

UPSC CURRENT AFFAIRS

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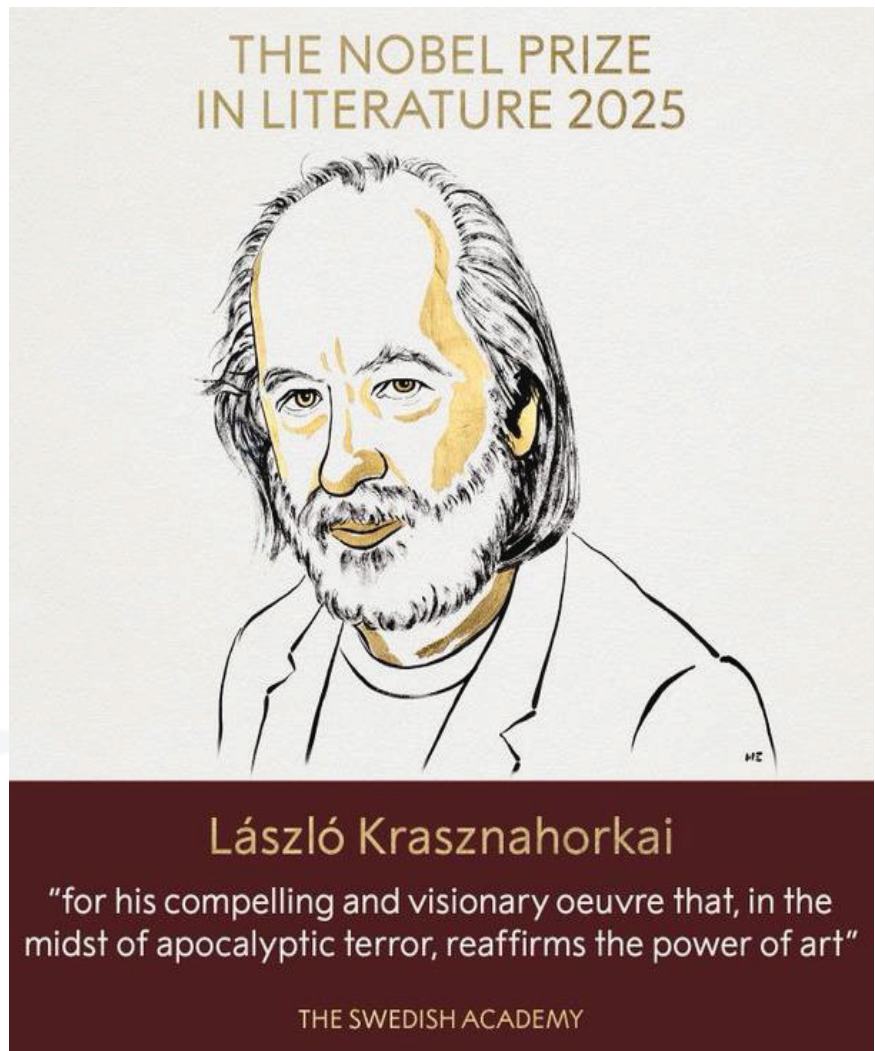


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1. Nobel Prize in Literature 2025, László Krasznahorkai — Hungary's voice of collapse wins

- The Royal Swedish Academy of Sciences announced that it has decided to award the Nobel Prize in Literature for the year 2025 to the Hungarian author László Krasznahorkai “for his compelling and visionary oeuvre that, in the midst of apocalyptic terror, reaffirms the power of art.”
- Born in 1954 in a town near the Romanian border Mr. Krasznahorkai became literary sensation in Hungary with his first novel ‘Sátántangó’ published in 1985 (‘Satantango’, 2012).
- His ‘Herscht 07769’ published this year, is described as a great contemporary German novel, on account of its accuracy in portraying the country’s social unrest.
- His other notable works include 2003 novel ‘Északról hegy, Délről tó, Nyugatról utak, Keletről folyó’ (‘A Mountain to the North, a Lake to the South, Paths to the West, a River to the East’, 2022), and ‘Seiobo járt odalent’ (2008; ‘Seiobo There Below’, 2013).



- ‘Seiobo There Below’ is a collection of 17 stories arranged in a Fibonacci sequence about the role of beauty and artistic creation in a world of blindness and impermanence.
- In ‘Herscht 07769’ we find ourselves in not a feverish nightmare in the Carpathians but rather a credible portrayal of a contemporary small town in Thüringen, Germany, which is nevertheless also afflicted by social anarchy, murder and arson.
- At the same time, the terror of the novel plays out against the backdrop of Johann Sebastian Bach’s powerful legacy.
- It is a book, written in a single breath, about violence and beauty ‘impossibly’ conjoined,.
- Last year, the Literature Nobel was awarded to South Korean writer Han Kang.

- The prizes carry a cash award of 11 million Swedish kronor (approximately Rs. 1.03 crore) and will be awarded on December 10.
- The Nobel Prize was created by Swedish inventor Alfred Nobel, who in his will dictated that his estate should be used to fund “prizes to those who, during the preceding year, have conferred the greatest benefit to humankind”.

Nobel Prize in Literature

- Established by Alfred Nobel’s will, one of the five original Nobel Prizes.
- Awarded by the Swedish Academy in Stockholm, Sweden.
- The prize is given to an author who has produced “the most outstanding work in an ideal direction” in the field of literature.
- Over the years, older works can be considered if their significance becomes clear later. Nominees must be nominated by 1 February each year.
- From 1901 through 2024, it has been awarded 117 times to 121 laureates.
- There have been 18 women laureates.
- The youngest recipient was 41 (Rudyard Kipling, 1907) and the oldest was 87.
- He is the second Hungarian to win this prize (after Imre Kertész in 2002).

History of Nobel Prize

- Alfred Nobel (1833–1896) was a Swedish chemist, engineer, and inventor—most famously of dynamite.
- Despite his industrial success, Nobel was troubled by the destructive uses of his inventions

The Will (1895):

- In his will, signed on November 27, 1895, Nobel left the bulk of his fortune (over 90%) to establish the Nobel Prizes.
- He specified that the prizes should honor those who “have conferred the greatest benefit to mankind” in five fields:
 - **Physics**
 - **Chemistry**
 - **Medicine (or Physiology)**
 - **Literature**
 - **Peace**

Establishment of the Prizes:

- Alfred Nobel died in 1896.
- His will faced legal challenges and controversy, particularly from family members.
- The Nobel Foundation was established in 1900 to manage finances and administration.
- The first Nobel Prizes were awarded on December 10, 1901, the fifth anniversary of Nobel’s death.

How Prizes Are Awarded:

- Different institutions select laureates:
 - **Royal Swedish Academy of Sciences** – Physics, Chemistry, and Economic Sciences
 - **Karolinska Institute** – Medicine
 - **Swedish Academy** – Literature
 - **Norwegian Nobel Committee (appointed by the Norwegian Parliament)** – Peace

Nobel Prize in Economic Sciences:

- Not part of Nobel's original will.
- Officially called the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, established in 1968 by Sweden's central bank.

QUESTIONS

1. Consider the following statements regarding the Nobel Prizes:

1. The first woman to win the Nobel Prize was Marie Curie, and she won the award twice.
2. Rabindranath Tagore was the first non-European and Indian to get a Nobel Prize in 1913 in literature.
3. All the Nobel Prizes are given in Stockholm, Sweden except for the Nobel Peace Prize which is awarded in Oslo, Norway.

How many statements given above is/are true?

- | | |
|-------------|--------------|
| A. Only one | C. All three |
| B. Only two | D. None |

2. Which of the following statements is true about the Nobel Prize in Literature?

1. The Nobel Prize in Literature was established by Alfred Nobel's will, but it was first awarded in 1895.
2. The prize is awarded by the Karolinska Institute in Sweden.
3. The prize is awarded for the most outstanding literary work produced in the preceding year.

Select the correct answer using the codes given below:

- | | |
|-----------|----------------------|
| A. 1 only | C. 3 only |
| B. 2 only | D. None of the above |

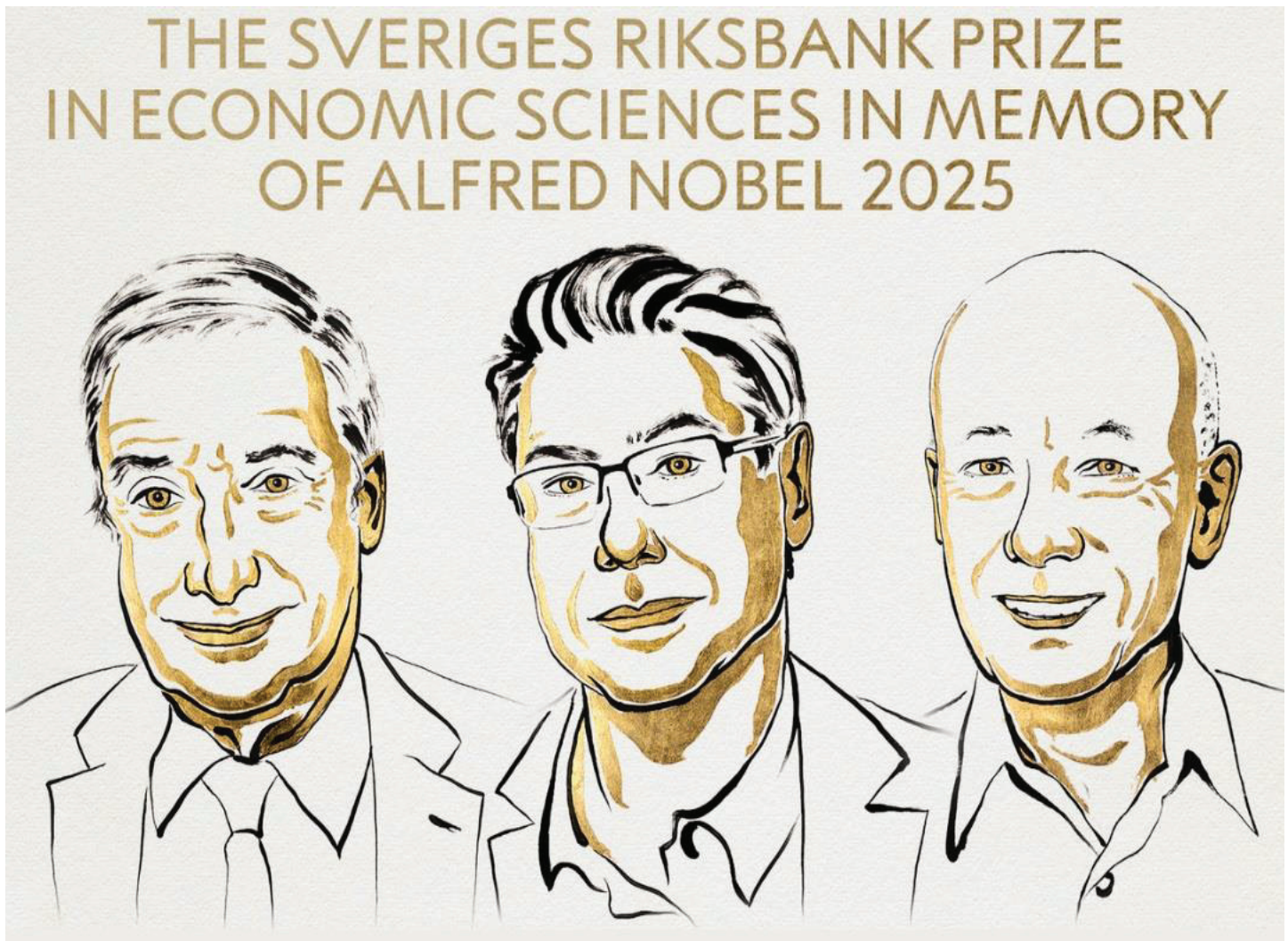
3. Consider the following statements about Laszlo Krasznahorkai, the Nobel Prize in Literature 2025 laureate:

1. Lsszlo Krasznahorkai is a Hungarian author awarded the Nobel Prize for Literature in 2025.
2. He was recognized for his contributions to modernist literature and his exploration of apocalyptic themes.
3. He is the first Hungarian author to win the Nobel Prize in Literature.

Which of the statements given above is/are correct?

- | |
|---------------------|
| A. 1 and 2 only |
| B. 2 and 3 only |
| C. 1 and 3 only |
| D. All of the above |

2. Economics Nobel to be shared by three for research on innovation-driven economic growth



- The 2025 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel has been awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their contributions to understanding innovation-driven economic growth.
- Joel Mokyr receives half the prize for his historical research identifying the prerequisites for sustained technological progress.
- Philippe Aghion and Peter Howitt share the other half for developing the theory of creative destruction—a process where innovation replaces outdated products, driving economic growth.
- Their work highlights that economic growth is not automatic and depends on maintaining innovation-friendly environments. The laureates are affiliated with leading institutions in the U.S., France, and the UK.
- The award, often called the “Economics Nobel,” was established in 1968 by Sweden’s central bank and is presented annually on December 10, along with a diploma, gold medal, and a \$1.2 million prize.

Understanding innovation-driven economic growth

- Sustained technological progress—progress that endures over time and continues to deliver impactful innovations—depends on a combination of interconnected prerequisites.

1. Human Capital & Education

- **STEM education:** Strong foundational education in science, technology, engineering, and mathematics.
- **Research training:** A skilled workforce capable of conducting cutting-edge research.
- **Lifelong learning:** Mechanisms to continuously upgrade skills as technologies evolve.

2. Scientific Research & Innovation Infrastructure

- **Basic research investment:** Funding for curiosity-driven research that may not have immediate applications but builds foundational knowledge.
- **R&D ecosystems:** Universities, research labs, and corporate R&D centers working collaboratively.
- **Open access to knowledge:** Dissemination of scientific discoveries (*e.g.*, journals, conferences, data sharing).

3. Economic & Market Incentives

- **Venture capital & investment:** Funding to commercialize new technologies.
- **Intellectual property rights:** Protection to incentivize innovation, balanced with public access.
- **Entrepreneurial culture:** Societies that reward risk-taking and tolerate failure.

4. Political & Regulatory Stability

- **Stable governance:** Predictable legal and political systems to support long-term planning.
- **Supportive regulation:** Clear and adaptable policies for emerging technologies (*e.g.*, AI, biotech).
- **Public-private partnerships:** Government collaborating with industry to accelerate innovation.

5. Technological Infrastructure

- **Digital infrastructure:** Broadband internet, cloud computing, 5G networks, etc.
- **Manufacturing capability:** Advanced manufacturing systems to produce and scale technologies.
- **Supply chain resilience:** Reliable access to critical materials (*e.g.*, semiconductors, rare earths).

6. Cultural and Societal Support

- **Tolerance for change:** Public openness to new ways of doing things.
- **Ethical frameworks:** Norms and policies that guide responsible use (*e.g.*, AI ethics, bioethics).
- **Public trust:** Confidence in institutions and new technologies.

7. Global Collaboration

- **International research cooperation:** Joint projects and knowledge sharing across borders.
- **Technology transfer mechanisms:** Ways to share innovation globally while respecting sovereignty and IP.
- **Efforts to close digital divides:** Ensuring developing countries aren't left behind.

Developing the theory of creative destruction

- The theory of creative destruction is a foundational concept in economics, particularly in understanding capitalism, innovation, and economic evolution. Originally developed by Joseph Schumpeter in the 20th century, it describes how innovation drives economic progress by simultaneously destroying old industries and creating new ones.

I. Origins of the Theory

- Joseph Schumpeter introduced the term “creative destruction” in his 1942 book “Capitalism, Socialism and Democracy.” Although the idea has roots in earlier economic thought (*e.g.*, Marxist theory of capitalist transformation), Schumpeter gave it a distinctly innovation-centric and dynamic interpretation.

Key Influences:

- **Karl Marx:** Saw capitalism as inherently unstable and self-undermining due to internal contradictions.
- **Austrian School of Economics:** Emphasized the role of the entrepreneur and market processes over equilibrium models.

II. Core Principles of Creative Destruction

1. Innovation as the Engine of Change

- Technological progress introduces new products, services, production methods, and markets.
- **Examples:** Steam engine, electricity, internet, AI.

2. Destruction of the Old

- Innovation displaces existing businesses, industries, and jobs.
- Creative destruction is not gradual improvement but disruptive transformation.
- **Example:** Film cameras displaced by digital photography; horse-drawn carriages replaced by automobiles.

3. Entrepreneurship as the Catalyst

- Entrepreneurs introduce disruptive innovations that restructure the economy.
- Schumpeter called this process the “gale of creative destruction.”

4. Capitalism as a Dynamic Process

- Unlike classical economics’ focus on equilibrium, creative destruction emphasizes constant disequilibrium.
- Capitalism is seen as a “perennial gale” of innovation and change.

III. Formalization and Evolution of the Theory

Post-Schumpeterian Developments

- **Endogenous Growth Theory (1980s–1990s)**
 - Paul Romer, Philippe Aghion, and Peter Howitt incorporated innovation into formal economic models.
- **Aghion & Howitt’s Schumpeterian growth model (1992):**
 - Growth arises from new innovations that render old technologies obsolete.
 - Creative destruction embedded in R&D-based growth.

Industrial Organization

- Studies on competition, monopoly rents, and innovation dynamics.
- Importance of market structure in determining the pace and impact of creative destruction.

Evolutionary Economics

- Firms and technologies evolve through variation, selection, and retention.
- Similar to biological evolution; emphasizes path-dependence and technological trajectories.

IV. Implications of Creative Destruction

A. Economic Growth

- Long-run growth depends on the cycle of innovation and obsolescence.

- Innovation boosts productivity and living standards over time.

B. Labor Market Disruptions

- Job displacement is inherent in creative destruction.
- Reallocation of labor can cause short- and medium-term social costs (*e.g.*, unemployment, wage stagnation).

C. Policy Dilemmas

- How to encourage innovation without exacerbating inequality and disruption.
- Debates on universal basic income (UBI), retraining programs, and industrial policy.

D. Corporate Strategy

- Businesses must innovate or risk obsolescence.
- **Example:** Kodak vs. Apple in the digital camera era.

E. Globalization and Technology

- Amplifies the speed and scale of creative destruction.
- Global competition accelerates turnover of industries (*e.g.*, manufacturing in the West vs. Asia).

V. Contemporary Applications

Digital Disruption

- AI, blockchain, and platform economies (*e.g.*, Uber, Airbnb) disrupt traditional sectors.

Green Transformation

- Transition to clean energy is destroying fossil fuel industries while creating green tech opportunities.

Post-COVID Economy

- Remote work, automation, and e-commerce restructured entire sectors rapidly.

VI. Critiques and Limitations

- **Social Costs Understated:** Not all destroyed jobs or businesses are easily replaced.
- **Uneven Benefits:** Gains often go to capital owners and high-skilled workers, while others fall behind.
- **Market Failures:** Innovation may not always be optimal; can be misdirected (*e.g.*, planned obsolescence, surveillance capitalism).
- **Environmental Concerns:** Unchecked innovation can lead to resource depletion or ecological damage.

VII. Toward a Nuanced Understanding

- Modern economists and policymakers aim to balance the dynamic benefits of creative destruction with social protections, transition mechanisms, and inclusive growth strategies.
- Examples of this integrated view:
 - “Just transition” frameworks in climate policy.
 - Lifelong learning and reskilling initiatives.
 - Rethinking intellectual property to encourage equitable innovation.

QUESTIONS

4. Consider the following statements about the theory of Creative Destruction:

1. Creative destruction is the process where innovation leads to the destruction of old industries and the creation of new ones.

2. The term “creative destruction” was introduced by Paul Romer in his 1986 work on endogenous growth theory.
3. Creative destruction is considered a gradual process of improvement rather than a disruptive transformation.

Which of the statements given above is/are correct?

- | | |
|-----------|-----------------|
| A. 1 only | C. 1 and 2 only |
| B. 2 only | D. 1, 2, and 3 |

5. Consider the following statements regarding the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2025:

1. The prize was awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their contributions to innovation-driven economic growth.
2. The prize recognizes their work on explaining how technological progress drives sustained economic growth through creative destruction.
3. The prize was awarded in recognition of their work in industrial design and manufacturing processes.

Which of the statements given above is/are correct?

- | | |
|-----------------|-----------------|
| A. 1 and 2 only | C. 2 and 3 only |
| B. 1 and 3 only | D. 1, 2, and 3 |

6. Which of the following is true regarding the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2025?

1. The prize was established in 1968 by Sweden’s central bank to recognize contributions to economic theory.
2. It is awarded annually on December 10, along with a diploma, gold medal, and a monetary prize.
3. The 2025 laureates focused on the economic implications of global financial systems and markets.

Select the correct answer using codes given below:

- | | |
|-----------------|-----------------|
| A. 1 and 2 only | C. 2 and 3 only |
| B. 1 and 3 only | D. 1, 2, and 3 |

3. UNESCO’s new Virtual Museum of Stolen Cultural Objects matters

- UNESCO has launched a groundbreaking initiative — the Virtual Museum of Stolen Cultural Objects — unveiled at the MONDIACULT conference.
- The digital museum is an innovative step toward tackling the illicit trafficking of cultural heritage and restoring lost identity to communities affected by colonial looting, theft, and illegal trade.

- Described as a platform to reconnect communities with their stolen treasures, the museum currently hosts nearly 240 missing items from 46 countries.



- UNESCO emphasizes that cultural theft is not just a loss of objects but a severing of historical identity.
- The virtual museum, therefore, becomes a symbol of remembrance, education, and eventual justice. Its long-term vision is unique — to eventually “empty itself” as objects are found and returned to their rightful origins.
- This evolving and dynamic platform offers more than a static exhibition; it is a living archive and a call for global cooperation in restitution efforts.
- Due to the scarcity of images for some objects, UNESCO has used artificial intelligence to recreate 3D, rotatable digital replicas.
- This allows users to interact with the stolen items from their own devices, or at on-site installations at MONDIACULT.
- The museum’s website, designed by acclaimed architect and Pritzker Prize-winner Francis Kéré, is shaped like a baobab tree, a powerful African symbol of strength and community.
- This digital tree branches into three main sections: the Stolen Cultural Objects Gallery, the Auditorium, and the Return and Restitution Room.
- In these sections, users can browse a wide array of objects, including statues, paintings, fossils, and idols — all searchable by name, material, function, or colour.
- The platform also features emotional testimonies from affected communities and shows the locations where the items were stolen, providing geographic and emotional context to the loss.

- Two highlighted objects in the museum come from India: ninth-century sandstone sculptures from the Mahadev Temple in Pali, Chhattisgarh.
- One is a Nataraja sculpture of the god Shiva performing his cosmic dance, symbolizing the cycle of creation and destruction.
- The other is an image of Brahma, the creator, seated in a meditative posture with sacred symbols, conveying spiritual wisdom and clarity.
- These artifacts are not just religious statues but embodiments of complex philosophical concepts in Hinduism — their theft representing both spiritual and cultural dislocation.
- The museum is supported financially by the Kingdom of Saudi Arabia and developed in collaboration with INTERPOL, adding layers of diplomatic and legal cooperation to the cultural mission.
- This initiative reflects UNESCO's evolution from post-WWII reconstruction to a broader mandate of promoting education, culture, and the safeguarding of heritage — now also addressing challenges posed by digital technology and artificial intelligence.
- By creating a space that memorializes loss and facilitates repatriation, UNESCO's Virtual Museum stands as a powerful digital testimony to the enduring value of cultural heritage — and the ongoing efforts to reclaim it.

UNESCO

- UNESCO stands for the United Nations Educational, Scientific and Cultural Organization.
- UNESCO is a specialized agency of the United Nations established in 1945. Its mission is to contribute to peace and security by promoting international collaboration through education, science, culture, and communication.

Education

- Promote inclusive and equitable quality education.
- Coordinate global efforts like Education for Sustainable Development (ESD) and Education 2030 (SDG 4).

Science

- Encourage scientific research and cooperation.
- Promote sustainable development through water, ocean, and biodiversity programs.

Culture

- Protect cultural heritage (both tangible and intangible).
- Manage the World Heritage Sites list.
- Combat illicit trafficking of cultural property.
- Communication and Information
- Advocate for freedom of expression.
- Promote access to information and knowledge (including universal internet access).

UNESCO World Heritage Sites:

- One of UNESCO's most visible programs is the World Heritage Centre, which designates landmarks or areas with cultural, historical, scientific, or natural significance.
- These sites must meet certain criteria and are protected under international treaties.

Headquarters:

- Paris, France

Notable Programs:

- Man and the Biosphere Programme (MAB)
- Global Geoparks
- Memory of the World
- Creative Cities Network

Education for Sustainable Development (ESD) and Education 2030 (SDG 4)

- Education for Sustainable Development (ESD) and Education 2030 (SDG 4) are closely interconnected initiatives under the global framework of the United Nations Sustainable Development Goals (SDGs).
- They focus on transforming education systems worldwide to address global challenges such as climate change, inequality, poverty, and environmental degradation.

1. Education for Sustainable Development (ESD)

- Education for Sustainable Development (ESD) equips learners of all ages with the knowledge, skills, values, and attitudes needed to address global challenges and contribute to a sustainable future.

Core Goals:

- Empower individuals to take responsible actions for environmental integrity, economic viability, and a just society.
- Promote critical thinking, problem-solving, and participatory teaching and learning methods.
- Encourage lifelong learning and global citizenship.

Key Themes:

- Climate change
- Biodiversity
- Sustainable consumption and production
- Human rights
- Gender equality
- Peace and cultural diversity

Frameworks:

- UNESCO leads the global ESD agenda, especially through the ESD for 2030 Framework, launched in 2020, which continues the momentum of the UN Decade of ESD (2005–2014) and the Global Action Programme (2015–2019).

2. Education 2030 (SDG 4)

Definition:

- Sustainable Development Goal 4 (SDG 4) aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” by 2030.

Targets of SDG 4:

- Some key targets under SDG 4 include:

Target	Focus
4.1	Free, equitable primary and secondary education
4.2	Quality early childhood development and pre-primary education
4.3	Equal access to affordable technical, vocational, and tertiary education
4.4	Relevant skills for employment and entrepreneurship

Target	Focus
4.5	Eliminate gender disparities in education
4.6	Universal literacy and numeracy
4.7	Education for sustainable development and global citizenship

• **Target 4.7 directly supports ESD:**

“By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including...through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity.”

QUESTIONS

7. Which one of the following was the latest inclusion in the Intangible Cultural Heritage List of UNESCO?

A. Chhau dance

C. Garba dance

B. Durga puja

D. Kumbh mela

8. Consider the following statements regarding the UNESCO’s Virtual Museum of Stolen Cultural Objects:

1. The museum aims to tackle illicit trafficking and restore lost identity to communities affected by colonial looting, theft, and illegal trade.

2. The museum currently hosts nearly 500 stolen items from 46 countries.

3. The platform features emotional testimonies from affected communities and offers geographic and emotional context to the loss of cultural heritage.

Which of the statements given above is/are correct?

A. 1 and 2 only

C. 2 and 3 only

B. 1 and 3 only

D. 1, 2, and 3

9. Consider the following statements about UNESCO:

1. UNESCO is a specialized agency of the United Nations established in 1945 with a mission to contribute to peace and security through education, science, culture, and communication.

2. UNESCO’s most visible program is the designation of World Heritage Sites, which are protected under international treaties.

3. UNESCO’s headquarters is located in Geneva, Switzerland.

Which of the statements given above is/are correct?

A. 1 only

C. 2 and 3 only

B. 1 and 2 only

D. 1, 2, and 3

4. Nobel Peace Prize 2025 winner: Maria Corina Machado, 'Iron Lady' of Venezuela



- On October 10, 2025, the Nobel Peace Prize was awarded to Maria Corina Machado, a Venezuelan opposition leader and long-standing advocate for democracy, civil liberties, and free elections.
- The Nobel Committee recognized her “extraordinary civilian courage” in leading Venezuela’s pro-democracy movement under increasingly authoritarian regimes.

From Latin America’s Strongest Democracy to an Authoritarian State

- Venezuela was once a beacon of democracy in Latin America, boasting one of the region’s most stable democratic systems until the 1990s.
- This changed dramatically under Hugo Chávez, elected president in 1998. In 1999, Chávez pushed through a new constitution via a constitutional assembly—bypassing the legislature and signaling the beginning of institutional erosion.
- Chávez’s populist policies maintained public support, but his government steadily dismantled democratic checks.
- The situation worsened after a failed US-backed coup in 2002 and a nationwide oil strike, both supported by the anti-Chávez opposition.

- These events provided Chávez justification to tighten his grip through institutional purges.
- By 2006, the opposition had lost much of its institutional presence. After Chávez's death in 2013, Nicolás Maduro took over, deepening the country's authoritarian slide.

The 2024 Election and Machado's Political Blockade

- In 2024, Maduro claimed victory in yet another controversial presidential election.
- The international community widely condemned the election as fraudulent, citing political repression, media censorship, and the disqualification of opposition candidates—including Maria Corina Machado, who was barred from running despite her popularity.
- Although Edmundo González, a lesser-known diplomat, appeared on the ballot, it was Machado's leadership and campaign machinery that inspired the people.
- Voter sentiment was clear: many voted for the opposition in her name, making her symbolic of the fight for change.
- Despite electoral manipulation, intimidation, and ballot tampering, the opposition, led by Machado, undertook an organized effort to record and preserve vote tallies before the regime could falsify results.
- The Nobel Committee cited this grassroots vigilance as a key reason for awarding her the Peace Prize.

Early Life and Entry into Politics

- Born in Caracas in 1967, Machado came from a privileged background. Her father, a steel magnate, had historical ties to Latin American liberator Simón Bolívar.
- She holds a degree in industrial engineering and a master's in finance, and began her activism in the early 1990s, founding the Atenea Foundation for street children.
- In 2002, she co-founded Súmate, a civil society organization monitoring elections and promoting citizen participation. The group played a pivotal role in organizing the 2004 recall referendum against Chávez, allowed under Article 72 of the constitution.
- Although Chávez survived the referendum, Súmate's accusations of fraud put Machado in the regime's crosshairs. She was branded a "US lackey" and faced criminal charges, including treason and conspiracy.

A Polarizing but Principled Figure

- Machado's open ties with the United States, including a 2005 White House visit under George W. Bush, fueled her controversial image.
- Súmate also received funding from US-based democracy promotion organizations like the National Endowment for Democracy.
- While many Venezuelans saw her as a courageous watchdog, others accused her of representing elite, pro-American interests.
- Nevertheless, Machado emphasized her commitment to nonviolence and democratic reform: "The idea was not, how do we get rid of this government," "but how do we resolve the profound social differences."

Machado's Rise in the Opposition Movement

- By the late 2000s, Machado became a prominent face of the Coalition for Democratic Unity (MUD), the main anti-Chavista alliance. In 2010, she ran in the opposition primaries but lost to Henrique Capriles, who went on to challenge—and lose to—Chávez in 2012, and again to Maduro in 2013.
- Machado's visibility grew as she continued to organize protests and speak out against the regime, often at great personal risk. While many opposition leaders, such as Juan Guaidó, fled the country, Machado remained, becoming a rallying symbol of the Venezuelan people's resilience.
- Her consistent refusal to go into exile, her activism on the streets, and her bold speeches in parliament made her known as the "Iron Lady" of Venezuela.

A Symbol of Democratic Resistance

- Venezuela's economy has seen one of the worst peacetime contractions in modern history.
- Despite having the largest oil reserves in the world, economic mismanagement, sanctions, and corruption have led to mass poverty and emigration.
- In this climate, Machado's campaign ahead of the 2024 election tapped into deep public frustration.
- Though banned from running, her leadership helped unify the historically fragmented opposition, rallying citizens under a common democratic vision.
- The Nobel Committee acknowledged not only Machado but also the collective courage of ordinary Venezuelans who defended the vote.
- Their peaceful defiance—through nonviolent protests, local organizing, and documentation of fraud—was seen as an inspiration for democratic movements worldwide.

Nobel Peace Prize

- The Nobel Peace Prize is one of the five Nobel Prizes, established by Alfred Nobel's will.
- It is awarded annually to individuals or organizations that have made significant contributions toward peace, such as promoting human rights, diplomacy, disarmament, and democratic freedoms.

How it's awarded

- The Norwegian Nobel Committee, appointed by the Norwegian Parliament, selects the Peace Prize laureate(s).
- It is awarded in Oslo, Norway. Unlike the other Nobel Prizes (which are mainly awarded in Stockholm), the Peace Prize ceremony is in Oslo.
- **The criteria are set by Nobel's will: what has done the most or the best work for:**
 - fraternity between nations,
 - abolition or reduction of standing armies,
 - holding and promotion of peace congresses.

Recent recipient

- The 2025 Nobel Peace Prize was awarded to María Corina Machado of Venezuela. She was recognized "for her tireless work promoting democratic rights for the people of Venezuela and for her struggle to achieve a just and peaceful transition from dictatorship to democracy."
- Announcement: 10 October 2025; ceremony: 10 December 2025 in Oslo.

QUESTIONS

10. Consider the following statements regarding Maria Corina Machado's award of the Nobel Peace Prize 2025:
1. Maria Corina Machado was awarded the Nobel Peace Prize for her efforts in promoting democratic rights and leading Venezuela's pro-democracy movement under authoritarian regimes.
 2. She was recognized for her contribution to resolving the border conflict between Venezuela and its neighboring countries.
 3. The Nobel Committee acknowledged her grassroots vigilance in documenting vote fraud during the 2024 presidential elections in Venezuela.

Which of the statements given above is/are correct?

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

11. Which of the following is a correct feature of the Nobel Peace Prize awarded to Maria Corina Machado in 2025?

1. The award recognizes her efforts in promoting human rights, democratic rights, and a peaceful transition from dictatorship to democracy.
2. The Peace Prize is awarded annually by the Royal Swedish Academy of Sciences, as is the case for other Nobel Prizes.
3. Machado's leadership helped unify Venezuela's fragmented opposition under a common democratic vision.

Select the correct answer using the codes given below:

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

12. Which of the following statements is/are true regarding the Nobel Peace Prize?

1. The Nobel Peace Prize is awarded in Stockholm, Sweden, unlike other Nobel Prizes, which are awarded in Oslo, Norway.
2. The prize was created by Alfred Nobel's will to honor those who have made significant contributions to peace, fraternity between nations, and human rights.
3. The Peace Prize is awarded annually to individuals or organizations based on the committee's discretion, without any specific criteria.

Select the correct answer using codes given below:

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

13. Consider the following statements regarding Mahatma Gandhi's Nobel Peace Prize nominations:

1. Mahatma Gandhi was nominated for the Nobel Peace Prize five times but never received the award.
2. Gandhi's final nomination for the Nobel Peace Prize was in 1948, shortly before his assassination.
3. The Norwegian Nobel Committee decided not to award the Peace Prize to anyone in 1948, after Gandhi's assassination, citing the lack of a suitable living candidate.

Which of the statements given above is/are correct?

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

14. Consider the following statements regarding Kailash Satyarthi:

1. Kailash Satyarthi was awarded the Nobel Peace Prize in 2014 for his campaign against child labor and for advocating the universal right to education for children.
2. Kailash Satyarthi co-founded the Global March Against Child Labour and the Kailash Satyarthi Children's Foundation.
3. In 2014, he was the co-recipient of the Nobel Peace Prize, along with Malala Yousafzai, "for their struggle against the suppression of children and young people and for the right of all children to education".

Which of the statements given above is/are correct?

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

5. India's 4G stack

Intelligent Swadeshi 4G Network Launched by BSNL

- TCS, C-DOT, and Tejas Networks Consortium deploy indigenous Bharat Telecom Stack for BSNL.
- Inspired by Government of India's vision of a digitally connected and self-reliant India.
- TCS spearheaded execution in mission mode and brought together seamless collaboration.

- India has taken a significant step toward achieving digital sovereignty and positioning itself as a global technology exporter by unveiling its fully indigenous 4G stack.

- Developed collaboratively by state-owned Bharat Sanchar Nigam Ltd (BSNL), Tejas Networks, Tata Consultancy Services (TCS), and the Centre for Development of Telematics (C-DoT), this comprehensive telecom solution includes both hardware and software needed to operate a 4G mobile network.

What is India's 4G Stack?

- The 4G stack integrates critical network components: Tejas Networks provides the Radio Access Network (RAN), C-DoT delivers the Core Network, and TCS leads the overall deployment and systems integration. Key features include:
- Full domestic design and manufacturing, minimizing dependency on foreign vendors
- Modular, upgradeable architecture that is “5G ready,” ensuring smooth future transitions
- Scalability and support for population-scale deployment across over 100,000 sites
- TCS also contributes with its Cognitive Network Operations platform for real-time monitoring and management, enhancing the stack's efficiency and reliability.
- India now joins an exclusive group of nations—Denmark, Sweden, South Korea, and China—capable of building and deploying their own telecom infrastructure, a critical achievement for national security, technological self-reliance, and strategic autonomy.

Export Ambitions and Digital Public Infrastructure

- The Indian government sees strong export potential for its 4G stack, with interest reportedly coming from multiple developing countries.
- Alongside this, India aims to export its Digital Public Infrastructure (DPI), collectively called the “India Stack.”
- This includes open-source digital tools that support identity verification (like Aadhaar), payments (such as UPI), and data governance at scale.
- The India Stack has already revolutionized domestic public service delivery and financial inclusion. Its potential application in other developing nations aligns with India's soft power strategy and digital diplomacy goals.

A Counter to China's Digital Silk Road?

- India's move is widely viewed as a strategic response to China's expansive Digital Silk Road (DSR), a component of the Belt and Road Initiative (BRI). Under the DSR, Chinese tech giants like Huawei and ZTE have exported telecom equipment and digital services—often backed by concessional financing—to many developing nations in Africa, Asia, and Latin America.
- Chinese firms dominate markets with low-cost offerings and full-package solutions, including cellular networks, surveillance systems, data centers, and fintech platforms. In Africa, for instance, Huawei accounts for nearly 70% of existing 4G infrastructure and pioneered 5G deployment on the continent.
- The DSR's strength lies in China's state-backed approach, combining political, financial, and technological support to entrench its digital influence in emerging markets. This growing dominance has raised concerns among Western democracies regarding data privacy, surveillance, and strategic control.

India's Strategic Positioning

- By building a domestic 4G stack and digital architecture with export potential, India aims to provide a credible alternative to Chinese offerings—particularly in countries seeking secure, interoperable, and non-aligned technology solutions.
- The Ministry of External Affairs, in coordination with the Department of Telecommunications (DoT), is reportedly exploring partnerships and export opportunities.

- In essence, India’s indigenous telecom push marks a pivotal moment in its rise as a digital power, reinforcing its strategic autonomy while offering friendly nations a sovereign, secure, and scalable technology model.

Digital Silk Road

- The Digital Silk Road (DSR) is a key component of China’s Belt and Road Initiative (BRI), aimed at enhancing global digital connectivity.
- Officially launched around 2015, the DSR focuses on building and expanding digital infrastructure internationally — especially in developing countries — and promoting Chinese technology standards and companies abroad.

What Is the Digital Silk Road?

- It refers to a network of digital infrastructure projects and technology cooperation initiatives backed by China to:
 - Improve internet connectivity (*e.g.* fiber-optic cables, 5G networks)
 - Boost e-commerce and smart cities
 - Expand China’s tech ecosystem (*e.g.* Huawei, ZTE, Alibaba)
 - Export digital governance models (*e.g.* surveillance tech, data controls)

Area	Focus
Telecom Infrastructure	Building 4G/5G networks, undersea cables
Smart Cities	Surveillance systems, traffic monitoring, AI
E-commerce Platforms	Promoting platforms like Alibaba abroad
Satellite Navigation	Expanding China’s Beidou GPS alternative
Fintech & E-payments	Spreading platforms like WeChat Pay
Digital Governance	Exporting cybersecurity and censorship tools

Countries Involved

- DSR projects have been rolled out in Asia, Africa, the Middle East, Europe, and Latin America.
- **Examples:**
 - Pakistan (fiber optics)
 - Kenya (Huawei 5G and smart city tech)
 - Serbia (AI surveillance)
 - Egypt (data centers and e-commerce)

QUESTIONS

15. Consider the following statements regarding India’s indigenous 4G stack:
1. The 4G stack was developed collaboratively by Bharat Sanchar Nigam Ltd (BSNL), Tejas Networks, Tata Consultancy Services (TCS), and the Centre for Development of Telematics (C-DoT).
 2. The 4G stack is fully dependent on foreign vendors for its components.
 3. The architecture of the 4G stack is modular and “5G ready,” ensuring smooth future transitions.

Which of the statements given above is/are correct?

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

16. What is the primary objective of India's indigenous 4G stack, as outlined in the article?

- A. To dominate the global telecom market with 4G technology
B. To minimize reliance on foreign vendors and enhance digital sovereignty
C. To compete with China's Digital Silk Road
D. To promote international collaborations with developed nations

17. Which of the following is **NOT** a feature of India's indigenous 4G stack?

- A. Full domestic design and manufacturing
B. Scalability to support population-scale deployment
C. Technology developed exclusively for India and not suitable for export
D. Modular and upgradeable to be "5G ready"

6. Clash between Afghanistan and Pakistan

- Around October 11-12, 2025, heavy cross-border clashes erupted along the Pakistan-Afghanistan border (especially near Torkham, Chaman, Kunar, Helmand, Kandahar, and other border areas).
- Pakistan carried out airstrikes inside Afghanistan targeting hideouts of the Tehreek-e-Taliban Pakistan (TTP), including its leader Noor Wali Mehsud.
- Afghanistan's Taliban government responded by firing on Pakistani border posts, accusing Pakistan of violating its sovereignty with those strikes.
- Border crossings (Torkham, Chaman, etc.) were closed by Pakistan, disrupting trade and civilian movement.
- Both sides claimed casualties, though the numbers differ widely. Pakistan speaks of destroying Afghan posts; Afghanistan claims more Pakistani soldiers were killed.
- After a few days of fighting, a 48-hour ceasefire was agreed.

Border Dispute

- The Durand Line, drawn in 1893 by the British, demarcates the border between Afghanistan and what was then British India (now Pakistan). Afghanistan has never formally recognized the Durand Line in all its parts, viewing it as an imposed colonial boundary that splits Pashtun ethnic areas.
- The border is difficult to patrol; it's rugged, porous, with tribes that straddle it.
- This allows for cross-border movement of people, goods, and militants.
- Pakistan accuses Afghan territory (especially under Taliban control) of harboring TTP militants who launch attacks inside Pakistan. TTP is considered a major threat inside Pakistan.
- Afghanistan's Taliban government denies responsibility, or at least claims it does not support cross-border terrorism, but mutual distrust remains high.

Sovereignty and Violations

- Pakistan’s airstrikes within Afghan territory are viewed by Kabul as violations of sovereignty.
- These provoke retaliation and serve as flashpoints.
- Conversely, Pakistan insists that it must act if Afghan territory is used as a base for attacks into Pakistan.

Refugees, Displacement, and Humanitarian Issues

- There has been tension over Afghan refugees in Pakistan, deportations, economic burdens, border trade disruptions. These add to insecurity and friction.

Geopolitical and Regional Drivers

- Pakistan feels pressure to protect its territory from terrorism. Afghanistan under the Taliban is in a complex position: internally, it must weight the opinions of its own fighters, tribal groups; externally, it’s sensitive to foreign intervention, sovereignty issues.
- There is also anxiety about how other regional actors are involved—for instance, Kabul’s relations with India raising concerns in Islamabad.

Historical Precedents

- Over decades, there have been recurring skirmishes, diplomatic disputes, cross-border raids, embassies being attacked, etc.
- Also, earlier the presence of militant sanctuaries, tribal insurgencies, and the mixing of militant, tribal, ethnic and political dynamics have made long-term resolution hard.

Why this flare-up is more intense

- The frequency and boldness of strikes (airstrikes inside Afghanistan), retaliatory strikes, and claims of capturing border posts suggest an escalation beyond prior skirmishes.
- The policy of border fencing (Pakistan has completed over 90% of its fence along the Durand Line) has also caused friction, since some Afghan sides see it as encroachment or territorial overreach.

Durand Line

- The Durand Line is a 2,640-kilometer (1,640-mile) long border between Afghanistan and Pakistan, originally established in 1893 through an agreement between:
- Sir Mortimer Durand, a British diplomat representing British India, and
- Abdur Rahman Khan, the then Amir of Afghanistan.

Purpose:

- The line was intended to demarcate the limits of British India and Afghanistan to:
- Prevent Russian expansion into South Asia,
- Establish clear zones of influence for British India,
- Control tribal regions more effectively.

Key Facts:

Feature	Details
Length	~2,640 km (1,640 mi)
Established	1893
Parties Involved	British India & Afghanistan

Feature	Details
Name Origin	Sir Mortimer Durand
Modern Relevance	Serves as the de facto border between Pakistan and Afghanistan

Controversy:

- Afghanistan has historically refused to recognize the Durand Line as an international border, arguing:
 - The agreement was imposed under duress.
 - It divided Pashtun tribal areas, leaving millions of Pashtuns on both sides.
 - Pakistan, which inherited the boundary after its independence in 1947, considers it the official international border.

QUESTIONS

18. Consider the following statements regarding the Durand Line:

1. The Durand Line was established in 1893 between Afghanistan and British India to prevent Russian expansion into South Asia.
2. Afghanistan has always recognized the Durand Line as the official border with Pakistan.
3. The Durand Line divides Pashtun tribal areas, with millions of Pashtuns living on both sides.
4. Pakistan considers the Durand Line as the official international border.

Which of the statements given above is/are correct?

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

19. Torkham and Chaman are major border crossings between

- A. Pakistan and Afghanistan
 B. Israel and Palestine
 C. Nepal and Bhutan
 D. Soudan and South Sudan

20. Consider the following countries:

1. Azerbaijan
2. Kyrgyzstan
3. Tajikistan
4. Turkmenistan
5. Uzbekistan

Which of the above have borders with Afghanistan?

- A. 1, 2 and 5 only
 B. 1, 2, 3 and 4 only
 C. 3, 4 and 5 only
 D. 1, 2, 3, 4 and 5

21. Radcliffe line defines boundary between_____.

- A. North Korea and South Korea
 B. USA and Canada
 C. India and Pakistan
 D. India and China

7. Sawalkote Hydroelectric Project



Fresh Environmental Clearance for Sawalkote Hydroelectric Project

- The Environment Ministry's apex Expert Appraisal Committee (EAC) has granted a fresh environmental clearance to the Sawalkote hydroelectric project, a major infrastructure initiative proposed on the Chenab River in Ramban district of Jammu and Kashmir.
- This clearance, accorded on September 26, 2025, comes after a detailed examination and deliberation by the committee.

Strategic Significance Amid Indus Waters Treaty Suspension

- The project gains strategic importance as it becomes the first major hydropower initiative on the Indus river system to receive clearance following India's suspension of the Indus Waters Treaty (IWT).
- The suspension was declared after the Pahalgam terror attack, marking a shift in India's stance towards more assertive water resource utilization on the western rivers allocated to Pakistan under the treaty.

Project Overview and Timeline

- The Sawalkote hydroelectric project is designed as a run-of-the-river (RoR) scheme, meaning it will harness the natural flow of the Chenab River without creating a major reservoir or storage dam.

- It is planned to feature a 192.5-meter high Roller Compacted Concrete (RCC) gravity dam, with six generating units of 225 MW each and one of 56 MW in the first stage.
- An additional two units of 225 MW are planned in a second stage, bringing the total capacity to 1,856 MW.
- Initially cleared in 2017 when the project was under the Jammu and Kashmir Power Development Corporation (JKPDC), the Sawalkote project faced delays due to the lack of forest clearance, a separate requirement from environmental clearance.
- In 2021, JKPDC transferred the project to National Hydro Power Corporation (NHPC) Ltd, which will oversee its execution and operations until 2061.

Key Approvals and Compliance

- Progress resumed in 2023 when the project received its Stage-1 forest clearance, followed by public hearings conducted between December 2022 and February 2023, as mandated under the Forest Rights Act.
- In July 2025, essential approvals from the Central Electricity Authority (CEA) and the Central Water Commission (CWC) were also obtained, further paving the way for the project's implementation.

Rising Costs and Economic Implications

- The cost of the project has seen a significant escalation, rising from an initial estimate of Rs. 22,000 crore to Rs. 31,380 crore.
- This increase is attributed to delays, inflation, and possibly changes in project scope or materials.
- Despite the cost surge, the project is being prioritized due to its strategic importance and energy potential.

Strategic Momentum and National Priorities

- The government's renewed focus on utilizing the full potential of eastern Indus rivers has accelerated clearances for such infrastructure, positioning Sawalkote as a flagship project in this effort.

QUESTIONS

22. Consider the following statements regarding the Sawalkote Hydroelectric Project:

1. The project is located on the Chenab River in Jammu and Kashmir.
2. The project is designed as a storage dam-based scheme and will include large reservoirs to store water.

Which of the statements given above is/are correct?

- | | |
|-----------|--------------------|
| A. 1 only | C. Both 1 and 2 |
| B. 2 only | D. Neither 1 nor 2 |

23. Which of the following is true about the Sawalkote Hydroelectric Project?

1. The total installed capacity of the project will be 1,856 MW.
2. The project was initially cleared under the Jammu and Kashmir Power Development Corporation (JKPDC) in 2015, but it is now being handled by NHPC Ltd.

Select the correct answer using the codes given below:

- | | |
|-----------|--------------------|
| A. 1 Only | C. Both 1 and 2 |
| B. 2 Only | D. Neither 1 nor 2 |

24. Read the following statements:

1. Baglihar Hydropower Project has been developed on river Chenab.
2. Dulhasti Hydropower Project has been developed on river Jhelum.
3. Salal Hydropower Project has been developed on river Ravi.

Which of the statements given above is/are correct?

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

25. Recently, the term “pumped-storage hydropower” is actually and appropriately discussed in the context of which one of the following?

- A. Irrigation of terraced crop fields
B. Lift irrigation of cereal crops
C. Long duration energy storage
D. Rainwater harvesting system

26. Consider the following pairs:

Reservoirs	States
1. Ghataprabha	Telangana
2. Ghandhi Sagar	Madhya Pradesh
3. Indira Sagar	Andhra Pradesh
4. Maithon	Chhattisgarh

How many pairs given above are not correctly matched?

- A. Only one pair
B. Only two pair
C. Only three pair
D. All four pair

8. GalaxEye to launch world's first multi-sensor EO satellite in 2026

- Space-tech startup GalaxEye will launch the world's first multi-sensor Earth observation (EO) satellite 'Mission Drishti' in the first quarter of next year, marking the beginning of setting up a constellation of satellites over the next four years.
- Weighing 160 kg, Mission Drishti is India's largest privately built satellite and also the highest-resolution satellite developed in the country, the Bengaluru-based company said in a statement.
- It plans to launch 8-10 satellites by 2029.
- The satellite uses GalaxEye's proprietary SyncFused Opto-SAR technology, which combines both Synthetic Aperture Radar (SAR) and multispectral sensors on a single platform.
- It will allow for continuous all-weather, high-resolution imagery with global coverage.



- The satellite, offering 1.5 metre resolution, will enable governments, defence agencies and industries to perform advanced geospatial analysis across a wide range of applications, including border surveillance, disaster management, defence, utilities and infrastructure monitoring, agriculture, as well as financial and insurance assessment, providing real-time environmental and structural insights.
- “With Mission Drishti, we are unlocking a new era of actionable data through space exploration.
- For the first time in the world, we are deploying a satellite that combines multiple sensing technologies on a single platform, enabling us to observe the Earth in ways that were previously impossible,”.
- “This mission places India firmly on the global space map and creates a system that turns space technology into intelligence that businesses, governments, and communities can rely on,”.
- The Drishti satellite has undergone comprehensive structural testing at ISRO’s U R Rao Satellite Centre (URSC), proving its capability to endure the harsh conditions of space, including extreme temperatures, vibrations, and vacuum.
- Each satellite is engineered as a remote-sensing Earth observation system, optimised for spatial, spectral and temporal resolutions to capture high-precision imagery.

Synthetic Aperture Radar (SAR)

- Synthetic Aperture Radar (SAR) is a form of radar used to create high-resolution images of landscapes, structures, or objects, regardless of weather conditions or lighting (*e.g.*, day or night).
- It’s widely used in remote sensing, military surveillance, earth observation, and planetary exploration.

How SAR Works

- SAR systems are typically mounted on aircraft or satellites.
- As the radar platform moves, it transmits microwave pulses toward the Earth’s surface and records the reflected signals (echoes).
- These reflections are processed using signal processing techniques to simulate a much larger antenna (hence, “synthetic aperture”).
 - **Synthetic aperture:** Refers to the long “virtual antenna” created by combining radar returns from multiple positions as the sensor moves.
 - **Resolution:** SAR can achieve fine resolution (on the order of meters or even sub-meter) in both range (distance to target) and azimuth (direction along the flight path).

Key Features of SAR

Feature	Details
All-weather capability	Uses microwaves that penetrate clouds, rain, and fog.
Day and night operation	Active system: does not rely on sunlight.
High resolution	Much higher than traditional radar at similar frequencies.
Penetration	Depending on frequency (e.g., L-band, P-band), can penetrate vegetation, soil, or ice.

SAR Image Interpretation

- SAR images look different from optical images. They show:
 - **Backscatter:** Bright areas represent strong radar reflections (e.g., buildings, rough terrain).
 - **Shadows:** Areas with no radar return due to steep terrain or structures.
 - **Speckle:** Grainy noise due to interference, often reduced using filtering techniques.

Applications of SAR

Sector	Use Case
Environmental monitoring	Forest mapping, glacier monitoring, flood detection, oil spill tracking.
Agriculture	Soil moisture, crop monitoring, precision farming.
Geology	Earthquake deformation (InSAR), landslide detection, volcano monitoring.
Military/Defense	Reconnaissance, surveillance, target detection.
Urban planning	Infrastructure monitoring, land-use mapping.

Special Techniques

- **InSAR (Interferometric SAR):** Combines two or more SAR images to measure ground movement (e.g., after earthquakes).
- **PolSAR (Polarimetric SAR):** Uses different polarizations to extract more information about target properties.
- **SAR Tomography:** Builds 3D images using SAR data from different angles.

Earth observation (EO) satellite

- An Earth Observation (EO) satellite is a type of satellite specifically designed to monitor and collect data about the Earth’s physical, chemical, and biological systems.
- These satellites play a critical role in a wide range of applications including weather forecasting, environmental monitoring, disaster response, agriculture, forestry, urban planning, and climate change research.

Imaging and Mapping

- High-resolution optical and radar imagery for land use, infrastructure, or natural resources.

Climate and Weather Monitoring

- Tracking temperature, precipitation, cloud cover, wind patterns, and storms.

Environmental Monitoring

- Observing deforestation, desertification, pollution, and ocean health.

Disaster Management

- Monitoring wildfires, floods, earthquakes, and hurricanes to aid emergency response.

Agriculture and Food Security

- Assessing crop health, irrigation needs, and forecasting yields.

Types of Sensors on EO Satellites

Sensor Type	Description	Example Use
Optical (Visible/NIR)	Captures images in visible and near-infrared light	Land cover, vegetation
SAR (Synthetic Aperture Radar)	Uses radar to penetrate clouds and darkness	Disaster mapping, topography
Thermal Infrared	Measures surface temperature	urban heat, wildfires
Hyperspectral	Captures data across many wavelengths	Mineral exploration, crop monitoring
Radiometers	Measure energy (radiation) in multiple spectral bands	Climate studies

Orbit Types for EO Satellites

Low Earth Orbit (LEO)

- 500–2,000 km altitude
- Common for high-resolution imagery (e.g., Sentinel, Landsat)

Sun-Synchronous Orbit (SSO)

- Passes the same part of Earth at the same local time each day
- Ideal for consistent lighting in images

Geostationary Orbit (GEO)

- ~36,000 km above Earth
- Fixed position relative to Earth – used for continuous weather monitoring (e.g., GOES)

Major EO Satellite Missions and Programs

Mission/Satellite	Organization	Purpose
Landsat	NASA / USGS	Land use, forests, agriculture
Sentinel	ESA (Copernicus)	Multi-purpose environmental monitoring
MODIS	NASA	Large-scale climate, ocean, land monitoring
GOES	NOAA	Real-time weather and storm tracking
RADARSAT	CSA (Canada)	Radar-based Earth imaging
Gaofen	CNSA (China)	High-res Earth observation

Applications of EO Data

- Climate change modeling
- Carbon emission tracking
- Urban growth analysis
- Monitoring glacier retreat and sea level rise
- Marine ecosystem monitoring (algal blooms, coral bleaching)

QUESTIONS

27. Consider the following satellite missions and their respective organizations:

1. Landsat - NASA / USGS
2. Sentinel - ESA (Copernicus)
3. MODIS - NASA
4. GOES - NOAA
5. RADARSAT - CSA (Canada)

Which of the above satellites are primarily focused on **environmental monitoring**?

- A. 1 and 2 only
B. 1, 2, and 3 only
C. 2, 4, and 5 only
D. 1, 2, 3, and 4

28. Which of the following applications are enabled by Earth Observation (EO) data?

1. Climate change modeling
2. Carbon emission tracking
3. Monitoring urban growth
4. Monitoring glacier retreat and sea level rise
5. Marine ecosystem monitoring (algal blooms, coral bleaching)

Which of the above applications are directly related to **environmental monitoring**?

- A. 1, 2, and 4 only
B. 3 and 5 only
C. 1, 3, and 5 only
D. 1, 2, 3, 4, and 5

29. Consider the following statements regarding GalaxEye's "Mission Drishti":

1. It is the world's first multi-sensor Earth observation (EO) satellite.
2. The satellite uses GalaxEye's proprietary SyncFused Opto-SAR technology, combining both Synthetic Aperture Radar (SAR) and multispectral sensors on a single platform.
3. The satellite offers 2.5-meter resolution.

Which of the statements given above is/are correct?

- | | |
|-----------------|-----------------|
| A. 1 and 2 only | C. 1 and 3 only |
| B. 2 and 3 only | D. 1, 2, and 3 |

9. Maldives becomes the first country globally to achieve Triple Elimination of Mother to Child Transmission (EMTCT) of HIV, syphilis and hepatitis B



- In a landmark global health achievement, the Maldives has become the first country in the world to receive the World Health Organization's (WHO) certification for the Triple Elimination of Mother-to-Child Transmission (EMTCT) of HIV, syphilis, and hepatitis B.
- This historic milestone was officially recognized during the 78th WHO Regional Committee Meeting for South-East Asia, held in Colombo, Sri Lanka.
- The certification was formally awarded by WHO Director-General Dr. Tedros Adhanom Ghebreyesus to Maldives' Minister of Health, H.E. Abdulla Nazim Ibrahim.
- The achievement reflects Maldives' sustained commitment to ensuring a healthier start for every child.
- It highlights decades of investment in maternal and child health, high-performing healthcare systems, and the dedication of healthcare professionals across the country.
- Receiving this certification positions Maldives as a global model for disease prevention and maternal-child health equity.
- Minister Abdulla Nazim Ibrahim expressed national pride in the accomplishment, calling it a testament to the country's unwavering efforts to leave no mother or child behind.
- He reaffirmed the government's commitment to eradicating preventable diseases and ensuring that every newborn has an equal opportunity to thrive in good health.
- Maldives had previously been recognized in 2019 for the dual elimination of mother-to-child transmission of HIV and syphilis.
- Building upon this success, the country expanded its initiatives to include hepatitis B, thereby fulfilling the requirements for triple elimination.
- The comprehensive approach included universal antenatal screening, timely access to treatment, safe childbirth practices, and robust postnatal follow-up care.
- Key international partners such as UNICEF, WHO, UNAIDS, and national stakeholders played a crucial role in supporting the Maldives through technical assistance, policy guidance, and health system strengthening.
- UNICEF, in particular, commended the country's achievement as a clear demonstration of how targeted, collaborative efforts can lead to impactful health outcomes for the most vulnerable.
- Dr. Edward Addai, UNICEF Representative to the Maldives, emphasized the broader implications of the milestone.
- He stated that this achievement proves what can be accomplished with sustained leadership, strong partnerships, and a commitment to equity and quality healthcare.
- He also reiterated that every child deserves to be born free from preventable infections and to grow up healthy.
- This recognition comes at a critical time as the global community works toward the 2030 goal of eliminating mother-to-child transmission of HIV, syphilis, and hepatitis B.
- Spearheaded by WHO, UNICEF, UNAIDS, and other partners, the global EMTCT initiative aims to prevent new infections and guarantee a healthy start for every child, regardless of geography.
- Maldives' historic certification is not only a national triumph but also a call to action for other countries.
- UNICEF urged nations across the region to follow suit, reinforcing the collective responsibility to eliminate these preventable diseases and protect future generations.
- Through shared dedication and global solidarity, the vision of an HIV, syphilis, and hepatitis B-free generation is within reach.

UNICEF (United Nations International Children's Emergency Fund)

- UNICEF (United Nations International Children's Emergency Fund) is a United Nations agency responsible for providing humanitarian and developmental aid to children worldwide.

Full Name

- **Originally:** United Nations International Children's Emergency Fund
- **Now:** United Nations Children's Fund — but the acronym UNICEF was kept for historical reasons.

Founded

- 1946, after World War II, to provide emergency food and healthcare to children in countries devastated by the war.

Headquarters

- New York City, USA

Mission & Work

- UNICEF works in over 190 countries and territories, focusing on:
 - Child protection
 - Education
 - Health and nutrition
 - Clean water and sanitation
 - Emergency relief
 - Advocacy for children's rights
- Its work is guided by the Convention on the Rights of the Child (1989) — the most widely ratified human rights treaty.

Funding

- UNICEF is entirely funded by voluntary contributions from:
 - Governments
 - NGOs
 - Corporations
 - Private individuals

Symbol / Logo

- The logo typically features a mother and child silhouette with an olive branch and a globe, symbolizing peace and global unity for children.

Notable Campaigns & Programs

- Giga (bringing internet to schools)
- COVAX (vaccine distribution during COVID-19)
- UNICEF Kid Power
- Back to School programs in war zones

QUESTIONS

30. With reference to the recent achievement of the Maldives, consider the following statements:

1. Maldives has become the first country in the world to receive WHO certification for the Triple Elimination of Mother-to-Child Transmission (EMTCT) of HIV, syphilis, and hepatitis B.
2. The certification was presented during the 78th WHO Regional Committee Meeting for South-East Asia held in Colombo, Sri Lanka.
3. The Triple Elimination initiative is led jointly by WHO, UNICEF, and the World Bank.

Which of the statements given above is/are correct?

- | | |
|-----------------|-----------------|
| A. 1 only | C. 2 and 3 only |
| B. 1 and 2 only | D. 1, 2 and 3 |

31. The term “Triple Elimination of Mother-to-Child Transmission (EMTCT)” recently seen in the news refers to the elimination of:

- A. HIV, malaria, and tuberculosis transmission from mother to child
- B. HIV, syphilis, and hepatitis B transmission from mother to child
- C. Polio, HIV, and hepatitis A transmission from mother to child
- D. HIV, syphilis, and Zika virus transmission from mother to child

32. Consider the following statements:

1. Hepatitis B is several times more infectious than HIV / AIDS.
2. Hepatitis B can cause liver cancer.

Which of the statement given above is/are correct?

- | | |
|-----------|--------------------|
| A. 1 only | C. Both 1 and 2 |
| B. 2 only | D. Neither 1 nor 2 |

33. In the context of hereditary diseases, consider the following statements:

1. Passing on mitochondrial diseases from parent to child can be prevented by mitochondrial replacement therapy either before or after in vitro fertilisation of the egg.
2. A child inherits mitochondrial diseases entirely from mother and not from father.

Which of the statements given above is/are correct?

- | | |
|-----------|--------------------|
| A. 1 only | C. Both 1 and 2 |
| B. 2 only | D. Neither 1 nor 2 |

34. Consider the following statements:

1. In tropical regions, Zika virus disease is transmitted by the same mosquito that transmits dengue.
2. Sexual transmission of Zika virus disease is possible.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

35. Which of the following diseases can be transmitted from one person to another through tattooing?

- 1. Chikungunya
- 2. Hepatitis B
- 3. HIV-AIDS

Select the correct answer using the codes given below.

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

36. Consider the following diseases:

- 1. Diphtheria
- 2. Chickenpox
- 3. Smallpox

Which of the above diseases has/have been eradicated in India?

- A. 1 and 2 only
- B. 3 only
- C. 1, 2 and 3
- D. None

ANSWER KEY AND EXPLANATION

1. **C Statement 1 is correct:** The first woman to win the Nobel Prize was Marie Curie, and she won the award twice.
- Statement 2 is correct:** Rabindranath Tagore is the only Indian to have won the Nobel Prize in Literature, receiving the award in 1913 for his collection of poems, “Gitanjali”. He was not only the first Indian but also the first non-European to receive the prize.
- Statement 3 is correct:** All the Nobel Prizes are given in Stockholm, Sweden except for the Nobel Peace Prize which is awarded in Oslo, Norway.
2. **D** The Nobel Prize in Literature was established by Alfred Nobel’s will, but it was first awarded in 1901, not 1895. The prize is awarded by the Swedish Academy, not the Karolinska Institute. It recognizes outstanding contributions to literature over time, not just in the preceding year. The correct answer is **D. None of the above.**
3. **A** László Krasznahorkai, the 2025 Nobel Prize in Literature laureate, is from Hungary and is recognized for his exploration of apocalyptic terror in his works. While he is indeed the second Hungarian author to win the prize (after Imre Kertész), statement 3 is incorrect. Therefore, the correct answer is **A. 1 and 2 only.**
4. **A** 1 only
- **Statement 1 is correct.** Creative destruction refers to the process where technological innovations replace outdated technologies, leading to the decline of old industries while creating new ones.
 - **Statement 2 is incorrect** because the term “creative destruction” was introduced by Joseph Schumpeter in 1942, not Paul Romer.
 - **Statement 3 is incorrect** as creative destruction is a disruptive process, not a gradual one.
5. **A** 1 and 2 only
- **Statement 1 is correct** as the prize was awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their contributions to innovation-driven economic growth.
 - **Statement 2 is correct** because their work focuses on how technological progress leads to sustained economic growth, particularly through the theory of creative destruction.
 - **Statement 3 is incorrect** because their work is not specifically about industrial design and manufacturing processes but focuses on economic growth through innovation and technological change.
6. **A** 1 and 2 only
- **Statement 1 is correct** as the prize was established in 1968 by Sweden’s central bank (Sveriges Riksbank) to recognize contributions to economic theory.
 - **Statement 2 is correct** as the prize is awarded annually on December 10, along with a diploma, gold medal, and monetary prize.
 - **Statement 3 is incorrect** because the 2025 laureates focused on innovation-driven economic growth through technological progress and creative destruction, not on global financial systems and markets.

7. C Garba dance

- **Option A is incorrect:** Chhau dance, a tradition from eastern India was inscribed under UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in 2010.
- **Option B is incorrect:** Durga Puja, the world's biggest public art festival, was inscribed in 2021 on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity.
- **Option C is correct:** UNESCO has inscribed the popular Gujarati folk dance Garba in UNESCO's Representative List of the Intangible Cultural Heritage of Humanity its 18th session, taking place in Kasane, Botswana from 5 to 9 December 2023. The inclusion of Garba now makes it India's 15th inscription on the List.
- **Option D is incorrect:** Kumbh Mela is a festival held at Allahabad, Haridwar, Ujjain and Nasik every four years by rotation. It was inscribed UNESCO Representative List of the Intangible Cultural Heritage of Humanity in 2017.

8. B 1 and 3 only

- **Statement 1 is correct** as the museum's goal is to address cultural theft by restoring lost identity and combating illegal trade.
- **Statement 2 is incorrect** as the museum currently hosts 240 stolen items, not 500.
- **Statement 3 is correct** as the platform includes emotional testimonies and provides context about the loss of cultural objects.

9. B 1 and 2 only

- **Statement 1 is correct** as UNESCO was established in 1945 to promote peace and international collaboration.
- **Statement 2 is correct** as UNESCO's World Heritage Sites are designated for cultural, historical, and scientific significance and are protected under international treaties.
- **Statement 3 is incorrect** as UNESCO's headquarters are located in Paris, France, not Geneva.

10. C 1 and 3 only

- **Statement 1 is correct** as she was awarded for her leadership in Venezuela's pro-democracy movement and efforts to promote democratic rights.
- **Statement 2 is incorrect** as the Peace Prize was not awarded for resolving a border conflict, but for her role in Venezuela's internal struggle for democracy.
- **Statement 3 is correct** as the Nobel Committee highlighted her work in documenting vote fraud and her role in protecting democracy through nonviolent efforts.

11. C 1 and 3 only

- **Statement 1 is correct** as the Nobel Committee acknowledged her efforts for democracy and peaceful transition from dictatorship.
- **Statement 2 is incorrect** as the Nobel Peace Prize is awarded by the Norwegian Nobel Committee, not the Royal Swedish Academy of Sciences.
- **Statement 3 is correct** as Machado's leadership played a central role in unifying the opposition in Venezuela.

12. B 2 only

- **Statement 1 is incorrect** as the Nobel Peace Prize is awarded in Oslo, Norway, not Stockholm.
- **Statement 2 is correct** as the Peace Prize was created to honor significant contributions to peace, human rights, and fraternity between nations.
- **Statement 3 is incorrect** as the award criteria are set by Alfred Nobel's will, and the committee chooses laureates based on those criteria.

13. D 1, 2 and 3

- **Statement 1 is correct**, as Gandhi was nominated five times for the Nobel Peace Prize but never won it.
- **Statement 2 is correct**, as Gandhi's last nomination occurred in 1948, the year of his assassination.
- **Statement 3 is correct**, as the Nobel Committee decided not to award the Peace Prize in 1948 due to Gandhi's assassination, stating there was no "suitable living candidate."

14. C 1, 2, and 3

- **Statement 1 is correct:** Kailash Satyarthi received the Nobel Peace Prize in 2014 alongside Malala Yousafzai for their efforts against child suppression and for children's education.
- **Statement 2 is correct:** Kailash Satyarthi has co-founded several organizations including the Global March Against Child Labour and the Kailash Satyarthi Children's Foundation.
- **Statement 3 is correct:** In 2014, he was the co-recipient of the Nobel Peace Prize, along with Malala Yousafzai, "for their struggle against the suppression of children and young people and for the right of all children to education."

15. C 1 and 3 only

- **Statement 1 is correct:** The 4G stack was indeed developed collaboratively by **BSNL, Tejas Networks, TCS, and C-DoT**.
- **Statement 2 is incorrect:** The 4G stack was designed to minimize dependency on foreign vendors, ensuring technological self-reliance.
- **Statement 3 is correct:** The stack's modular architecture is "**5G ready**," which allows for future scalability and easy transition to 5G networks.

16. B To minimize reliance on foreign vendors and enhance digital sovereignty

- The **primary objective** of India's 4G stack is to achieve **digital sovereignty** by reducing reliance on foreign technology vendors, fostering national technological self-reliance, and ensuring **secure telecom infrastructure**. This aligns with the **Aatmanirbhar Bharat** initiative.

17. C Technology developed exclusively for India and not suitable for export

- **Statement 3 is incorrect:** While the 4G stack is **designed for India's use**, it also has **strong export potential**. Several developing countries are reportedly interested in using India's **4G stack**, positioning India as a global player in digital sovereignty and telecom exports.

18. C 1, 3, and 4 only

- **Statement 1 is correct:** The Durand Line was established in 1893 between Afghanistan and British India to prevent Russian expansion and to establish clear zones of influence.

- **Statement 2 is incorrect:** Afghanistan **has historically refused** to recognize the Durand Line as an official international border, claiming it was imposed under duress.
 - **Statement 3 is correct:** The Durand Line divides Pashtun tribal areas, with millions of Pashtuns living on both sides of the border.
 - **Statement 4 is correct:** Pakistan, which inherited the boundary after its independence in 1947, considers the Durand Line as the official international border.
- 19. A** Torkham and Chaman are major border crossings between Pakistan and Afghanistan, primarily used for trade, although they also facilitate the movement of people and are often used for illicit activities.
- 20. C** Afghanistan, officially the Islamic Republic of Afghanistan, is a mountainous landlocked country in southern Central Asia. It borders Tajikistan, Turkmenistan, and Uzbekistan to the north, Iran to the west, Pakistan to the East and South and India to the East. Afghanistan does not share a border with Kazakhstan or Kyrgyzstan.
- 21. C** India and Pakistan
- The **Radcliffe Line** is the boundary line between India and Pakistan. It was drawn in 1947 to demarcate the borders between the newly independent countries of India and Pakistan, following the partition of British India. The line was named after **Sir Cyril Radcliffe**, the British lawyer who was tasked with drawing the boundary. It divides the regions of Punjab and Bengal into two parts, one part going to India and the other to Pakistan.
- 22. A** 1 only
- **Statement 1 is correct:** The Sawalkote Hydroelectric Project is located on the Chenab River in the Ramban district of Jammu and Kashmir, as mentioned in the passage.
 - **Statement 2 is incorrect:** The project is designed as a **run-of-the-river (RoR)** scheme, which means it harnesses the natural flow of the river without creating a major reservoir or storage dam. This is specifically designed to avoid large water storage, making the second statement incorrect.
- 23. C** Both 1 and 2
- **Statement 1 is correct:** The project is planned to have an installed capacity of **1,856 MW**, with the initial phase involving six 225 MW units and an additional two 225 MW units in a second stage.
 - **Statement 2 is correct:** The Sawalkote Hydroelectric Project was initially cleared in 2017 under the Jammu and Kashmir Power Development Corporation (JKPDC). However, it was transferred to **National Hydro Power Corporation (NHPC) Ltd** in 2021 for its execution and operations until 2061.
- 24. A** 1 only
- **Statement 1 is correct:** The Baglihar Hydropower Project is indeed developed on the Chenab River. It is located in the Doda district of Jammu and Kashmir.
 - **Statement 2 is incorrect:** The Dulhasti Hydropower Project is developed on the Chenab River, not the Jhelum River. It is situated in the Kishtwar district of Jammu and Kashmir.
 - **Statement 3 is incorrect:** The Salal Hydropower Project is developed on the Chenab River, not the Ravi River. It is located in the Reasi district of Jammu and Kashmir. **Thus, only Statement 1 is correct.**

25. C Long duration energy storage

The term “pumped-storage hydropower” relates to long-duration energy storage. It refers to a type of hydroelectric energy storage where two water reservoirs at different elevations are used to generate power. Water moves down from one reservoir to the other (discharge), passing through a turbine, and then requires power to be pumped back into the upper reservoir (recharge).

26. C Only three pairs

Let’s analyze each pair:

- **Ghataprabha – Telangana:** This pair is **incorrect**. The **Ghataprabha Reservoir** is located in the **Belagavi district** of **Karnataka**, not Telangana. The Ghataprabha River is a major tributary of the Krishna River and is primarily used for irrigation in Karnataka.
- **Gandhi Sagar – Madhya Pradesh:** This pair is **correct**. The **Gandhi Sagar Dam** is situated on the **Chambal River** in the **Mandsaur and Neemuch** districts of **Madhya Pradesh**.
- **Indira Sagar – Andhra Pradesh:** This pair is **incorrect**. The **Indira Sagar Dam** is located in **Madhya Pradesh**, not Andhra Pradesh. The **Indira Sagar Dam** is a multipurpose project located on the **Narmada River** in **Punasa**, Madhya Pradesh. The **Polavaram** project, on the other hand, is an interstate project in Andhra Pradesh, located on the **Godavari River**.
- **Maithon – Chhattisgarh:** This pair is **incorrect**. The **Maithon Dam** is located in **Jharkhand**, not Chhattisgarh. The dam is built on the **Barakar River**, which is a tributary of the Damodar River. It is located near **Dhanbad**, Jharkhand, and is famous for its underground power station.

Thus, **three pairs are incorrectly matched: Pair 1 (Ghataprabha), Pair 3 (Indira Sagar), and Pair 4 (Maithon)**. Therefore, the correct answer is **[C] Only three pairs**.

27. B 1, 2, and 3 only

- **Landsat (NASA / USGS)** focuses on **land use, forests, and agriculture**, which are critical aspects of **environmental monitoring**.
- **Sentinel (ESA / Copernicus)** is a **multi-purpose** environmental monitoring satellite, aimed at monitoring land, oceans, and atmosphere, which is in line with **environmental** applications.
- **MODIS (NASA)** focuses on **large-scale climate, ocean, and land monitoring**, contributing to **environmental** studies.
- **GOES (NOAA)** primarily focuses on **weather and storm tracking**, which is more related to meteorological aspects than environmental monitoring in the broader sense.
- **RADARSAT (CSA, Canada)** focuses on **radar-based Earth imaging**, which includes applications like **flood monitoring, sea ice mapping, and disaster monitoring**, but it is not primarily focused on environmental monitoring as a whole.

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

- **Climate change modeling:** This requires monitoring various environmental factors such as temperature, precipitation, and vegetation, all of which are critical for **environmental monitoring**.
- **Carbon emission tracking:** Monitoring carbon emissions directly contributes to understanding climate change and **environmental monitoring**.
- **Monitoring urban growth:** This is a key aspect of **environmental monitoring**, as urbanization affects land use, ecosystems, and natural resources.

- **Monitoring glacier retreat and sea level rise:** This directly ties to **environmental monitoring**, particularly related to climate change impacts on polar regions and oceans.
- **Marine ecosystem monitoring** (algal blooms, coral bleaching): This is part of **environmental monitoring** focused on marine health and ecosystem changes due to climate change.

All five applications are related to **environmental monitoring** and contribute to understanding and addressing **global environmental challenges**.

29. A 1 and 2 only

- **Statement 1** is correct as **Mission Drishti** is indeed the world's first multi-sensor Earth observation satellite, which marks a significant milestone in space technology.
- **Statement 2** is also correct, as the satellite utilizes **SyncFused Opto-SAR technology**, combining **Synthetic Aperture Radar (SAR)** and **multispectral sensors** to provide real-time environmental and structural insights.
- **Statement 3** is incorrect because **Mission Drishti** offers a resolution of **1.5 meters**, not 2.5 meters. This high-resolution capability is one of its standout features.

30. B 1 and 2 only

- Maldives became the first country globally to achieve Triple Elimination of Mother-to-Child Transmission (EMTCT) of HIV, syphilis, and hepatitis B, certified by WHO.
- The certification was awarded during the 78th WHO Regional Committee Meeting for South-East Asia in Colombo.
- The initiative is led by WHO, UNICEF, and UNAIDS, *not* the World Bank.

31. B HIV, syphilis, and hepatitis B transmission from mother to child

- The Triple EMTCT certification recognizes a country's success in interrupting mother-to-child transmission of HIV, syphilis, and hepatitis B.
- Maldives became the first country globally to achieve this recognition from the World Health Organization (WHO).

32. C Both 1 and 2

- **Statement 1 is correct:** Hepatitis B is significantly more infectious than HIV, according to multiple sources. Some say it can be up to 100 times more contagious.
- **Statement 2 is also correct:** Hepatitis B is a primary cause of liver cancer. Chronic hepatitis B infection can lead to the development of liver cancer.

33. C Both 1 and 2.

- **Statement 1: Correct.** Mitochondrial replacement therapy (MRT) involves transferring healthy mitochondria from a donor egg to prevent a child from inheriting mitochondrial diseases. This can be done by transferring the maternal spindle before fertilization or the pronucleus after fertilization has occurred, both of which are processes related to the IVF cycle.
- **Statement 2: Correct.** The vast majority of mitochondria in a cell, and therefore the mitochondrial DNA, are inherited from the mother through the egg's cytoplasm. Sperm contain very few mitochondria, and their DNA is not transmitted to the offspring's mitochondria. Therefore, a father cannot pass on a mitochondrial disease to his child.

34. C Both 1 and 2.

- **Statement 1:** Zika virus and dengue are both transmitted by the *Aedes aegypti* mosquito, making statement 1 correct.
- **Statement 2:** Zika virus can also be transmitted through sexual contact, making statement 2 correct as well.

35. D 2 and 3 only.

Hepatitis B and HIV-AIDS can be transmitted through bloodborne pathogens, which can be present on contaminated tattoo needles. Chikungunya is transmitted through mosquito bites, not through contact with bodily fluids.

36. B 3 only.

The disease that has been eradicated in India is smallpox. Smallpox is the only human disease that has been globally eradicated thanks to a successful vaccination campaign. This eradication also applies to India, where the last case of smallpox was reported in 1977.

Diphtheria: While vaccination efforts have significantly reduced diphtheria cases in India, it is still considered endemic. There have been resurgences of the disease.

Chickenpox: Chickenpox is a common viral infection that is not eradicated. Although widespread vaccination against varicella (the virus that causes chickenpox) has reduced its prevalence, the disease still exists.

