culturally and historically significant.
- Inland cruise tourism, like on the Ganga and Brahmaputra, boosts tourism-based economies.

7. National Waterways Development

- India has 111 National Waterways under the National Waterways Act, 2016.
- Major projects like the Jal Marg Vikas Project (JMVP) aim to develop the Ganga (NW-1) for navigation from Varanasi to Haldia.

8. Integration with Multimodal Transport

- Inland waterways are integral to India's push for multimodal transport infrastructure, alongside Bharatmala (roads) and Sagarmala (ports) projects.

Importance of Inland waterways in Jammu & Kashmir

1. Eco-Friendly Transport

- Waterways are a low-emission, sustainable mode of transport compared to roadways and airways.
- In a Himalayan region like J&K, preserving the environment is crucial, and waterways reduce air and noise pollution.

2. Cost-Effective Logistics

- Inland water transport (IWT) is generally cheaper than road or air transport.
- For movement of goods like apples, walnuts, saffron, and handicrafts, waterways can reduce logistics costs, especially over medium distances.

3. Tourism Promotion

- J&K's natural lakes and rivers—such as Dal Lake, Jhelum River, and Wular Lake—are already popular tourist attractions.
- Developing waterway transport like shikara services, water taxis, or ferries can enhance the tourist experience and boost the local economy.

4. Decongestion of Roads

- Road infrastructure in J&K is limited and often impacted by landslides, snow, or overuse.
- Using waterways, particularly the Jhelum River and connected canals, can reduce pressure on road transport and improve connectivity within the Kashmir Valley.

5. Revival of Traditional Routes

- The Jhelum River historically served as a vital trade route.
- Revitalizing such routes honors heritage while adapting them for modern use (e.g., for cargo and passenger services).

6. Strategic and Disaster Resilience

- Inland waterways can act as alternative supply routes during natural disasters or conflicts when roads are blocked.

- This is particularly relevant for a region with a history of geopolitical sensitivity and natural calamities.

7. Livelihood Generation

- Water-based transport can create jobs in boat manufacturing, maintenance, ferry operations, and tourism services.
- Local communities can benefit economically from these new opportunities.

QUESTIONS

13. Which of the following correctly pairs National Waterways with rivers flowing through the Union Territory of Jammu and Kashmir as per the new MoU signed with IWAI?

A. NW-26 – Jhelum, NW-49 – Chenab, NW-84 – Ravi

B. NW-26 – Chenab, NW-49 – Jhelum, NW-84 – Ravi

C. NW-26 – Ravi, NW-49 – Chenab, NW-84 – Jhelum

D. NW-26 – Ravi, NW-49 – Jhelum, NW-84 – Chenab

14. What is the primary significance of IWAI establishing an office in Srinagar, as per the latest inland water transport development plan?

A. To oversee the development of new sea ports for exports in Jammu

B. To monitor inland ferry services for tourism in Leh and Ladakh

C. To implement infrastructure development in three National Waterways, including floating jetties, dredging, and night navigation

D. To privatize all river navigation infrastructure in Kashmir Valley

15. Which of the following statements is incorrect about India's Inland Waterways and related initiatives?

A. National Waterway 1 (NW-1) runs along the Ganga-Bhagirathi-Hooghly river system and is the longest waterway in India

B. Jal Marg Vikas Project is focused on enhancing navigability of NW-2 and NW-4 under IWAI

C. IWAI was established in 1986 and regulates 111 National Waterways declared under the 2016 Act

D. NW-3 connects Kollam to Kottappuram via Champakara and Udyogmandal canals in Kerala

6. China named places in Arunachal Pradesh

- India rejected the new Chinese names for places in Arunachal Pradesh as a "preposterous" attempt to alter the "undeniable" reality that the state "was, is, and will" always is an integral part of India.
- It is, in fact, an old Chinese habit to periodically issue lists of new names for locations in Arunachal Pradesh. India describes the names as "inventions" by China, and has consistently and unequivocally dismissed them.
- China has issued several such lists since 2017, claiming to "standardise" names in accordance with regulations issued by the State Council, the equivalent of the Chinese Cabinet.

China keeps doing this from time to time

- In recent years, this practice started on April 14, 2017, when the Chinese Ministry of Civil Affairs issued "official" Chinese names for six places in Arunachal Pradesh.
- This was a "first batch" of "standardised" names.
- The six names on that list then, written in the Roman alphabet, were "Wo'gyainling", "Mila Ri", "Qoidengarbo Ri", "Mainquka", "Bumo La" and "Namkapub Ri".
- The latitude and longitude listed with the names showed those places as Tawang, Kra Daadi, West Siang, Siang (where Mechuka or Menchuka is an emerging tourist destination), Anjaw, and Subansiri respectively — spanning the breadth of Arunachal Pradesh.
- Four and a half years later, in December 2021, came a "second list" of 15 "standardised Chinese names" for places in Arunachal Pradesh.
- Among them were eight residential areas, four mountains, two rivers, and a mountain pass.
- This time too, China provided the latitudes and longitudes of these places.
- On April 2, 2023, China issued a so-called "third list" of "standardised geographical names" for 11 places, including five mountain peaks, two populated areas, two land areas, and two rivers.
- Among the "renamed" places was a town close to Itanagar, the capital of Arunachal Pradesh.
- And last year, the Chinese Civil Affairs Ministry posted on its website a list of 30 "new names" for places in Arunachal Pradesh.

But why is China naming places that are in India?

- China claims some 90,000 sq km of Arunachal Pradesh as its territory.
- It calls the area "Zangnan" in the Chinese language and makes repeated references to "South Tibet".
- Chinese maps show Arunachal Pradesh as part of China, and sometimes parenthetically refer to it as "so-called Arunachal Pradesh".
- China makes periodic efforts to underline this unilateral claim to Indian territory. Giving Chinese names to places in Arunachal Pradesh is part of that effort.

And what is the basis for China's claim?

- The People's Republic of China disputes the legal status of the McMahon Line, the boundary between Tibet and British India that was agreed at the Simla Convention — officially the 'Convention Between Great Britain, China, and Tibet' — of 1914.
- China was represented at the Simla Convention by a plenipotentiary of the Republic of China, which had been declared in 1912 after the Qing dynasty was overthrown. (The present communist government came to power only in 1949, when the People's Republic was proclaimed.)
- The Chinese representative did not consent to the Simla Convention, saying Tibet had no independent authority to enter into international agreements.
- The McMahon Line, named after Henry McMahon, the chief British negotiator at Shimla, was drawn from the eastern border of Bhutan to the Isu Razi pass on the China-Myanmar border.
- China claims territory to the south of the McMahon Line, lying in Arunachal Pradesh.
- China also bases its claims on the historical ties that have existed between the monasteries in Tawang and Lhasa.

How does making these claims help China?

- It sees this as a kind of pressure tactic.

- So the "first batch" of renaming in 2017 came days after the Dalai Lama visited Arunachal Pradesh, against which Beijing lodged a strong protest.
- And in 2021, it protested after then Vice President M Venkaiah Naidu went to the state Assembly.
- China also creates difficulties in issuing visas to Indian athletes from Arunachal Pradesh.
- The government in Beijing tries to give its own Chinese names to other places as well, such as islands in the South China Sea that it claims sovereignty over.
- In fact, laying aggressive claims to territories on the basis of alleged historical injustices done to China is a part of the Chinese foreign policy playbook.

Shimla Convention

- The Shimla Convention, officially known as the Convention Between Great Britain, China, and Tibet, was a significant agreement reached in 1914 in Simla, British India.
- It aimed to settle Tibet's sovereignty, prevent future territorial disputes, and delineate borders, particularly the McMahon Line.
- While representatives from all three parties participated, China ultimately refused to sign the final agreement.

Purpose:

- To address Tibet's status, settle disputes, and define boundaries between Tibet, British India, and China.

Participants:

- Great Britain, China, and Tibet (represented by the Dalai Lama).

Key decisions:

- Dividing Tibet into "Outer Tibet" and "Inner Tibet".
- "Outer Tibet" was to remain under Tibetan government with Chinese suzerainty, but China would not interfere in its administration.
- "Inner Tibet" was to be under Chinese jurisdiction.
- The boundary between British India and Tibet was demarcated, known as the McMahon Line.

McMahon Line:

- The McMahon Line, named after the British chief negotiator Sir Henry McMahon, was a significant outcome of the convention, marking the border between British India and Tibet.

China's refusal to sign:

- While China participated in the negotiations, they ultimately did not sign the final agreement, primarily due to their objection to Tibet's autonomy and the creation of a boundary line.

Later implications:

- The Shimla Convention, especially the McMahon Line, became a point of contention in the Sino-Indian border dispute.
- On 3 July 1914, the British and Tibetan plenipotentiaries signed the Convention without a Chinese signature.
- They also signed an additional bilateral declaration with the claim that the convention would be binding on them and that China would be denied any privileges under the agreement until it signed it.

16. Which of the following accurately explains the division of Tibet as proposed in the Shimla Convention of 1914?

A. Outer Tibet would be under complete Chinese administration, while Inner Tibet would be autonomous.

B. Inner Tibet would have Tibetan self-rule with British protection, and Outer Tibet would be annexed by China.

C. Outer Tibet would be governed by Tibetans with Chinese suzerainty and no interference, while Inner Tibet would be under direct Chinese control.

D. Inner and Outer Tibet were to be merged into one autonomous region under British administration.

17. Which of the following was a direct outcome of the Shimla Convention that later became a contentious issue between India and China?

A. Recognition of Nepal as an independent kingdom

B. Establishment of the Durand Line as India's northern frontier

C. Declaration of Tibet as an Indian protectorate

D. Demarcation of the McMahon Line as the border between British India and Tibet

18. Why did China refuse to sign the Shimla Convention of 1914, despite participating in the negotiations?

A. It did not recognize the authority of Great Britain in Asia.

B. It insisted on full independence for Tibet.

C. It objected to the McMahon Line and the recognition of Tibet's autonomous status.

D. It demanded joint governance of Tibet with the British, which was rejected.

7. Semiconductor mission: Consistent momentum

- The Union Cabinet chaired by the Prime Minister Shri Narendra Modi approved the establishment of one more semiconductor unit under India Semiconductor Mission.
- Already five semiconductor units are in advanced stages of construction.
- With this sixth unit, Bharat moves forward in its journey to develop the strategically vital semiconductor industry.
- The unit approved is a joint venture of HCL and Foxconn.
- HCL has a long history of developing and manufacturing hardware.
- Foxconn is a global major in electronics manufacturing.
- Together they will set up a plant near Jewar airport in Yamuna Expressway Industrial Development Authority or YEIDA.
- This plant will manufacture display driver chips for mobile phones, laptops, automobiles, PCs, and myriad of other devices that have display.

- The plant is designed for 20,000 wafers per month.
- The design output capacity is 36 million units per month.
- Semiconductor industry is now shaping up across the country.
- World class design facilities have come up in many states across the country. State governments are vigorously pursuing the design firms.
- Students and entrepreneurs in 270 academic institutions and 70 startups are working on world class latest design technologies for developing new products.
- 20 products developed by the students of these academic students have been taped out by SCL Mohali.
- The new semiconductor unit approved will attract investment of Rs 3,700 crore.
- As the country moves forward in semiconductor journey, the eco system partners have also established their facilities in India.
- Applied Materials and Lam Research are two of the largest equipment manufacturers.
- Both have a presence in India now.
- Merck, Linde, Air Liquide, Inox, and many other gas and chemical suppliers are gearing up for growth of our semiconductor industry.
- With the demand for semiconductor increasing with the rapid growth of laptop, mobile phone, server, medical device, power electronics, defence equipment, and consumer electronics manufacturing in Bharat, this new unit will further add to Prime Minister Shri Narendra Modiji's vision of Atmanirbhar Bharat.

India Semiconductor Mission

- The India Semiconductor Mission (ISM) is a strategic initiative launched by the Government of India in 2021 to develop a robust semiconductor and display manufacturing ecosystem in the country.
- It is part of the larger "Make in India" and Aatmanirbhar Bharat (Self-Reliant India) campaigns, aiming to reduce India's dependence on imports and position it as a global hub for semiconductor design and manufacturing.

Key Objectives of the India Semiconductor Mission:

Establish Fab and Display Units:

- Attract global and domestic companies to set up semiconductor fabrication (fab) units and display fabs in India.

Design Ecosystem Support:

- Promote an ecosystem for semiconductor design through incentives and design-linked schemes.

Supply Chain Development:

- Build infrastructure and capabilities for the entire semiconductor supply chain including ATMP (Assembly, Testing, Marking, and Packaging) units.

Human Resource Development:

- Develop skilled professionals for semiconductor research, design, and manufacturing through partnerships with academia.

Sustainable Manufacturing:

- Ensure environmentally sustainable practices in semiconductor manufacturing.

Administrative Structure:

- The India Semiconductor Mission is being implemented by a dedicated institution under the Ministry of Electronics and Information Technology (MeitY).
- It functions as an independent business division with professionals from the semiconductor industry.

Recent Developments (as of 2024–2025):

- Micron Technology began setting up a semiconductor ATMP unit in Sanand, Gujarat, with support under ISM.
- Tata Electronics has announced plans to establish semiconductor fabs and ATMP units.
- Collaboration with global players like Intel, TSMC, Foxconn, and AMD has been under discussion.
- In 2024, the first multi-chip fabrication facility was announced in Jewar, Uttar Pradesh, in collaboration with the U.S.

Strategic Importance:

- Reduces import dependency (India imports nearly all of its semiconductors).
- Boosts national security and digital sovereignty.
- Enhances India's role in the global electronics supply chain.
- Supports AI, 5G, IoT, automotive, and defense technologies through domestic chip production.

Union Cabinet

- The Union Cabinet is the highest decision-making body in the executive branch of the Government of India.
- It consists of senior ministers, typically heading key ministries, and is led by the Prime Minister.
- The Cabinet is a subset of the Council of Ministers and plays a central role in policymaking and administration.

1. Composition:

- Prime Minister (Head of the Government)
- Cabinet Ministers (Senior ministers heading important ministries like Home, Defence, Finance, External Affairs, etc.)
- Sometimes includes Ministers of State (Independent Charge) invited to attend Cabinet meetings.

2. Role and Functions:

- Formulating and implementing government policies.
- Taking major administrative and legislative decisions.
- Coordinating between ministries.
- Approving bills before they are introduced in Parliament.
- Making appointments to key constitutional positions.
- Managing national crises and foreign affairs.

3. Constitutional Basis:

- Articles 74 and 75 of the Indian Constitution deal with the Council of Ministers.
- The President of India is constitutionally bound to act on the aid and advice of the Council of Ministers, headed by the Prime Minister.

4. Cabinet Committees:

- Smaller groups within the Cabinet, formed to deal with specific issues like Security, Economic Affairs, Parliamentary Affairs, etc.
- Examples: Cabinet Committee on Security (CCS), Cabinet Committee on Economic Affairs (CCEA).

As of 2025 (current context):

- The Prime Minister is Narendra Modi.

The Union Cabinet includes ministers like:

- Amit Shah – Minister of Home Affairs and Cooperation
- Rajnath Singh – Minister of Defence
- Nirmala Sitharaman – Minister of Finance
- S. Jaishankar – Minister of External Affairs

Atmanirbhar Bharat

- Atmanirbhar Bharat meaning "Self-Reliant India," is a vision and initiative launched by the Government of India to make the country self-sufficient and reduce dependence on foreign products and services.
- It was introduced by Prime Minister Narendra Modi in May 2020, particularly in response to the economic challenges posed by the COVID-19 pandemic.

Key Objectives:

- **Economic self-reliance:** Boost domestic production and reduce imports.
- **Support for local industries:** Encourage "Make in India" and promote indigenous industries, start-ups, and MSMEs (Micro, Small, and Medium Enterprises).
- **Job creation:** Generate employment opportunities within the country.
- **Innovation and technology:** Promote research, innovation, and digital infrastructure.
- **Sustainable development:** Strengthen rural economy, agriculture, and green energy sectors.

Pillars of Atmanirbhar Bharat:

PM Modi outlined five key pillars:

- Economy – Quantum jumps, not incremental changes.
- Infrastructure – That represents a modern India.
- System – Technology-driven arrangements fulfilling the dreams of the 21st century.
- Vibrant Demography – Our source of energy for a self-reliant India.
- Demand – Strengthening demand and supply chain systems.

Major Components:

- Atmanirbhar Bharat Abhiyan Packages (stimulus measures across multiple sectors including agriculture, defense, health, education, and finance).
- PLI Scheme (Production Linked Incentive) to boost manufacturing.
- Startup and MSME support.
- Vocal for Local campaign to promote Indian goods and services.

Sectors Benefited:

- Defense (push for indigenous defense manufacturing)

- Health (boost to pharma and healthcare systems)
- Electronics and semiconductors
- Renewable energy
- Space and atomic energy
- Agriculture and food processing

Global Vision:

- While the focus is on self-reliance, PM Modi clarified that "self-reliant India does not mean isolationism" — India seeks to integrate with global supply chains while building domestic capabilities.

QUESTIONS

19. Which of the following correctly identifies the unique contribution of the newly approved semiconductor unit under India Semiconductor Mission (ISM)?

A. It is a joint venture of HCL and Foxconn to manufacture display driver chips near Jewar airport.

B. It is India's first fab facility for memory chips.

C. It will be the first to produce semiconductors used in defence satellite communication.

D. It is the first facility set up exclusively for silicon photonics-based semiconductor devices.

20. Which of the following correctly pairs the semiconductor industry component with its corresponding developmental initiative under India Semiconductor Mission?

A. Fab unit — Design Linked Incentive Scheme

B. ATMP unit — National Supercomputing Mission

C. Supply chain chemicals and gases — Presence of global firms like Merck and Inox

D. Display fabs — Operated exclusively by ISRO through SCL Mohali

21. Which of the following statements best describes the administrative structure of the India Semiconductor Mission (ISM)?

A. It is directly managed by NITI Aayog and chaired by the Prime Minister.

B. It functions as an autonomous body under the Department of Science and Technology.

C. It operates as a specialized division under MeitY with professionals from the semiconductor industry.

D. It is jointly administered by the Ministry of Commerce and the Ministry of Skill Development.

8. World Food Prize for scientist for growing food with fewer chemicals

- A Brazilian scientist who pushed back against the use of chemical fertilisers and studied biological approaches to more robust food production has been honoured with this year's World Food Prize.
- Microbiologist Mariangela Hungria has been researching biological seed and soil treatments for 40 years, and has worked with Brazilian farmers to implement her findings.
- Her accomplishment has now won her $500,000 from the Iowa-based World Food Prize Foundation.

- Norman Borlaug, who received the Nobel Peace Prize in 1970 for his work to dramatically increase crop yields and reduce the threat of starvation in many countries, founded the World Food Prize.
- Since the first prize was handed out in 1987, 55 people have been honoured.
- Early in her career, she decided to focus on a process called biological nitrogen fixation, in which soil bacteria could be used to promote plant growth.
- At that time, farmers in Brazil and around the world were reluctant to reduce their use of nitrogen fertilisers, which dramatically increase crop production but lead to greenhouse gas emissions and pollute waterways.
- Hungria studied how bacteria can interact with plant roots to naturally produce nitrogen.
- She then demonstrated her work on test plots and began working directly with farmers to convince them that they wouldn't have to sacrifice high crop yields if they switched to a biological process.
- The work is credited for increasing yields of several crops, including wheat, corn, and beans, but it has been especially affective on soybeans. Brazil has since become the world's largest soybean producer, surpassing the US.
- Although Hungria's research could be applied on farms in other countries, soybean production in the US is different than it is in Brazil.
- American farmers typically rotate crops between growing corn and soybeans.
- Enough nitrate fertiliser applied to corn still remains in the soil when soybeans are planted and little or no fertiliser needs to be applied.
- Brazilian agricultural companies have faced fierce criticism for clearing forested land to create farmland, largely to grow soybeans.
- Hungria will be awarded her prize at an annual October gathering in Iowa of agricultural researchers and officials from around the world.
- Gebisa Ejeta, chair of the World Food Prize Laureate Selection Committee, credited Hungria for the transformative effects of her research in South America.

World Food Prize

- The World Food Prize is a prestigious international award established in 1986 by Nobel Peace Prize laureate Norman Borlaug.
- Often referred to as the "Nobel Prize for Food and Agriculture," it honors individuals who have made significant contributions to improving the quality, quantity, or availability of food worldwide.
- Administered by the World Food Prize Foundation, the award includes a $500,000 prize, a diploma, and a commemorative sculpture.
- Laureates are celebrated annually in Des Moines, Iowa, during a ceremony at the Iowa State Capitol.
- The World Food Prize has honored over 50 individuals from various countries, including India, for their contributions to food security and agriculture.
- The World Food Prize Foundation's headquarters, the Hall of Laureates in Des Moines, Iowa, serves as a museum and educational center.
- It celebrates the achievements of laureates and aims to inspire future generations to continue the fight against hunger.
- Notable Indian laureates include Dr. M.S. Swaminathan, recognized for his role in India's Green Revolution, and Dr. Rattan Lal, honored for his work in soil science.

India's Green Revolution

- India's Green Revolution refers to a period of significant agricultural transformation in India during the 1960s and 1970s, which drastically increased food grain production, particularly wheat and rice, through the adoption of modern agricultural techniques.

Key Features:

Introduction of High-Yielding Varieties (HYV):

- Especially for wheat and rice.
- **Notable variety:** K68 and IR8 (rice), Lerma Rojo and Sonora 64 (wheat).

Use of Chemical Fertilizers and Pesticides:

- Boosted crop yields by supplying essential nutrients.

Expansion of Irrigation:

- Creation of canals, tube wells, and improved water management systems.

Mechanization:

- Use of tractors, harvesters, and threshers to reduce dependence on manual labor.

Supportive Government Policies:

- Minimum Support Price (MSP), subsidies on fertilizers and seeds, and institutional credit.

Timeline:

- **Early 1960s:** Food shortages and reliance on imports, including U.S. food aid under PL-480.
- **1965-66:** Severe droughts highlighted the urgency for self-sufficiency.
- **1966 onwards:** Launch of Green Revolution initiatives.

Major Contributors:

- **Dr. M.S. Swaminathan:** Known as the Father of India's Green Revolution.
- **Norman E. Borlaug:** American agronomist whose wheat varieties were used in India.
- **Prime Minister Lal Bahadur Shastri and Indira Gandhi** supported and implemented the policies.

Impact:

Positive:

- India became self-sufficient in food grain production.
- Significant increase in agricultural productivity, especially in Punjab, Haryana, and western Uttar Pradesh.
- Reduced famine and food imports.

Negative:

- **Regional disparity:** Benefits were concentrated in a few states.
    - Soil degradation due to overuse of chemical inputs.
    - Water table depletion from over-irrigation.
    - Environmental pollution and loss of biodiversity.

22. Which of the following best reflects the innovation for which Mariangela Hungria was awarded the 2024 World Food Prize?

A. Development of genetically modified rice for drought tolerance

B. Large-scale implementation of precision agriculture using AI

C. Promotion and application of biological nitrogen fixation to reduce chemical fertilizer dependency

D. Introduction of vertical farming systems to combat urban food shortages

23. Consider the following statements regarding the World Food Prize:

1. It was established in 1986 by the Nobel Peace Prize-winning agronomist Norman Borlaug.
2. The award is presented in Geneva, Switzerland, and includes a prize of USD 100,000.
3. Indian scientists such as M.S. Swaminathan and Rattan Lal have been recipients of this award.

Which of the statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2, and 3

24. Which of the following correctly contrasts the agricultural strategies promoted by the Green Revolution in India with the recent biological approaches promoted by laureates like Mariangela Hungria?

A. The Green Revolution discouraged mechanization while recent approaches prioritize it.

B. The Green Revolution promoted chemical input-intensive farming, whereas current biological approaches seek sustainability with reduced chemical use.

C. The Green Revolution relied heavily on microbial techniques for nitrogen fixation, whereas recent research moves toward chemical-based agriculture.

D. Both strategies primarily emphasize vertical farming and hydroponics.

9. FM Sitharaman Hails BSE's 150-Year Legacy, Launches BSE 150 Index

- Union Finance Minister Nirmala Sitharaman lauded the Bombay Stock Exchange's (BSE) technological advancements and its vital role in India's economic development.
- The Bombay Stock Exchange (BSE), Asia's oldest stock exchange, marked a historic milestone as it celebrated its 150th anniversary, and Finance Minister Nirmala Sitharaman was the chief guest at the celebration.
- BSE processes orders worth Rs 1,500 crore daily, reflecting the seamless integration of cutting-edge technology.
- The finance minister pointed out that the market capitalization of BSE has reached an impressive Rs 400 lakh crore, placing it among the world's top exchanges.

- Finance Minister said retail investor participation has surged, with 4.1 crore demat accounts opened in February 2024 alone, a clear sign of growing trust in the transparency of India's capital markets.
- She noted that mutual fund assets under management have also tripled recently, indicating growing investor maturity.
- She also underscored the rising dominance of Domestic Institutional Investors (DIIs) and India's emergence as a global leader in IPO listings.
- Sitharaman launched the BSE 150 Index, a new benchmark index designed to track the performance of the top 150 listed companies based on market capitalization and liquidity.
- The new index aims to offer investors a more comprehensive view of India's rapidly evolving equity landscape.

BSE 150 Index

- The S&P BSE 150 MidCap Index is designed to track the performance of 150 mid-cap companies listed on the Bombay Stock Exchange (BSE).
- It serves as a benchmark for mid-sized companies in India, offering investors exposure to firms that are typically in a growth phase and may provide higher returns compared to large-cap companies, albeit with increased volatility.

Composition

- The index comprises 150 mid-cap companies selected based on total market capitalization, subject to certain buffers within the BSE 500 index.
    - Mazagon Dock Shipbuilders Ltd.
    - Solar Industries India Ltd.
    - Max Healthcare Institute Ltd.
    - Indian Hotels Company Ltd.
    - UPL Ltd.
    - SRF Ltd.
    - Oracle Financial Services Software Ltd.
    - One 97 Communications Ltd. (Paytm)

Investment Insights

- Mid-cap companies often represent a balance between the stability of large-cap firms and the high growth potential of small-cap firms.

Investing in the BSE 150 MidCap Index can offer:

- **Growth Potential:** Mid-cap companies are typically in expansion phases, potentially leading to significant capital appreciation.
- **Diversification:** Exposure to a broad range of sectors and industries.
- **Higher Volatility:** Compared to large-cap stocks, mid-cap stocks can be more volatile, leading to higher risk.
- It's essential to assess your risk tolerance and investment horizon before investing in mid-cap indices.

- For those interested in passive investment strategies, several mutual funds and exchange-traded funds (ETFs) track the performance of the BSE 150 MidCap Index.

Bombay Stock Exchange Limited

- **Founded:** 1875
- **Location:** Mumbai, Maharashtra, India
- **Benchmark Index:** S&P BSE SENSEX
- **Currency:** Indian Rupee (INR)
- **Oldest Stock Exchange in Asia:** BSE is the first stock exchange in Asia and among the ten largest in the world by market capitalization.
- **SENSEX:** Its flagship index, the S&P BSE SENSEX, represents the 30 largest and most actively traded stocks on the BSE. It is a barometer of the Indian economy.
- **Demutualization:** BSE was demutualized and corporatized in 2005, becoming a corporate entity owned by shareholders.
- **Listed Companies:** It has over 5,000 companies listed, making it one of the world's top exchanges in terms of listed firms.

Technological Advancements

- In 1995, BSE introduced BOLT (BSE OnLine Trading), a fully automated screen-based trading system.
- In 2017, BSE became India's first listed stock exchange after its IPO.

Regulation and Governance

- Regulated by the Securities and Exchange Board of India (SEBI).
- Plays a crucial role in the Indian capital market by providing a transparent and efficient marketplace for securities trading.

Other Segments

Apart from equity trading, BSE also provides:

- Debt instruments
- Derivatives
- Mutual funds
- SME (Small and Medium Enterprises) Platform
- Commodity derivatives (via BSE's subsidiary, India INX)

QUESTIONS

25. Which of the following correctly distinguishes the S&P BSE 150 Index from the SENSEX?

A. The BSE 150 Index tracks only large-cap companies while SENSEX focuses on mid-cap companies.

B. The BSE 150 Index is a broader benchmark comprising mid-cap companies, whereas SENSEX includes the 30 most actively traded large-cap stocks.

C. Both indices include the same 150 companies but differ in calculation methodology.

D. The SENSEX excludes financial services companies, whereas the BSE 150 Index focuses exclusively on them.

26. With reference to the Bombay Stock Exchange (BSE), which of the following statements is/are correct?

1. BSE was demutualized in 2005 and became a corporatized entity.
2. BSE introduced the BOLT trading system as early as 1995.
3. The BSE 150 Index focuses exclusively on financial services and banking firms.
4. BSE became India's first listed stock exchange in 2017.

Select the correct answer using the code below:

A. 1 and 3 only
B. 2 and 4 only
C. 1, 2, and 4 only
D. 1, 2, 3, and 4

27. Which technological advancement first introduced by BSE in 1995 revolutionized trading in India's capital market?

A. BSE High-Frequency Terminal
B. SENSEX Real-time Monitoring App
C. Automated Risk Assessment Framework
D. BOLT (BSE OnLine Trading) system

10. India-Middle East-Europe Corridor

- "India-Middle East-Europe Corridor (IMEEC) is vital for bilateral interests, enhancing strategic supply chains and boosting security in economic, energy, and health sectors across India, Europe, and the Middle-East,".

What is IMEEC?

- The IMEEC, launched on the margins of the G20 Summit in Delhi in September 2023, is an important project as it passes through Marseille in the Mediterranean Sea.
- On 9 September, 2023 the Memorandum of Understanding (MoU) was signed during the 2023 G20 New Delhi summit by the governments of India, United States, United Arab Emirates, Saudi Arabia, France, Germany, Italy and the European Union.
- The project, however, had failed to make headway because of the Gaza conflict.
- The IMEEC aims to integrate India, Europe, and the Middle-East through UAE, Saudi Arabia, Jordan, Israel and the European Union.
- The route, currently being used to bypass the Houthi blockade, is widely seen as a way to future proof the India-Europe-US supply chain avoiding the Suez canal.
- "The IMEEC will comprise of two separate corridors, the east corridor connecting India to the Gulf and the northern corridor connecting the Gulf to Europe.

- The corridor intends to enhance connectivity, increase efficiency, reduce costs, secure regional supply chains, increase trade accessibility, generate jobs and lower greenhouse gas emissions, resulting in a transformative integration of Asia, Europe and Middle East.
- The implementation of the IMEEC involves multiple stakeholders and is at an initial stage.
- It added that an Intergovernmental Framework Agreement (IGFA) between India and the United Arab Emirates (UAE) concerning cooperation for operation of the IMEEC was signed on 13 February 2024.
- The main elements of the Framework include development and management of a logistics platform, including a digital ecosystem, and provision of supply chain services to handle all types of general cargo, bulk, containers and liquid bulk in order to enable IMEEC.
- The IMEEC seeks to mobilise $600 billion by 2027 to address infrastructure gaps in partner countries. The memorandum of understanding on IMEEC outlines political commitments from the participants and does not establish legal rights or obligations.

How would it Benefit India?

- "India-Middle East-Europe Economic Corridor (IMEC) is an important initiative that can add to India's maritime security and faster movement of goods between Europe and Asia,".

Strengthening Maritime Security

- A fully operational IMEEC promises to bolster India's maritime security while expediting the movement of goods between Europe and Asia.
- The initiative not only enhances India's shipping capabilities and port infrastructure but also acts as a strategic countermeasure to China's Belt and Road Initiative.

Promoting Regional Stability

- IMEEC will contribute to regional stability and peace by aligning with the European Nations' Global Gateway program.
- By fostering robust diplomatic ties and encouraging normalisation between Middle Eastern nations, the corridor can help create a more secure and stable environment in a historically volatile region.

Streamlined Trade Corridor

- A stabilised trade corridor under the IMEEC framework will streamline logistics and ensure the continuous, dependable flow of products, renewable energy, and information.
- With established logistical centers, road networks, and seaports in key member states, India stands to benefit from enhanced trade connectivity with Europe and its neighbours.

Boosting Trade Demand and Supply

- The corridor will also drive a significant increase in trade demand and supply across the region, reducing transaction costs and creating new job opportunities.
- IMEEC will facilitate industrial development and improve access to the European market, further securing India's supply chain through improved logistical services.

Enhancing Cultural Exchange

- Beyond economic benefits, IMEEC offers a vital platform for cultural and political exchange.
- By facilitating cross-cultural interactions and fostering mutual understanding, the initiative can bridge ideological and religious divides, promoting tourism, educational opportunities, and a more integrated regional identity.

Advancing Energy, Hydrogen, and Technology Sectors

- IMEEC's expansive vision extends into the energy and technology sectors, incorporating initiatives such as integrated electricity grids, clean hydrogen pipelines, and secure high-speed data connectivity.
- These advancements align with India's leadership in renewable energy and digital innovation, positioning the nation as a pivotal player in shaping a sustainable, technologically advanced future across the region.

Major Indian International Economic Corridor

1. International North-South Transport Corridor (INSTC)

- Multi-modal route (sea, rail, road) connecting India, Iran, Central Asia, Russia, and Europe.
- Reduces time and cost of freight movement between India and Eurasia.
    - **Key route:** Mumbai → Bandar Abbas (Iran) → Caspian Sea → Russia.

2. Bangladesh-Bhutan-India-Nepal (BBIN) Corridor

- Focuses on sub-regional connectivity for trade and movement of goods and people.
- BBIN Motor Vehicle Agreement facilitates seamless transport between the four countries.
- Strategic for India's Act East Policy and South Asian integration.

3. India-Myanmar-Thailand Trilateral Highway

- Connects Moreh (India) to Mae Sot (Thailand) via Myanmar.
- Part of India's Act East Policy to enhance connectivity with ASEAN.
- Under expansion to include Laos, Cambodia, and Vietnam in future.

4. Kaladan Multi-Modal Transit Transport Project

- Connects Kolkata (India) to Sittwe port (Myanmar) via sea, and then inland to Mizoram (India).
- Enhances connectivity to India's North-East and provides alternative access to the region bypassing the Siliguri Corridor.

Belt and Road Initiative (BRI)

- The Belt and Road Initiative is a global infrastructure and economic development strategy launched by China in 2013.
- It aims to enhance regional connectivity and embrace a brighter future through building trade routes reminiscent of the ancient Silk Road.
- The initiative encompasses investments in various sectors, including transportation, energy, and telecommunications, across Asia, Europe, Africa, and Latin America.
- As of early 2024, over 140 countries have joined the BRI, representing about 75% of the world's population and more than half of global GDP.
- The initiative has the potential to boost trade flows in participating countries by 4.1% and increase global GDP by $7.1 trillion annually by 2040.
- However, the BRI has faced criticism over concerns of debt sustainability, environmental impact, and geopolitical influence.
- Some countries have experienced challenges related to debt repayment and have raised questions about the transparency and terms of BRI projects.

28. Which of the following statements regarding the India-Middle East-Europe Corridor (IMEEC) is correct?

A. It legally binds signatory countries to fixed infrastructure investment commitments.

B. It bypasses the Suez Canal and aims to enhance strategic supply chains across Asia, Europe, and Africa.

C. It is primarily a maritime-only corridor between India and the European Union.

D. It was launched during the BRICS summit hosted by India in 2023.

29. The India-Middle East-Europe Corridor (IMEEC) involves which of the following?

1. India
2. Saudi Arabia
3. European Union
4. Iran
5. United States

Select the correct code:

A. 1, 2, 3, and 5 only

B. 1, 2, 4, and 5 only

C. 1, 3, 4, and 5 only

D. 1, 2, 3, 4, and 5

30. Compare the objectives of IMEEC with the International North-South Transport Corridor (INSTC). Which of the following is a major distinguishing feature of IMEEC?

A. It links India to Russia through the Caspian Sea

B. It aims to connect India directly to ASEAN

C. It focuses on integrating India with Europe via the Middle East

D. It is limited to sub-regional integration in South Asia

ANSWER KEY AND EXPLANATION

1. B Operation SINDOOR involved coordinated efforts by the Army, Air Force, and Navy, emphasizing jointness, strategic foresight, and operational ethics. It was a calibrated and intelligence-led operation, not a full-scale war nor a covert-only or maritime-only mission.

2. C The Indian Air Force conducted high-impact strikes on Pakistan's Nur Khan Air Base and Rahimyar Khan Air Base, as confirmed by visual evidence presented during briefings.

3. B India's layered air defence grid relied on legacy systems like Pechora and OSA-AK, along with indigenous Akash SAMs, forming a network capable of neutralizing aerial threats, including drones and UCAVs.

4. C Following his tactical retreat from the Battle of Haldighati in 1576, Maharana Pratap used the Aravalli hills for guerrilla warfare, gradually recapturing much of Mewar, except Chittorgarh. This strateg

5. C The Mughals held the battlefield technically, making it a tactical victory. However, Maharana Pratap escaped, continuing a decade-long guerrilla resistance and regaining much of his kingdom, making it a strategic success for him in the long run.

6. B The Bhils, a tribal group from the Aravalli region, were strategic allies of Maharana Pratap. They supported his guerrilla campaigns and were instrumental in local military and logistical operations, showcasing indigenous collaboration in anti-Mughal resistance.

7. D The Mars Orbiter Mission (Mangalyaan) was launched on 5 November 2013, unrelated to May 11, 1998. The other three events — Pokhran-II nuclear tests, the Trishul missile test, and the Hansa-3 flight — all occurred on May 11, 1998, leading to the declaration of National Technology Day.

8. C The theme "YANTRA – Yugantar" conveys a paradigm shift (Yugantar) in India's approach, emphasizing technological self-reliance, leadership, and acceleration. It reflects a broader vision of India moving from adaptation to becoming a global technology leader. It is not limited to defense or elite institutions.

9. C 'Jigyasa', launched by IIT Delhi, is a science outreach initiative intended to bridge the gap between complex research and public understanding. It aims to promote scientific curiosity, making science accessible and engaging for a non-expert audience, especially students and the general public.

10. B Only Kerala, Delhi, and Maharashtra have met all three SDG targets, while Tamil Nadu and Andhra Pradesh haven't met NMR target (TN = 9 is OK, but AP = not listed for NMR ≤12). MMR ≤ 70: Kerala (20), Maharashtra (38), U5MR ≤ 25: Kerala (8), Delhi (14), Maharashtra (16), NMR ≤ 12: Kerala (4), Delhi (8), Maharashtra (11)

11. C According to the UN-MMEIG 2023 Report, over the 33-year period (1990–2023): MMR declined 86% (India) vs 48% (Global), U5MR declined 78% (India) vs 61% (Global) and NMR declined 70% (India) vs 54% (Global), IMR declined 71% (India) vs 58% (Global). Option C is correct; all others reverse or mismatch the data.

12. C The Government has adopted multi-pronged interventions: Infrastructure: Establishment of MCH Wings, ICUs, SNCUs, etc. Clinical Practices: Use of CPAP, antenatal corticosteroids, and newborn screening. Human Resources: Training of birth attendants, midwives, and community health workers. These directly address mortality causes and align with the noted improvements in MMR, IMR, NMR, and U5MR.

13. B As per the MoU between IWAI and the Jammu & Kashmir government: NW-26: River Chenab, NW-49: River Jhelum and NW-84: River Ravi. These are part of the 111 National Waterways declared under the National Waterways Act, 2016.

14. C The IWAI's office in Srinagar's Transport Bhawan aims to: Implement the MoU with J&K Govt. Set up floating jetties at 10 locations. Carry out dredging, install night navigational aids, and conduct hydrographic surveys. These initiatives are vital to enhancing eco-tourism, boosting the local economy, and developing river navigation.

15. B The Jal Marg Vikas Project (JMVP) is focused only on NW-1, i.e., Ganga-Bhagirathi-Hooghly system, not NW-2 or NW-4. NW-2 refers to Brahmaputra, NW-4 links Krishna and Godavari rivers. Hence, statement B is incorrect, making it the right answer.

16. C The Shimla Convention proposed a dual division of Tibet: Outer Tibet: Under Tibetan administration but with Chinese suzerainty, no Chinese interference in governance. Inner Tibet: Under direct Chinese jurisdiction. This arrangement aimed to preserve Tibetan autonomy in the frontier areas while acknowledging Chinese overlordship — China rejected this proposal, leading to disputes later.

17. D The McMahon Line, named after British negotiator Sir Henry McMahon, was drawn during the Shimla Convention to delineate the boundary between British India and Tibet. Though signed by Britain and Tibet, China refused to accept it, disputing its legitimacy, leading to the Sino-Indian border conflict, especially in Arunachal Pradesh (South Tibet in Chinese terms). The Durand Line is between India (now Pakistan) and Afghanistan and is unrelated here.

18. C China's refusal to sign stemmed from: Rejection of Tibet's claim to autonomy, especially the concept of Outer Tibet being governed independently. Objection to the McMahon Line, which effectively set a border without Chinese consent. China believed Tibet was a part of its sovereign territory and did not agree to any division or foreign-drawn boundaries. Britain and Tibet signed a bilateral declaration, excluding China from any benefits of the agreement unless it signed it later (which it never did).

19. A The recently approved 6th semiconductor unit under ISM is a joint venture between HCL and Foxconn, intended to manufacture display driver chips used in mobiles, laptops, PCs, and vehicles. The unit is being set up near the Jewar airport in YEIDA, Uttar Pradesh, and will manufacture 20,000 wafers/month, with an output capacity of 36 million units/month.

20. C The India Semiconductor Mission not only focuses on fabs and design but also entire supply chain development, which includes chemicals and specialty gases. Global firms such as Merck, Linde, Air Liquide, and Inox are actively setting up operations in India to support this ecosystem. Option A is incorrect because fab units are supported under Production Linked Incentive (PLI) schemes, while design firms benefit from the Design Linked Incentive (DLI) scheme. Option B is wrong — ATMP units are under ISM, not the National Supercomputing Mission. Option D is misleading — SCL Mohali is involved in taping out student chip designs but not display fabs for ISRO.

21. C The India Semiconductor Mission (ISM) is housed within the Ministry of Electronics and Information Technology (MeitY) but is managed independently by a dedicated professional team from the semiconductor industry. This structure allows ISM to function with industry-level agility, critical for high-tech manufacturing strategy execution.

22. C Mariangela Hungria, a Brazilian microbiologist, received the 2024 World Food Prize for her pioneering research in biological nitrogen fixation. This process uses soil bacteria to naturally fix nitrogen, enhancing plant growth without heavy reliance on chemical fertilizers, which contribute to greenhouse gas emissions and water pollution. Her work has directly benefited Brazilian farmers and promotes sustainable agriculture.

23. C Statement 1 is correct: The World Food Prize was indeed established by Norman Borlaug in 1986, and he received the Nobel Peace Prize in 1970. Statement 2 is incorrect: The prize is awarded in Des Moines, Iowa (USA), not Geneva, and the cash prize is $500,000, not $100,000. Statement 3 is correct: Notable Indian laureates include M.S. Swaminathan, credited with India's Green Revolution, and Dr. Rattan Lal, a renowned soil scientist.

24. B The Green Revolution in India (1960s–70s) relied on high-yielding varieties, chemical fertilizers, pesticides, and irrigation to boost food grain production. In contrast, scientists like Mariangela Hungria advocate for biological solutions like nitrogen-fixing bacteria, which promote sustainability, reduce environmental impact, and minimize fertilizer use. Hence, Option B best captures the difference in approach.

25. B The S&P BSE 150 MidCap Index tracks 150 mid-cap companies to reflect the performance of medium-sized firms that are typically in a growth phase. In contrast, the SENSEX includes 30 large-cap companies, selected for being the most actively traded and having a significant impact on the economy. This distinction reflects different market capitalization tiers and investment strategies.

26. C Statement 1 is correct: BSE was demutualized in 2005, transforming into a corporatized, shareholder-owned entity. Statement 2 is correct: In 1995, BSE introduced BOLT, India's first fully automated trading system. Statement 3 is incorrect: The BSE 150 Index includes diversified mid-cap companies, not exclusively financial firms. Statement 4 is correct: In 2017, BSE became the first stock exchange in India to list itself via an IPO.

27. D In 1995, BSE introduced BOLT, India's first fully automated screen-based trading system, which replaced open outcry and digitized trading, significantly improving speed, transparency, and efficiency.

28. B IMEEC was launched during the G20 Summit in Delhi (September 2023). One of its objectives is to bypass the Suez Canal by using land and maritime routes across India, the Gulf, and Europe, improving strategic supply chains. It is not legally binding (so A is wrong), not maritime-only (C is wrong), and was launched during the G20 Summit, not BRICS (D is wrong).

29. A IMEEC signatories include India, Saudi Arabia, UAE, Jordan, Israel, France, Germany, Italy, EU, and the USA. Iran is not a part of IMEEC (though it is part of INSTC). Hence, 1, 2, 3, and 5 are correct.

30. C IMEEC's defining feature is its east-west corridor integrating India, the Middle East, and Europe. Option A is true for INSTC, Option B is true for the India-Myanmar-Thailand Highway, Option D is true for BBIN.