

Achievements of Indians in science & technology

❖ **Jagadish Chandra Bose**

➤ **CONTEXT:** Recently a group of researchers from Tel Aviv University in Israel reported that they had been able to pick up distress noises made by plants. The researchers said these plants had been making very distinct, high-pitched sounds in the ultrasonic range when faced with some kind of stress, like when they were in need of water.

- This was the first time that plants had been caught making any kind of noise, and the breakthrough research findings made global headlines. But many Indians just had a sense of déjà vu.
- Several previous generations of Indians had grown up hearing that Jagadish Chandra Bose had shown, more than a century ago, that plants experienced sensations and were able to feel pleasure and pain just like animals.
- Children were often advised not to pluck leaves, flowers or twigs because that could cause pain to the plants or trees. The discovery that plants 'cry' in distress, therefore, did not come as much of a surprise to them. It seemed just a logical extension of J C Bose's work.
- Bose might not be a very familiar name to the current generation, but he is a colossal figure of Indian science. A physicist-turned-biologist, Bose, who lived between 1858 and 1937, made pioneering contributions in both the fields and was the first Indian to have made a powerful impact on modern science, much before Srinivasa Ramanujan, C V Raman, or Satyendra Nath Bose, a student of Jagadish, arrived on the scene.
- J C Bose could (many believe he deservedly should) very well have been India's first Nobel Prize winner, ahead of his life-long friend and confidant Rabindranath Tagore, with whom he used to have a prolific, and often poetic, correspondence.

➤ **Bose's science**

- Jagadish Chandra Bose is remembered for two things
 - ✓ His work on wireless transmission of signals
 - ✓ The physiology of plants.
- He is also credited as one of the first contributors to solid state physics.
- Sir Neville Mott, Nobel Prize winner in 1977, is said to have remarked that Bose was "at least 60 years ahead of his time and he had anticipated **the p-type and n-type semiconductors**", according to an account in Remembering J C Bose, a 2009 publication by D P Sen Gupta, M H Engineer and V A Shepherd.
- Bose is widely believed to be the first one to generate electromagnetic signals in the microwave range.
- In 1895, just a year after he began his active research, he demonstrated, before an audience in Kolkata, how microwaves could be used, wirelessly, to ring an electric bell on the other side of a building.
- He published as many as 12 papers on radio waves in the Proceedings of the Royal Society, and many more in some other prestigious journals, as reported in the book Jagadis Chandra Bose and the Indian Response to Western Science, by Subrata Dasgupta.
- He lectured on his work at some highly publicised scientific gatherings in Europe, in the presence of some of the leading scientists of the day.
- He was the first one to come up with radio receivers, which enabled wireless telegraphy.
- Guglielmo Marconi, an Italian scientist who carried out the first transmission of signals across the Atlantic in 1901, is recognised as the sole inventor of the radio. Marconi, along with another colleague, was awarded the 1909 Nobel Prize for work that Bose is known to have accomplished earlier.
- It was not just bias, but as several accounts put it, a reluctance on Bose's part to obtain patents for his work, that deprived him of the Nobel.
 - ✓ J C Bose, wrote to Tagore about being approached by a big businessman in Europe with the offer to get his work patented. Bose not just rejected the offer, he felt disgusted at the idea of making money from science. "If only Tagore would witness the country's (England's) greed for money," Bose wrote to Tagore. "What a dreadful, all-consuming disease it was".

➤ **His study of plants**

- Bose, rather abruptly, changed tack in the initial years of the 20th century and began to focus his attention on plants.
- "J C Bose was extremely talented at picking electric signals. The other thing he was extremely creative at was making instruments. Bose was working with rudimentary facilities and, yet, was able to build some remarkably sensitive instruments. He used these instruments to try and detect the faintest signals from the plants. He was carrying over his skills from physics to probe the world of biology.
- Bose's contributions to the communication systems in biology as well as physics are amazing. He devoted strong attention to studies on the biology of movements, feelings and nervous system.

- The word 'feelings' was used for plants, but clearly this is a matter of semantics; plants react both chemically and physically to touch, but to use the word 'feeling' or 'sensation' as we know it is quite different.
- The simple experiments of Bose revealed a high degree of similarity in the responses of plant and animal tissues to external stimuli. This principle was amply demonstrated later by biophysicists, using highly sophisticated instruments.
- According to the authors of Remembering J C Bose, in a way, Bose was possibly the world's first biophysicist. But some of his work became controversial as well, particularly when he claimed that not just plants, even inanimate inorganic matter could respond to stimulus, and that there was actually no sharp demarcation between living and non-living worlds.
 - ✓ Such "mental leaps" have sometimes been attributed to Bose's "deep convictions in Indian philosophy" and his "faith in universalism".
 - ✓ Bose regarded plants to be the "intermediates in a continuum that extended between animals and the non-living materials".
- His work on plants, too, was also not easily digested. Bose himself records the opposition he faced. In a letter to Tagore, he mentioned a lecture he was delivering in Europe.
- ❖ "When I commented during my lecture at the Royal Society that plants which come between the living and the non-living will provide similar response, (John) Burden Sanderson (a leading physiologist of his time) told me that he had worked all his life with plants. Only mimosa (touch-me-not) responds to touch. That ordinary plants should give electrical response is simply impossible. It cannot be".
- Over the years, much of Bose's work has been confirmed, though his genius is not always acknowledged. "He was much ahead of his times. Many of his contemporaries did not fully understand him. The recent discovery of distress noise from plants could lead to some exciting research in the field.

LAW AND POLICY

❖ Civil union

➤ **CONTEXT:** A five-judge bench of the Supreme Court, headed by Chief Justice of India DY Chandrachud, began hearing a batch of petitions seeking legal recognition of same sex marriage. While the Centre, through Solicitor General Tushar Mehta, contested the maintainability of the petitions, and also the judiciary's right to confer legal recognition on the "socio-legal institution" of marriage, the CJI clarified that the hearing's scope would be limited to developing a notion of a "civil union" that finds legal recognition under the Special Marriage Act.

➤ **What is a civil union?**

- A "civil union" refers to the legal status that allows same-sex couples specific rights and responsibilities normally conferred upon married couples.
- Although a civil union resembles a marriage and brings with it employment, inheritance, property, and parental rights, there are some differences between the two.

➤ **How is a civil union different from marriage?**

- In the year 2015, the Supreme Court of the United States (SCOTUS) legalised same-sex marriages across the nation with its landmark ruling in "**Obergefell v. Hodges**".
- Prior to the 2015 ruling, a majority of the US states had civil union laws that allowed same-sex couples to marry, without providing them formal recognition of the same.
- These civil unions would be accompanied by rights such as inheritance rights, employment benefits to spouses, joint parenting or joint ownership rights, and the right to abstain from testifying against one's partner — similar to the spousal privilege given under Section 122 of the Indian Evidence Act, when it comes to disclosure of communication between two spouses.
- A big difference between civil unions and marriages was that the former was recognised solely by issuing states and not by federal law. This created a situation where such couples could not enjoy the benefits of being in a civil union, uniformly, across all states. Since the US had a system where states had to determine their own marriage laws, this disparity of recognition existed.
- In the wake of the legalisation of same sex marriages, several civil unions were converted into marriages.

➤ **What other countries allow civil unions?**

- The United States is just one of the countries that allows same sex unions.
- Before 2009, the year that Sweden legalised same sex marriages, LGBTQ couples there could apply for civil unions and enjoy benefits such as the right to adopt.
- Similarly, from 1993, couples in Norway enjoyed the right to enter into civil unions, which gave way to a new law 15 years later, allowing such couples to marry, adopt and undergo state-sponsored artificial insemination.

- In Austria, same-sex couples could form civil partnerships between the years 2010-2017. However, this changed with a court ruling that deemed civil unions discriminatory in January 2019, when such marriages were legalised.
- Similarly, countries like Brazil, Uruguay, Andorra, and Chile had also recognised the right of same sex couples to enter into civil unions, even before they formally recognised their legal right to marriage.

AGRICULTURE

❖ **Wheat blast**

➤ **CONTEXT: Scientists have warned that the fungus *Magnaporthe oryzae*, which is destroying South American wheat crops, could spread worldwide.**

- The pathogen affects the crop in a disease known as 'wheat blast'.
- The seriousness of the disease is indicated by the fact that crops are burnt to avoid this disease. *Magnaporthe oryzae* originated in South America, but cases of infection have also been reported in Asia in 2016 and Africa in 2018.
- Genomic analysis of fungus samples from all three continents showed that these fungi are part of the same family.
- Wheat crops around the world are susceptible to the fungus. The pathogen is also resistant to fungicides. The biggest concern is that this fungus has the potential to affect not only wheat but also other major food crops.

➤ **Need for accurate, early detection**

- Genomic surveillance allows for early and accurate detection of these, which can lead to the discovery of the origin of the disease and help create a prevention strategy.
- *Magnaporthe oryzae* infects wild and cultivated grasses, most notably rice and wheat. Researchers first detected the pathogen in Brazilian wheat crops in the 1980s.
- The fungus has since spread throughout South America. In some areas, the situation became so severe that the fungus destroyed the entire crop.

- After this, Asia's first outbreak of this pathogenic wheat blast was reported in Bangladesh in 2016. Wheat blast led to a loss of 51 per cent in crop yield that year.

- Two years later, an outbreak of this fungus was detected in wheat crops in Zambia, which was the first time the pathogen was detected in Africa. However, it is not clear whether it reached Zambia from Bangladesh or South America.

- In the recently study, scientists analysed more than 500 samples of the fungus to understand the origin of the pathogen.

- Separate genome sequencing of 71 samples also helped identify that wheat blast fungus detected in Bangladesh in 2016 and Zambia in 2018 belonged to different branches of the disease lineage from South America.

- This suggests that the strain of wheat blast from South America independently reached Africa and Asia. Therefore, humans are likely transporting these pathogens somehow.

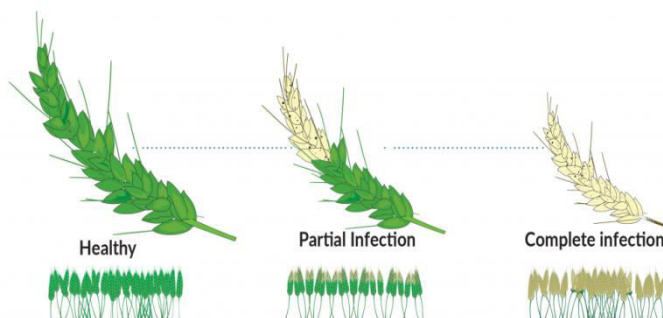
- According to the study importing infected seeds is a possible outbreak source. Before the outbreak in Bangladesh, the country had received a large quantity of wheat seeds from Brazil. However, this doesn't help accurately identify its origin as the fungus lineage was found in Brazil as well as in Bolivia.

- Researchers are now using genomic information to monitor the spread of wheat blast throughout Bangladesh.

- Genomic analysis has highlighted the dangers associated with the fungus. Research has shown that the fungus responsible for the outbreak is susceptible to certain fungicides, but laboratory experiments have shown that resistance can arise through spontaneous mutations.

- According to the research, the strain developed by self-cloning can acquire new characteristics by mixing with another genus of the fungus. The researchers found that the wheat blast strain may have interbred with another strain infecting millet crops in Africa.

- The average yield loss due to pests and diseases in wheat crop is more than 21 per cent. Above all, changes in climate and rainfall patterns and increase in temperatures are also causing heavy damage to crops, suggesting an impending crisis of food security.



- Crores of people can reach the brink of starvation due to a combined effect of these factors. In such a situation, efforts should be made to eliminate this pathogenic wheat blast before it is too late.

PRELIMS

1. International Day for Monuments and Sites (IDMS)

➤ **CONTEXT:** World Heritage Day is celebrated every year on 18 April to preserve human heritage and to recognize all the efforts of relevant organisations.

- This day is dedicated to promoting the importance of cultural heritage and raising awareness about the need to preserve historical sites and monuments across the globe.
- The day celebrates the unique and diverse cultural heritage across the world and encourages people to appreciate and safeguard it for future generations.
- The United Nations Educational, Scientific and Cultural Organisation (UNESCO) has a total of 1,154 monuments designated as world heritage sites from all over the world. Apart from India only Italy, Spain, Germany, China and France have 40 or more World Heritage sites.

History and Significance

- The International Council on Monuments and Sites (ICOMOS) proposed the idea of World Heritage Day in 1982, and it was approved by UNESCO's General Conference the following year.
- The first World Heritage Day was celebrated in 1983, and since then, it has become an important event for promoting awareness about cultural heritage
- The main aim of this day is to increase awareness about the importance of preserving cultural heritage sites and monuments.
- The day provides an opportunity to highlight the value of cultural heritage and the need to protect it from damage or destruction due to natural disasters, human activities, or urbanization.
- The theme for World Heritage Day 2023 is "Heritage Changes" The theme for World Heritage Day 2023 is focused on the crucial issue of climate action and its relation to cultural heritage.

➤ **Importance of World Heritage Sites**

 <p>1. AGRA FORT, UTTAR PRADESH A prominent 16th-century Mughal monument, also known as Red Fort of Agra.</p>	 <p>2. AJANTA CAVES, MAHARASHTRA Buddhist rock-cut cave temples and monasteries renowned for wall paintings and sculptures.</p>	 <p>3. ELLORA CAVES, MAHARASHTRA The Ellora complex illustrates the spirit of tolerance that was characteristic of ancient India.</p>
 <p>4. TAJ MAHAL, UTTAR PRADESH Built between 1631 and 1648 by Shah Jahan, it is a universally-admired masterpiece.</p>	<p>5. GROUP OF MONUMENTS AT MAHABALIPURAM, TAMIL NADU Mahabalipuram is known for its rathas, mandapas, giant open-air reliefs, temple of Rivage.</p>	
 <p>6. SUN TEMPLE, KONARAK, ODISHA A pinnacle of Kalingan temple architecture with its representation of Sun God Surya's chariot.</p>	 <p>7. KAZIRANGA NATIONAL PARK, ASSAM It is home to the world's largest population of one-horned rhinoceroses.</p>	
 <p>8. KEOLADEO NATIONAL PARK, RAJASTHAN A major wintering area for over 364 species of aquatic and non-migratory birds, including the rare Siberian Crane. (can remove including the rare Siberian Crane)</p>	 <p>9. MANAS WILDLIFE SANCTUARY, ASSAM Home to a variety of wildlife, including endangered species, such as tiger, pygmy hog, rhinoceros, elephant.</p>	 <p>10. CHURCHES & CONVENTS OF GOA, GOA Along with the Church of Bom Jesus, containing St Francis-Xavier's tomb, they illustrate the evangelisation of Asia.</p>
 <p>11. FATEHPUR SIKRI, UTTAR PRADESH Also known as City of Victory, key architecture includes Jama Masjid, Diwan-i-Khas, Panch Mahal, Buland Darwaza.</p>	 <p>12. GROUP OF MONUMENTS AT HAMPI, KARNATAKA Notable structures include Krishna temple, Hemakuta temples, Vitthala temple, Pattabhirama temple, Lotus Mahal.</p>	 <p>13. KHAJURAHO GROUP OF MONUMENTS, MADHYA PRADESH A group of Hindu and Jain temples, famous for Nagara-style architectural symbolism.</p>
 <p>14. ELEPHANTA CAVES, MAHARASHTRA A collection of cave temples and rock art mainly dedicated to Lord Shiva.</p>	<p>15. GREAT LIVING CHOLA TEMPLES, TAMIL NADU Includes 11-12th century temples: Brihadisvara Temple at Thanjavur & Gangaikondacholisvaram, Airavatesvara Temple at Darasuram.</p>	
 <p>16. GROUP OF MONUMENTS AT PATTADAKAL, KARNATAKA A complex of 7-8th century Hindu and Jain temples, including Temple of Virupaksha, a masterpiece.</p>	 <p>17. SUNDERBANS NATIONAL PARK, WEST BENGAL It contains the world's largest mangrove forests and are home several rare and endangered species.</p>	
 <p>18. NANDA DEVI AND VALLEY OF FLOWERS NATIONAL PARKS, UTTARANCHAL Famous for its meadows of endemic alpine flowers and also home to rare and endangered fauna, such as snow leopards & blue sheep.</p>	 <p>19. BUDDHIST MONUMENTS AT SANCHI, MADHYA PRADESH Comprises monolithic pillars, palaces, temples and monasteries, dating back to 2nd and 1st century BC.</p>	 <p>20. HUMAYUN'S TOMB, DELHI The first garden tomb on the Indian subcontinent, it has inspired several major architectural innovations, including Taj Mahal.</p>

- World Heritage Sites are places of exceptional cultural or natural significance and have been recognized by

21. QUTB MINAR AND ITS MONUMENTS, DELHI
The complex includes Qutub Minar, Alai Minar, Quwwat-ul-Islam Mosque, Iron Pillar and several tombs.

22. MOUNTAIN RAILWAYS OF INDIA, WEST BENGAL, TAMIL NADU, HIMACHAL PRADESH
This site includes 3 railways: Darjeeling Himalayan Railway, Nilgiri Mountain Railway, Kalka Shimla Railway.

23. MAHABODHI TEMPLE COMPLEX AT BODH GAYA, BIHAR
An ancient restored Buddhist temple in Bodh Gaya, marking the location where Buddha is said to have attained enlightenment.

31. GREAT HIMALAYAN NATIONAL PARK CONSERVATION AREA, HIMACHAL PRADESH
With riverine forests, alpine meadows and high peaks, it hosts over 25 forest types.

32. RANI-KI-VAV (THE QUEEN'S STEPPWELL) AT PATAN, GUJARAT
Divided into 7 stair-levels with sculptural panels of high quality, it has over 500 principle sculptures & 1,000 minor ones.

33. ARCHAEOLOGICAL SITE OF NALANDA MAHA VIHARA AT NALANDA, BIHAR
Consists of archaeological remains of a monastic and scholastic institution dating from 3rd century BCE to 13th century CE.

24. ROCK SHELTERS OF BHIMBETKA, MADHYA PRADESH
Known for its natural rock shelters and paintings from the Mesolithic Period to the historical period.

25. CHAMPANER-PAVAGADH ARCHAEOLOGICAL PARK, GUJARAT
A treasure trove of Hindu and Muslim architecture, culture, and history, some Islamic designs pre-Mughal era have been preserved.

34. KHANGCHENDZONGA NATIONAL PARK, SIKKIM
Includes the world's 3rd-highest peak, Mt Khangchendzonga, and a unique diversity of plains, valleys, lakes, glaciers and snow-capped mountains.

35. COMPLEXE DU CAPITOLE, CHANDIGARH
Recognised as a World Heritage Site as part of an outstanding contribution to the Modern Movement.

26. CHHATRAPATI SHIVAJI TERMINUS (FORMERLY VICTORIA TERMINUS), MAHARASHTRA
Formerly known as Victoria Terminus Station, it is an outstanding example of Victorian Gothic Revival architecture in India.

36. HISTORIC CITY OF AHMEDABAD, GUJARAT
The walled city presents a rich architectural heritage from the sultanate period along with Hindu and Jain temples of later periods.

27. RED FORT COMPLEX, NEW DELHI
Known for its red sandstone architecture, every pavilion reflects a fusion of Persian, Timurid and Hindu traditions.

28. JANTAR MANTAR, JAIPUR, RAJASTHAN
An astronomical observation site built in the early 18th century, it includes a set of some 20 main fixed instruments.

29. WESTERN GHATS, KERALA, TAMIL NADU, KARNATAKA, GOA, MAHARASHTRA, AND GUJARAT
Recognised as one of the world's 8 'hottest hotspots' of biological diversity, the mountain chain represents a unique ecology.

30. HILL FORTS OF RAJASTHAN, RAJASTHAN
The serial site includes 6 majestic forts in Chittorgarh, Kumbhalgarh, Sawai Madhopur, Jhalawar, Jaipur and Jaisalmer.

37. VICTORIAN GOTHIC AND ART DECO ENSEMBLES OF MUMBAI, MAHARASHTRA
The 19th-century Victorian ensemble & 20th-century Art Deco include Indian elements suited to the climate.

38. JAIPUR CITY, RAJASTHAN
Also known as the Pink City, it consists of several palaces, temples, and forts, and is known for its indigenous city planning.

39. DHOLAVIRA: A HARAPPAN CITY, GUJARAT
It is the larger of the 2 most remarkable excavations of the Indus Valley Civilization, dating back to 3000-1500 BCE.

40. KAKATIYA RUDRESHWARA (RAMAPPA) TEMPLE, TELANGANA
Consists of a Shiva temple built during Kakatiyan period, known for lightweight porous bricks.

Source: whc.unesco.org | Compiled by Prathiksha Lakshmi Kanth

UNESCO for their outstanding universal value. These sites include ancient ruins, historical monuments, natural landscapes, and cultural practices.

- World Heritage Sites are important because they provide a unique insight into the history and culture of a country or region. They are often popular tourist destinations and can help to boost the local economy. However, they should be protected and preserved to ensure their continued existence for future generations.

➤ **Preservation of World Heritage Sites**

- The preservation of World Heritage Sites is essential to ensure that they continue to provide insights into our past and cultural heritage. This can be achieved through a variety of measures, such as:
- Conservation and restoration of buildings and structures: This involves repairing and maintaining historical buildings and structures to ensure their longevity.
- Protection and management of natural sites: This involves managing natural sites such as national parks to ensure that they remain intact and free from human disturbance.
- Education and awareness-raising: This involves educating people about the significance of cultural heritage and the need to protect it.
- Funding and support: This involves providing financial support and resources to ensure that cultural heritage sites are properly maintained and preserved.

2. **National Health Claims Exchange (HCX)**

➤ **CONTEXT: National Health Authority (NHA) invites participation on the 'National Health Claims Exchange (HCX)-Sandbox' under Ayushman Bharat Digital Mission (ABDM)**

- National Health Authority has been collaborating with insurance regulator Insurance Regulatory and Development Authority of India (Irdai) for developing the Health Claims Exchange.
- NHA announced HCX as a new initiative under the Ayushman Bharat Digital Mission (ABDM)
- National Health Authority will start using the exchange for processing claims under Pradhan Mantri Jan Arogya Yojana. Thereafter the exchange will be open for insurance players, hospitals and software vendors, among others.

➤ **Need for HCX:**

- The current health insurance claims settlement process in the country is mostly manual, non-digital and laborious in nature posing challenges at every stage.
- The current process of exchanging claims lacks standardization leading to high cost of processing each claim.
- To tackle these key challenges and streamline the process of claim settlement, NHA has developed HCX to enable interoperability of health claims.

➤ **What is it and how it will operate?**

- The HCX serves as a protocol for exchanging claims-related information among various actors, including payers, providers, beneficiaries, regulators, and observers.
- It is designed to be interoperable, machine-readable, auditable, and verifiable which helps ensure that the information being exchanged is accurate and trustworthy.

- HCX will act as a gateway (with validation and routing capabilities) for the ecosystem.

- There are two sides to Health Claims Exchange:

- ✓ One is the provider side, which are basically hospitals who provide services.

- ✓ Another is the payer side, which are insurance companies and state government, who do the payments

- Benefits:

- ✓ Health Claims Exchange will transform the way health insurance claims are processed as the digital platform will reduce cost and waiting time for processing a claim

- ✓ The HCX envisions to standardize the claims process by creating a transparent and rule-based platform that will enable faster claim processing and better patient experience.

➤ **The National Health Authority**

- The National Health Authority (NHA) has been constituted as an autonomous entity under the Society Registration Act, 1860 for effective implementation of PM-JAY in alliance with state governments.

- The State Health Agency (SHA) is the apex body of the State Government responsible for the implementation of AB PM-JAY in the State.

➤ **Pradhan Mantri Jan Arogya Yojana**

- The Pradhan Mantri Jan Arogya Yojana (PM-JAY) popularly known as Ayushman Bharat was launched in 2018.

- It aims to secure the lives of 50 crore individuals that comprises of 10.74 cr poor families including both rural and urban areas with a defined benefit cover of Rs 5 lakh per family.

- The scheme covers over nearly 40% of the population targeted towards poorest and the vulnerable.

➤ **Ayushman Bharat Digital Mission**

- The mission will create a seamless online platform through the provision of a wide-range of data, information and infrastructure services, duly leveraging open, interoperable, standards-based digital systems.

- It will enable access and exchange of longitudinal health records of citizens with their consent.

- Key components of Ayushman Bharat Digital Mission

- ✓ Health ID for every citizen that will also work as their health account, to which personal health records can be linked and viewed with the help of a mobile application.

- Healthcare Professionals Registry (HPR) and Healthcare Facilities Registries (HFR) that will act as a repository of all healthcare providers across both modern and traditional systems of medicine

3. Namami Gange Programme

- **CONTEXT: The 48th meeting of the Executive Committee of the National Mission for Clean Ganga (NMCG) was held recently and eight projects worth around Rs. 638 crore were approved in the meeting.**

➤ **About**

- It is an Integrated Conservation Mission, approved as a 'Flagship Programme' by the Union Government in June 2014 with a budget outlay of Rs.20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation, and rejuvenation of the National River Ganga.

- It is dynamic and evolving in nature to address the emerging needs and priorities for the rejuvenation of river Ganga & its tributaries.

- The main pillars of the Namami Gange Programme are

- ✓ Sewerage Treatment Infrastructure

- ✓ River-Front Development

- ✓ River-Surface Cleaning

- ✓ Bio-Diversity

- ✓ Afforestation

- ✓ Public Awareness

- ✓ Industrial Effluent Monitoring

✓ Ganga Gram

ANSWER WRITING

Q. A new trend has emerged in India where organised gangs which primarily used to carry out extortion activities are being used for drug trafficking and gun running. Discuss the security issues emanating from the terrorist-drug nexus.

According to the 2nd Administrative Reform Commission (ARC), narco-terrorism is the attempt by narcotics traffickers to influence the policies of the government through systematic threats or the use of violence. Narco-terrorism combines two criminal activities; drug trafficking and terrorist violence. Geographically, India is sandwiched between the golden crescent and the golden triangle and this has made it vulnerable to the trafficking of narcotics. In recent times, a new trend is emerging in India where organised gangs are getting hooked to terrorist networks and are being used for drug trafficking and gun running.

Security issues emanating from the terrorist-drug nexus:

- Pakistan-sponsored terrorism and drug trade: There have been several instances of narco seizure from militants in Kashmir. Lately, Pakistan seems to push especially heroin, to Kashmir directly through the Line of Control. The Pakistani Inter-Services Intelligence (ISI) agency and terrorist groups based in Pakistan and Afghanistan have aided and promoted the narcotics trade to fund anti-Indian activities.
- Increasing use of maritime routes for drug trafficking: According to a 2022 report by the Narcotics Control Bureau (NCB) drug trafficking through sea routes in the Arabian Sea and the Bay of Bengal accounts for about 70 per cent of the total illegal drugs smuggled into India. Investigations have indicated the connection of drug traffickers from across borders with terrorist organisations like Lashkar-e-Toiba and Hizbul Mujahideen.
- Challenges emanating from the use of dark nets and cryptocurrencies: Studies reveal that 62 per cent of the darknet is being used for illicit drug trafficking. Darknet markets are disrupting traditional drug markets because of their anonymity and low risks. Cryptocurrency payments and doorstep deliveries, through courier services, have made darknet transactions more attractive.
- Use of organised gangs by terrorists: Quick, and more money is attracting organised gangs to drug trafficking activities. However, these gangs are getting into the trap of ISI and Khalistani elements settled abroad, especially in Canada, Germany, the UK, USA.
- Challenges in the north-east: The north-eastern border also provides a secure channel for the movement of insurgents, narcotics trafficking and gunrunning. The Shan and Kachin provinces of Myanmar bordering China also pose challenges. These heroin and methamphetamine-producing areas have porous borders and are under the control of rebel groups, indirectly supported by the Chinese.
- International drug cartel and linkages to terrorism: India has also become a hot destination for cocaine, the supply of which is controlled by South American drug cartels. Recent investigations have revealed the connection of these cartels with NRIs based in Canada, Australia, Singapore, Hong Kong and several European countries along with local drug lords and gangsters in India, who have links with Khalistani terrorists and the ISI in Pakistan.

The terrorist-drug nexus is giving rise to new threats in the internal security domain for India. Measures such as international collaboration, creating awareness among the general public about drug abuse, deployment of anti-drone technology and preparing a comprehensive policy on narcotics can help in tackling the issue in the future.

MCQs

1. With reference to Jagadish Chandra Bose consider the following
 1. He for the first time demonstrated that plants have feelings.
 2. He invented the crescograph a device for measuring the growth of plants.
 3. He was responsible for the expansion of experimental science in India.
 Which of the above statement/s is/are correct?
 - a) 1 and 2 only
 - b) 2 and 3 only
 - c) 1 and 3 only
 - d) 1,2 and 3**
2. Consider the following statements with regards to Pradhan Mantri Jan Arogya Yojana (PMJAY)
 1. The scheme was launched to achieve the vision of Universal Health Coverage (UHC).
 2. It is a Centrally Sponsored Scheme.
 3. It subsumed the scheme Rashtriya Swasthya Bima Yojana (RSBY) under it.
 4. There are no restrictions on the number of family members, age, or gender.
 Choose the correct statement/s using the codes given below
 - a) 1 and 4 only
 - b) 2 and 4 only
 - c) 2 and 3 only

- d) **1,2,3 and 4**
3. With reference to World Heritage Day 2023 consider the following
1. The day was established by the UNESCO in 1982 during conference in Tunisia and was later approved by International Council on Monuments and Sites (ICOMOS) in 1983.
 2. The theme for 2023 is "Heritage for Generations"
- Which of the above statement above given is/are correct?
- a) 1 only
 - b) 2 only
 - c) Both 1 and 2
 - d) **Neither 1 nor 2**
4. The term "Wheat Blast" often mentioned in news is related to which of the following?
- a) Bumper Wheat production in South America
 - b) **Wheat Disease**
 - c) Low Wheat production in Northwestern Part of India due to March rain
 - d) Deficient Wheat export from Ukraine due to war
5. River Hindon often mentioned in news is a tributary of which of the following river?
- a) Ganga
 - b) **Yamuna**
 - c) Son
 - d) Mahanadi
6. With reference to the 'Namami Gange Programme', consider the following statements:
1. It is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014.
 2. It aims to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.
 3. The United Nations has recognised the Namami Gange initiative as one of the top 10 World Restoration Flagships to revive the natural world.
- 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**
7. Which of the following Ministry recently launched 'Sangathan Se Samridhi' campaign?
- a) **Ministry of Rural Development**
 - b) Ministry of Corporate Affairs
 - c) Ministry of micro Small Medium Enterprises
 - d) Ministry of Environment and Climate Change
8. Bihu dance, recently seen in news, is an indigenous folk dance of which of the following Indian state?
- a) Tripura
 - b) **Assam**
 - c) Meghalaya
 - d) Nagaland
9. TeLEOS-2 satellite often mentioned in news is belongs to which country?
- a) Myanmar
 - b) **Singapore**
 - c) India
 - d) UAE
10. Which of the following statement is correct about the term "Killer Electron"?
1. The electrons trapped in Earth's outer radiation belt that can damage or "kill" satellites
 2. Killer electrons have been blamed for many spacecraft failures.
 3. Recently scientists developed a shield called "Halloween shield" which prevent Killer electrons penetrate into and accumulation inside the satellite.
- Which of the above statement/s is/are correct?
- a) **1 and 2 only**
 - b) 2 and 3 only
 - c) 1 and 3 only
 - d) 1,2 and 3