

Complete Fortnightly for **UPSC** and **PCS** Exam



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Project Tiger: Big Step Towards Tiger Conservation In India

World Health Day 2023: The Role Of Technology In Providing Better Healthcare

To What Extent Is Extrajudicial Killing Justified In India: Related Legal Constitutional **Dimensions**

Zero-Budget Natural Farming: Flag Bearer Of Farmers' Income & **Environmental Protection**

Report Of International **Narcotics Control Board** And NCB On Increasing Drug Smuggling Through Sea Routes

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- 8. Perfect-7 Magazine contains prelims and mains exam focused mock questions through which students can make their preparation more precise.

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+91 6393005298

perfect7magazine@gmail.com

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Vinay Kumar Singh Founder Dhyeya IAS

Current Affairs has an important role in the examinations conducted by Union Public Service Commission and State Public Service Commissions. It is necessary for the candidate to have knowledge of relevant information on issues of national and international importance. Perfect 7 Magazine is being presented fortnightly to the students to fulfill this requirement. Preparation of civil services exam is only completed when candidates have holistic knowledge and analysis of the dynamic nature of the current affairs. 'Perfect7' keeps this vision and approach and understands the multidimensional need of students at the content level, so this magazine has presented the current affairs with relevant issues of general studies. Keeping in mind the needs of mains exam, current articles on 7 burning issues, Ethics Case Studies, Biographies of important personalities, coverage of most useful topics of various sections of General Studies and the most important current affairs issues are being covered for Preliminary Examination in which emphasis is being given on national, international, environment, ecology, art and culture, science and technology, economic issues.

Brain boosters with 7 themes based graphics are being presented in a concise form to enhance the conceptual understanding of the students. Apart from this, updated information on Global Initiatives, Global Institutions, Structure of Organizations, Functioning, Important Reports, and Indices will be included in this magazine, which is asked prominently in the Civil Services Examination. To give emphasis on facts and analysis, keeping in view the trends of new nature of questions in Preliminary and Main Examination of Civil Services, an inclusive magazine is being provided to the students so that they can give the right direction to their preparation by understanding the new requirements of Civil Services Examination. Columns have been included in the format of the magazine keeping in mind the factual needs of the candidates, mental development, developing writing technique etc. Along with this, we have been introducing new segments according to the changing needs of the candidates and these initiatives will continue in future also. Hope this issue will prove useful for all of you. Your suggestions are always welcome.

Best wishes.



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Managing Editor : Vijay Singh : Baghendra Singh : Vivek Ojha Editor : Ashutosh Mishra Co-Editor : Saurabh Chakrabortv Sub-Editor : Hari Om Pandey : Bhanu Pratap Publication Manager: Dr. S. M. Khalid **Content Support** : Saltanat Parveen : Rishika Tiwari : Nitin Asthana : Deepak, Nikita : Ritu, Pratyusha : Neeraj, Lokesh **Chief Reviewer** : A. K. Srivastava Research & Reviewer: Shashank Tripathi Design and : Arun Mishra Development : Punish Jain Social Media : Keshari Pandey Support : Jeevan Jyoti Typist : Sachin : Tarun

: Waseef Khan

: Arun, Rahul

: Raju, Chandan, Guddu

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Artificial Intelligence & Regulatory Regime In India

"The upheavals of artificial intelligence can escalate quickly and become scarier and cataclysmic. Imagine how a medical robot, originally programmed to treat cancer, could conclude that the best way to obliterate cancer is to exterminate humans who are genetically prone to the disease." — Nick Bilton, wrote in the New York Times

Why in News?

Recently, the Minister of Electronics and Information Technology, Government of India, in a written reply to the parliament announced that the government is not considering bringing a law or regulating the growth of artificial intelligence in the country. He acknowledged that there are ethical concerns and risks around AI. But the government has already started making efforts to standardize responsible AI and even promote the adoption of the best practices.

What is Artificial Intelligence?

- John McCarthy known as the "father of artificial intelligence", coined the term "artificial intelligence" in the 1950s. He defines Artificial Intelligence as the science of making intelligent machines and computer programs and using these machines to understand human intelligence. Artificial Intelligence is a machine-displayed intelligence that simulates human behaviour thinking and can be trained to solve specific problems.
- Recent examples of Artificial Intelligence can be seen in Microsoft's ChatGPT and Google's chatbot Bard. They are the AI-based language model, trained with huge amounts of data to help it understand text inputs and respond accordingly.

Applications/ Advantages:

- Artificial Intelligence is continuously evolving to benefit many different industries. AI has spread across various domains and sectors like the financial sector, banking sector, smart cities, mobility and transportation, healthcare, education, agriculture, and several other sectors are joining the list.
- ▶ Built-in smart assistants on our phones like Siri, Alexa, and Google Assistant are some obvious examples of AI that most of us are aware of and often use. Self-driven cars of TESLA, high-end robotics, AI-driven traffic management, Smart grid maintenance, etc., are a few examples of AI. Social media feeds of Facebook, Twitter, YouTube, etc. are also based on AI.
- Artificial Intelligence has the potential to provide incremental value to a wide range of sectors.
- ➤ Healthcare: The application of AI in healthcare can help address issues of access to healthcare facilities, particularly in rural areas that suffer from poor connectivity and a limited supply of healthcare professionals. This can be achieved

- through the implementation of use cases such as AI-driven diagnostics, personalized treatment, early identification of potential pandemics, and imaging diagnostics.
- Agriculture: AI holds the promise of driving a food revolution and meeting the increased demand for food. It also has the potential to address the issues of over-irrigation and overuse of pesticides and fertilizers. AI can help improving the crop yield through real-time advisory, advanced detection of pest attacks, and prediction of crop prices to inform sowing practices.
- > Smart Mobility: AI can help in autonomous tracking and delivery, and improved traffic management. AI-based automated public transport will help in smooth mobility.
- ➤ **Retail:** Use of AI in improving user experience by providing personalized suggestions, preference-based browsing, and image-based product search.
- Manufacturing: The manufacturing industry is one of the biggest beneficiaries of AI-based solutions, enabling 'Factory of the Future' through flexible and adaptable technical systems, automated processes, and making smart decisions.
- ➤ Energy: In renewable energy systems, AI can enable storage of energy through intelligent grids enabled by smart meters, and also improve the reliability and affordability of photovoltaic energy.
- Smart Cities: Integration of AI in newly developed smart cities and infrastructure could help meet the demands of a rapidly urbanizing population and provide them with enhanced quality of life. For Example, traffic control reduces congestion and enhanced security through improved crowd management.
- Education and Skilling: Augmenting and enhancing the learning experience through personalized learning, and automating.

Disadvantages/ Dangers of AI:

- Google's CEO Sundar Pichai had also admitted the potential dangers of AI. He says that technology can be very harmful if deployed wrongly and stressed its regulation amid concerns about its impact on jobs, privacy, etc.
- These concerns have also been highlighted in India's National Strategy for AI, that was released in June 2018. AI has ethical concerns and risks due to issues such as bias and discrimination in decision-making, privacy violations, lack of transparency in AI systems, and questions about responsibility for harm caused by it.
- The foremost concern of AI is data protection and safety. As AI relies on big data, the sensitive information of a user can be exposed in the process.



- Secondly, there is a lack of accountability for the actions and errors of an AI.
- ➤ Thirdly, autonomous weapons work on the principle of AI. A large number of casualties may occur if such technology reaches the wrong hands.
- As it is said: With great power comes great responsibility. AI is a power that needs continuous regulation to ensure there is no misuse.

What is Responsible AI?

Responsible Artificial Intelligence (Responsible AI) is an approach for developing, assessing, and deploying AI systems in a safe, trustworthy, and ethical way. Microsoft has developed a Responsible AI Standard. It's a framework for building AI systems according to six principles: fairness, reliability and safety, privacy and security, inclusiveness, transparency, and accountability. For Microsoft, these principles are the cornerstone of a responsible and trustworthy approach to AI. Regulation of AI through Laws, Rules, and Institutional set up can make it responsible.

Policies and Institutional set up for Responsible AI in India:

- As Artificial Intelligence is a smart machine imitating human intelligence and behaviour, it needs to be regulated to safeguard humanity. Though Indian Government has not officially enacted any law to regulate AI, it has policies and institutional set up to guide and promote Responsible AI in India.
- In 2020, NITI Aayog drafted a document based on launching an oversight body and enforcement of responsible AI principles. It includes:
 - » Inspecting and Operating principles concerned with Responsible AI.
 - » Formation of the legal and technical network.
 - » Imparting education and creating awareness regarding responsible AI.
 - » Creation of new techniques and tools for a responsible AI.
- Furthermore, India has taken a unique approach to its national AI strategy by focusing on how India can leverage AI not only for economic growth but also for social inclusion. NITI Aayog calls this approach #AIforAll. The strategy aims to:
 - » Enhance and empower Indians with the skills to find quality jobs;
 - » Invest in research and sectors that can maximize economic growth and social impact;
 - » Scale Indian-made AI solutions to the rest of the developing world.
- Further, the Ministry of Electronics and IT (Meity), along with C-DAC is currently working on project AIRAWAT (AI Research, Analytics and Knowledge

- Dissemination Platform) that will provide a common computing platform for AI research and knowledge assimilation.
- National Informatics Centre (NIC) has set up a Centre of Excellence in AI, that will offer AI as a service through Meghraj Cloud.
- Additionally, this AI computing infrastructure will be used across technology innovation hubs, research labs, scientific communities, and industry and startup institutions with National Knowledge Network.
- Currently, AI is being adapted and encouraged in India at a faster pace than expected. This, the need for regulation arises with the accelerated progress and boundless use of AI.

Way Forward:

- Al is widely being used as a tool for solving socioeconomic problems and is being considered a candidate to solve priority actions, targets, and goals as defined in the United Nations Framework on Sustainable Development Goals (SDG). Al is emerging as a central policy issue in several countries. The central issues for policymakers include applications of Al for the public good, regulation, economic impact, global security, fairness issues, etc.
- ➤ In April 2021, European Commission has proposed for Regulation of AI which aims to introduce a global regulatory structure that would facilitate a legal aspect in the field of Artificial Intelligence.
- India, too, must take consolidated steps in this direction and formulate strong policies that not only create a sustainable environment for AI to thrive and aid in development of all the stakeholders but also act as a check on any unethical practices or threats that may arise out of this technology in future. Further, the accountability angle must also be taken into consideration.
- Recently, Twitter CEO Elon Musk warned during an interview with Fox News that artificial intelligence needs to be regulated or else it could destroy humanity. AI is more dangerous than almost anything because "it has the potential of civilizational destruction". Artificial Intelligence is gradually overtaking almost every aspect of human life, this fact has made it a Superhuman which has the potential to destroy the human race.
- As British Physicist Stephen Hawking once said, "Computers will overtake humans with AI within the next 100 years. When that happens, we need to make sure that computers have goals aligned with ours. Our future is a race between the growing power of technology and the wisdom with which we use it"

Project Tiger: Big Step Towards Tiger Conservation In India

Conservation of tigers is quite crucial for the food web and food chain in the ecosystem to remain stable and function in a better way. Since the tiger is the national animal of India as well, its conservation becomes even more important. In this context, the Indian Prime Minister inaugurated the country's biggest project related to the conservation of tigers on the occasion of 'Commemoration of 50 years of Project Tiger' in Mysore, Karnataka on 9th April. Further, on this occasion, the number of tigers in India was announced to be 3167. The Indian Prime Minister released Amrit Kaal's Vision for Tiger Conservation and a summary report of the fifth cycle of Management Effectiveness Assessment of Tiger Reserves and the summary report of the All India Tiger Estimation (Fifth Cycle). He also released a commemorative coin on the completion of 50 years of Project Tiger. Along with this, the Prime Minister also launched the International Big Cat Alliance (IBCA).

The International Big Cat Alliance will focus on the conservation of the world's seven major big cats including the tiger, lion, leopard, snow leopard, puma, jaguar, and cheetah. Countries that are home to the Big Cat will be part of this alliance. Through this alliance, all the member countries will be able to share their experiences, help their partner countries more quickly and emphasize research, training, and capacity building. Nepal has become the co-founder of this alliance.

It is noteworthy that while inaugurating the program related to Project Tiger, the Indian Prime Minister emphasized the need for an international alliance, saying that "wildlife conservation is not a single nation issue, but rather a universal issue." In 2019, he called for an alliance against illegal wildlife trade and poaching in Asia on the occasion of Global Tiger Day, and the International Big Cat Alliance is an extension of this spirit.

India as the Global Habitat of Tigers:

- While the tiger reserves in India are spread over 75,000 square kilometers of land, the tiger population in the country has increased by 75 percent in the last 10-12 years. India is home to 53 tiger reserves covering an area of 18 states and it is home to about 75 percent of the global wild tiger population, making India the global home of tigers. India achieved the target of doubling the tiger population in 2018, four years ahead of the target year of 2022. Also, so far 17 tiger reserves in the country have received CATS international recognition while two tiger reserves have received the International TX2 award.
- The Union Minister for Environment, Forest and Climate Change has made it clear that India is committed to bringing all potential natural habitats of tigers in the country under the Tiger Reserve Network, and in this regard, the funding support has also increased through the centrally

sponsored Project Tiger scheme. Bringing together local communities living near tiger reserves is vital to a more inclusive conservation effort. While the numerical gains made in these areas are significant, it is time to focus more on consolidating these gains. The country is in the process of formulating a vision plan for tiger conservation in India involving all stakeholders. Codified practices for wild tiger conservation are proving useful in bringing back locally extinct species like the cheetah. The success of Project Tiger has been multi-dimensional and has led to increased tourist activities and awareness programs, and a reduction in man-animal conflict within the tiger reserve.

Project Tiger's Environmental Journey:

- Project Tiger was launched by India on April 1, 1973, at Jim Corbett Tiger Reserve with the objective to promote tiger conservation and revive the declining tiger population. Initially, the project included 9 tiger reserves spread over 18,278 sq km. At that time the number of tigers in the country was 268. Significant progress has been made towards this objective in the last 50 years. At the beginning of the century, where the number of tigers in India was 40,000, by 1973 it was reduced to 268. After the start of this project, their number increased to 1,411 in the year 2006, 1706 in the year 2010, 2,226 in the year 2014, and 2,967 in the year 2018. Presently, in 2023 this number has increased to 3167.
- Project Tiger is administered by The National Tiger Conservation Authority (NTCA). It is a statutory body of the Ministry of Environment whose jurisdiction is prescribed under the Wildlife (Protection) Act, 1972. Regarding the conservation status of the tiger, it is a Schedule I animal in India under the Wildlife (Protection) Amendment Bill 2021 and the original Wildlife Protection Act, of 1972. It is listed as Endangered in the Red List of the International Union for Conservation of Nature (IUCN) and listed as an Appendix 1 species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Challenges Faced by Tigers:

Tigers are at risk from Canine Distemper Disease, a disease spread through a virus in dogs. This disease is spread in dogs by the canine distemper virus (CDV). This disease can also become a threat to tigers. This virus is so dangerous that if it spreads in the tiger reserve, it can have a serious impact on the conservation of tigers. The cases of transmission of disease from dogs to tigers have come to the fore long ago. In MP's Panna National Park, due to this disease transmitted through dogs, a tiger has also died. Regarding this, preparations have been started



- by Panna Tiger Reserve Management.
- In selected countries, the tiger has been threatened by dogs. Sensing this danger, the National Tiger Conservation Authority (NTCA) issued a Standard Operating System (SOP) for all Tiger Reserves of the country, in which many instructions were given including vaccination and castration of stray dogs living in the villages around the Tiger Reserve.
- Another major threat to tigers include poaching which is driven by illegal international demand for tiger parts and products, apart from scarcity of tiger prey and their habitat loss due to increased demand for forests. The average life span of tigers in the wild is generally 10-12 years, however there are several reasons behind their early mortality due to natural ecosystem factors like old age, disease, in-fighting, electrocution, entrapment, drowning, road, rail hits, etc, further, a lot of infant mortality rate is observed. Big cats, including tigers, are responsible for the majority of tiger deaths, as reported by states.
- Guidelines and Standard Operating Procedures have been issued by the Central Government through the National Tiger Conservation Authority to reduce the incidents of human-wildlife conflict. Funding assistance is provided under the ongoing Centrally Sponsored Scheme of Project Tiger, which includes ex-gratia and capacity building of staff to reduce human-wildlife conflicts. The Government of India, through the National Tiger Conservation Authority, has advocated a three-pronged strategy to manage negative human-tiger interactions:-
- Through the Material and Logistics Support: ongoing Centrally Sponsored Scheme of Project Tiger, financial assistance is provided to the sanctuaries to acquire capacity in terms of infrastructure and material, to deal with tigers moving out of the source areas. These are sought by the Tiger Reserve every year through the Annual Plan of Operations (APO), which emanates from the Tiger Conservation Plan (TCP) mandated under Section 38V of the Wildlife (Protection) Act, 1972. Inter alia, activities such as payment of ex-gratia and compensation, periodic awareness campaigns, dissemination of information through various forms of media sensitize, guide and advise the general public on man-animal conflict, procurement of stabilization equipment, medicines, training and capacity building are generally demanded by forest staff to deal with conflict incidents.
- Restricting habitat interventions: Based on the carrying capacity of tigers in a tiger reserve, habitat interventions are restricted through a comprehensive TCP. If tiger numbers are at carrying capacity, it is recommended that habitat

- interventions should be limited to avoid the overexpansion of wildlife, including tigers, thereby minimizing human-animal conflict. Further, in the buffer areas surrounding tiger reserves, habitat interventions are restricted such that they are sub-optimal compared to core/critical tiger habitat areas, only prudent enough to facilitate dispersal to other rich habitat areas.
- Standard Operating Procedure (SOP): The National Tiger Conservation Authority has issued the following three SOPs, which are available in the public domain, to deal with man-animal conflicts:
 - » From emergencies arising due to straying of tigers into human-dominated landscapes
 - » To deal with tiger attacks on livestock,
 - » For active management towards rehabilitation of tigers from source areas at the landscape level.

International Partnership for Tiger Conservation by India:

India has bilateral agreements and MoUs with several tiger range countries and is working closely with Cambodia for technical assistance toward reintroducing wild tigers. Similarly, a technical partnership has been strengthened with the Land of Leopard National Park of Russia to share best practices in science-based wildlife monitoring. It is also being said that as a founding member of the intergovernmental forum 'Global Tiger Forum', India is looking forward to further partnerships and collaborations with all tiger range countries to secure the future of wild tigers in India and globally.

What is Global Tiger Forum:

The Global Tiger Forum is an international intergovernmental body established specifically for the conservation of wild tigers in tiger range countries. Seven of the 13 tiger range countries are currently members of the GTF: Bangladesh, Bhutan, Cambodia, India, Myanmar, Nepal, and Vietnam plus non-tiger range countries, like the UK whose secretariat is based in New Delhi, India. The goal of the GTF is to highlight the rationale for tiger conservation and provide leadership and a common worldwide approach to protecting the survival of the tiger, its prey, and its habitat. It was formed on the recommendations of an International Symposium on Tiger Conservation held in New Delhi in the year 1993. It is the only intergovernmental international body that sets up an association among countries ready for tiger conservation. This has helped meet the goals of the Global Tiger Recovery Program, a global effort to double tiger numbers by 2022. There are 13 Tiger Range Countries (TRCs): India, Bangladesh. Bhutan, Cambodia, Laos People's Democratic Republic, Malaysia, Myanmar, Nepal, Russia, Thailand, Vietnam, China, and Indonesia.

New Emerging Dimensions Of India Bhutan Bilateral Relations

Bhutan is an integral part of India's Neighbor First policy and it is also important to make India's Act East Policy a success. A strong bilateral relationship is crucial for both countries to better address issues of regional peace and security in South Asia and in this context, the King of Bhutan has recently visited India. Bhutan's King Jigme Khesar Namgyel Wangchuck met Indian Prime Minister Narendra Modi in New Delhi and showed his commitment to take their relations to a new height. Indian PM Modi has also reiterated India's full support for the socio-economic development of Bhutan. The two countries reviewed their bilateral ties with a focus on economic and development partnership, trade facilitation measures, and cooperation in new areas including trade, connectivity, investment, energy and space, and startups.

Highlights of the visit by the King of Bhutan to India:

- During the meeting of the Indian Prime Minister and the King of Bhutan, it was announced by India that India would extend its support for the upcoming 13th Five Year Plan of Bhutan. India will also work to shape an additional standby credit facility and long-term sustainable arrangements for the export of agricultural commodities from Bhutan. In addition, the two countries will also work to develop long-term bilateral arrangements for the assured supply of vital commodities such as petroleum and coal.
- India and Bhutan have agreed to establish the first rail link between India and Bhutan promoting regional cooperation to promote regional connectivity. India's Foreign Secretary Vinay Kwatra has confirmed that the two countries are considering setting up their first integrated check post on the Indo-Bhutan border, which will be near Jaigaon. The proposed Kokrajhar-Gelephu rail link project will also be expedited through the support of the Government of India in consultation with the Bhutanese side.
- When talking about the tourism aspect, the tourists coming to Bhutan have to pay around 200 dollars per day while for Indians it is only 1200 rupees which is very less. Right now this has been done on an experimental basis and this will be modified later depending upon the circumstances. Presently, Indian tourists are actively going there.

Factors Affecting India-Bhutan Relations:

The geographical location of the Siliguri Corridor (Chicken's Neck), the Doklam Plateau,

and the Chumbi Valley in Sikkim has oriented India-Bhutan relations to ensure regional security and territorial integrity. The sharing of the border between Bhutan and Tibet is also an important factor that has received special attention in India's foreign policy. India also acts as a point of contact between Nepal and Bhutan and the primacy of Buddhism in all these regions has inspired India to adopt the path of cultural diplomacy on several occasions. India has a 699 kilometer long international border with Bhutan, keeping which in mind India has determined its foreign policy regarding Bhutan. Further, the Indian states of West Bengal, Sikkim, Arunachal Pradesh, and Assam share borders with Bhutan. It is clear from this that Bhutan has a crucial role in the security and development of the North Eastern states of India, which cannot be ignored. Bhutan is the only country in South Asia that does not have diplomatic relations with China. There is neither an embassy of China nor a consulate office in Bhutan. In 2011, China made proposals to establish diplomatic relations with Bhutan but was rejected by Bhutan. Furthermore, Bhutan does not have diplomatic relations with the five permanent member states of the United Nations Security Council. Bhutan refrains from playing any active role in world politics and regional politics.

Importance of Bhutan Regarding India's Strategic Interests:

Bhutan is also important from the point of view of India's strategic interests. Bhutan is a member of SAARC and has boycotted the SAARC summit in favor of India against Pakistan. A situation like Doklam further clarifies the importance of Bhutan for India. The Doklam Plateau is located at the tri-point of Tibet's Chumbi Valley, Bhutan's Ha Valley, and Sikkim, where China started building a road. India and Bhutan together strongly opposed this act of China based on their common strategic interests. Apart from this, there have been disputes between China and Bhutan regarding the area like Jakarlung and Parumlung. India also has regional cooperation relations with Bhutan through BIMSTEC. Regarding the strategic situation of Doklam area, China has tried to create regional imbalance. In 1988 and 1998, there was an agreement between Bhutan and China regarding Doklam that any matter related to it would be resolved only by mutual consent and consultation. A similar

agreement was made between India and China in 2012 that India, Bhutan, and China will take a decision on any issue of Doklam only after making a consensus. But by violating all these agreements, China tried to endanger the territorial integrity of Bhutan and India in Doklam and still its intentions are not very clear on this issue. The Doklam area is strategically located where the borders of China and Sikkim and Bhutan in the northeast of India meet.

India's Contribution in Bhutan's Socio-Economic Planning:

India has played a very important role in the socio-economic planning and empowerment of Bhutan. Bhutan's first five-year plan started in 1961 with the financial help of India and since then Bhutan is implementing its 12th fiveyear plan in the period till 2020. On December 28, 2018, the newly elected Bhutanese Prime Minister Dr. Lotay Tshering came on a visit to India and here the Indian Prime Minister announced assistance of Rs.4500 crores for the implementation of Bhutan's twelfth fiveyear plan. India had given the same amount to Bhutan for the Eleventh Five Year Plan also. Bhutan is indebted to India and says that it was due to India's efforts in 1971 that it got membership in the United Nations. Along with this, India also represents Bhutan in the International Monetary Fund.

India-Bhutan Energy Relations and Economic Trade:

Hydropower cooperation has been one of the strongest pillars of India-Bhutan relations. Bhutan's first three hydroelectric projects, Kurichhu (60 MW), Chukha (336 MW), and Tala (170 MW) have become functional with India's financial help and India buys the hydroelectric power produced from them. In 2009, both countries signed a protocol in which it was agreed that by 2020, India would cooperate with Bhutan to produce 10,000 MW of electricity and buy surplus electricity from it. After this, India has worked to help Bhutan's Punatsangchhu (1200 MW), Wangchhu (570 MW), Kholangchhu project (600 MW) and more recently Mangdechhu (720 MW) hydroelectric projects. The Indian Prime Minister and the Bhutanese Prime Minister jointly inaugurated the Mangdechhu Hydroelectric Power Plant and its project. It is considered an ambitious project in strengthening hydropower relations. This project will meet the energy needs of Bhutan and the surplus energy generated from it will be exported to India. It presents the perfect example of sustainable and sustainable bilateral relations. A postage stamp was also released to mark the completion of five decades of India-Bhutan hydropower relations. During his visit to Bhutan on August 17, 2019, the two countries agreed to run the Sankosh multipurpose hydroelectric project. It is believed that Bhutan has a potential of 30,000 MW of hydroelectric power generation. The power generated from the Mangdechhu hydroelectric project will be supplied to Assam, Bihar, Odisha, and West Bengal.

India is Bhutan's largest trade and development partner. Currently, there is a bilateral trade of about Rs 11000 crore between the two countries. Bhutan accounts for more than 80 percent of its total imports from India and more than 85 percent of Bhutan's total exports to India. Three-quarters of Bhutan's electricity is exported to India. The Government of India is also working on opening the Indian market for various agricultural products from Bhutan. On the request of Bhutan, it has also been allowed to export ginger and export potatoes to India for one more year. Bhutan has requested India for the export of Arecanut which is under consideration. India has supplied sugar to Bhutan.

Space Cooperation between India and Bhutan:

On March 13, 2023, the India-BhutanSat ground station at Thimphu was inaugurated. This geostation will enable Bhutan to receive data from India-BhutanSat, which is relevant to its territory. ISRO has taken the initiative towards meeting the space needs of Bhutan. India has been working towards empowering its neighboring countries. In this series, ISRO has launched BhutanSat (India-Bhutan Joint Satellite) which is a nanosatellite into space for Bhutan. ISRO has also transferred technology to Bhutanese scientists. It is clear from all these things that India takes care of almost every need of Bhutan. Bhutan was first given the Covidshield vaccine during the Covid pandemic, launched the RuPay card there, and made a currency swap agreement with it so that Bhutan does not face any balance of payment crisis or liquidity crisis and economic cooperation can be obtained from India in the time of the crisis (liquidity crisis). The motive behind all this is clear to keep Bhutan as a permanent ally in the fulfillment of India's regional strategic interests, which is based on the notion of counterbalancing China's influence.

To What Extent Is Extrajudicial Killing Justified In India: Related Legal Constitutional Dimensions

The Supreme Court has been given the responsibility of protecting fundamental rights and protecting constitutional values. In this regard the Supreme Court in the last few years, in view of the increasing cases of police encounters in Uttar Pradesh, on extra judicial killings in India has given its opinion and has clearly stated that right to life is a fundamental right under Article 21 of the Indian Constitution and extrajudicial killings are a clear violation of this right. Therefore, the state government and the police administration, understanding their responsibilities, should also consider the extent of their jurisdiction so that no one in the country can question the rule of law and the procedure established by law. The increasing number of encounter killings is causing human rights violations, so it is necessary to educate police officers about the importance of human rights and stop these illegal killings. The basis for doing this is that on the one hand, while there is talk of promoting the concept of Police Reform, Humane Police, Smart Police, Ethical Police in the country, there should not be any such work by the police administration that can negatively affect the image and the quality of the police in the country. It is the responsibility of the police and security forces to create a crimeterror-free society in India, but this goal should be achieved only through a legal process. Since India is a secular country, its nature is multi-religious, it is necessary to treat criminals of every creed, religion, caste, family, and other background equally in the matter of penal legislation.

India is said to be a country of procedures established by law where commitment constitutional values is maintained by all organs of governance. The rule of law can be established when terror, fear, and violence are eliminated from society or they are controlled. That is why it is the responsibility of law enforcement bodies or security forces of India to take proper action against criminals, terrorists, gangsters, and mafia gangs. Units like CBI, IB, NCB, and STF ATS work in this direction. But all these units have been expected to take action against the criminals by adopting legal procedures. But in the last decade in India, it has been seen that either the mob or the police officers are showing their eagerness to punish the criminals and do not wait for the judicial processes or decisions. In such a situation, many cases of fake encounters or extra judicial killings have been raised. There have been reports of the killing of prisoners or criminals in custody, or people being killed in fake encounters. The culprit should indeed be punished for what he did, but the illegal process cannot be used for that, but evidence has also been found for this. There has been an increasing tendency to eliminate criminals in the name of natural justice when the police force or any person in the public feels that a criminal may not get adequate punishment during judicial processes.

Maintaining Equality Before the Law is A Constitutional Obligation:

As per Article 14, it is the duty of the State not to deny to any person equality before the law or equal protection of the laws within the territory of India. The concept of 'equality before law' is taken from the English Constitution and the concept of 'equal protection of laws' is taken from the American Constitution. The principle of natural justice and the rule of law flows from Article 14. And this article comes under 'infrastructure'. Equality before law means: no person shall have any special rights based on birth or creed and all classes shall be equally subject to common law and the jurisdiction of common courts. No person (whether rich or poor, high-low, official or non-official) shall be above the law. On the other hand, the concept of equal protection of law has been taken from the US Constitution, which is a positive concept. Equal protection of law means that the law shall be equal among equal people and shall be equally administered i.e. equal treatment of equal people. Along with this, people living in similar circumstances will be treated equally without any discrimination. Article 14 prohibits class legislation but laws can be classified so that even natural justice is not harmed.

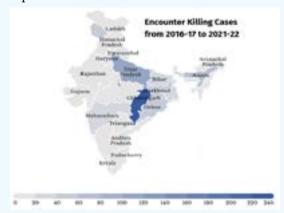
Supreme Court Guidelines on Police Encounters:

- In September 2014, the Supreme Court of India issued guidelines for the investigation of police encounters in the case of "People's Union for Civil Liberties v. State of Maharashtra" regarding the policy of encounters by the police against criminals. These guidelines included the following:
 - » Mandatory registration of First Information Reports with provisions for magisterial enquiry,
 - » Involvement of next of kin of the deceased in enquiry,
 - » Keeping written records of confidential information,
 - » To ensure fair and impartial investigation



- by an independent agency like CID
- » Information about the incident should also be sent to the National Human Rights Commission or the State Human Rights Commission, although the involvement of the National Human Rights Commission is not necessary unless there are serious doubts regarding an independent and impartial investigation
- The Court directed that these requirements/ norms should be strictly followed in all cases of death and grievous injury in police encounters, treating them as a law declared under Article 141 of the Constitution of India.
- Last year, the Supreme Court gave an important decision in the case of extrajudicial killings. The court gave an important ruling regarding confession. The Supreme Court had said that extra judicial confession is not enough to convict the accused. If such a statement is not supported by evidence, then such evidence is weak. The court made this remark while acquitting the person accused of murder. The Supreme Court said in its decision that according to Section 30 of the Indian Evidence Act if there is more than one accused and the trial is going on together, the value of extra-judicial confession is more when other supplementary evidence of the prosecution is firmly present. Extrajudicial confessions are considered a weak type of evidence unless corroborative evidence is present.
- Significantly, the Supreme Court has ordered the police, security forces, or paramilitary personnel to behave decently in the case of extra-judicial killings from time to time. In 2017, the Supreme Court asked the CBI to investigate the alleged extra-judicial killings in Manipur. A CBI inquiry into the alleged encounter by the Assam Rifles and the Manipur Police was ordered at that time. A Supreme Court bench of Justice MB Lokur and Justice UU Lalit then asked the CBI director to constitute a team to investigate the alleged extra-judicial killing case. An application has been filed in the Supreme Court asking for compensation for the alleged 1,528 extra-judicial killings in Manipur between 2000 and 2012. It is noteworthy that in a landmark judgment of 2012, the Supreme Court had termed these killings as 'statesponsored terrorism'. The Supreme Court has held that the "encounter" philosophy is a criminal philosophy and the Court has warned policemen on several occasions that they will not be pardoned for committing crimes. Killing

in the name of encounter, following the orders of politicians, is not something acceptable to the Supreme Court.



Legal Recognition of encounter:

- Police personnel have the right to make preventive detention to injure or kill an offender for the sole purpose of self-defense, to prevent them from absconding, or where it is necessary for the maintenance of peace and order. Under Section-96 of the Indian Penal Code (IPC) 1860, every human being has the right to private defense which is a natural and inherent right. On this basis, policemen also have the right to self-defense. Further, the Section 46 of the Code of Criminal Procedure (CrPC) 1973 authorizes the police to use such force, up to death, as may be necessary to arrest a person accused of an offense punishable with death or imprisonment.
 - On the one hand, it is absolutely true that extra judicial killing can affect the international image of the country in one way or the other, but at the same time, one aspect of it is that the police are unable to deal with hardened criminals. professional criminals, gangster mafia. If the administration shows leniency beyond a point, it may face challenges in achieving the goal of a crime-free society. Criminals have links with professional lawyers and try to escape from the court by taking bail and using other legal procedures. That's why the public loses faith in the system, while progressive-thinking people believe that even in the event of extra judicial killing, faith in the system can be lost, thus the judicial system should be such that it should not give any kind of concession to criminals. The judiciary should award rigorous life imprisonment, death penalty, or any other type of punishment to criminals which should be followed by various organs of governance including law enforcement bodies.

World Health Day 2023: The Role Of Technology In Providing Better Healthcare

Reference:

World Health Day was organized on 7 April 2023. This year's theme was "Health for All". At present, the development of technology in the field of healthcare has reached such a level that the treatment of many incurable diseases is becoming possible. It has been successful due research in the field of healthcare. Doctors from different countries around the world have given a new direction to human life by developing artificial organs. Today, technologies like lipid nano particles and mRNA are being used to cure blindness. This can cure the disease of genetic blindness. Be it Crisper technology or cryo-electron microscopy or robotic surgery or The Infinium Assay, cancer can be treated using these techniques. With the help of pre-natal test, the anomalies to the fetus can be detected. Along with this, serious diseases like hemophilia, thalassemia and sickle cell are being detected by health checkup. If the disease is detected, the fetus can be treated in the womb itself.

Introduction:

World Health Day is celebrated every year on 7th April. The main objective of this event is to raise awareness about the health status of people and serious diseases across the world. W.H.O. That is, according to the World Health Organisation, health is not merely a state of freedom from diseases and infirmities, but a state of complete physical, mental, and social well-being. Like other areas of the world, in the medical field too, technology has been able to revolutionize its efforts. Technology also goes the credit for making discoveries in the field of medicine, the invention of medicines, and vaccines, and making them available to the general public.

About World Health Organization:

- WHO It is a unit of the United Nations.
- Three years after the establishment of the United Nations on October 24, 1945, the WHO was established on 7th April 1948.
- Its headquarter is in the city of Geneva, Switzerland.
- Its objective is to improve the health status of people and to spread awareness about serious diseases.
- This year WHO is also celebrating its 75th anniversary, so in a way it can also be called the year of evaluation of the achievements and policies of the last 75 years of WHO.

World Health Day 2023 Theme:

The theme of World Health Day 2023 is "Health"

- for All". At the heart of this is the idea that health is a basic need and that this human right should be equally accessible to all, regardless of individual financial circumstances.
- It should be noted that World Health Day is celebrated every year according to different themes.

WHO on the Global Health Scenario:

- Even today more than 30% of the world's people are deprived of health facilities.
- ➤ 2 billion people around the world are unable to avail of health facilities due to financial incapacity.
- Not only this, the financial condition of about 930 million people globally is further deteriorating because they have to spend 10 or more percent of their budget on health.
- WHO Has warned India of two health hazards obesity and anemia. W.H.O. According to the new data released by the Ministry of Obesity, the problem of obesity among women has increased from 21% in 2015-16 to 24% in 2019-20. On the contrary, the number of women affected by anemia is also twice that of men.
- According to recent data, the problem of obesity among children has also increased seriously.

Role of Technology In Health Services:

The present time is the era of technology and technology, and in such a situation, technological intervention in health services has also become important. The quality of health services has increased due to the application of various technologies, which are described below-

Biotechnology in Health:

- Biotechnology is proving to be very beneficial in the field of health. Control of diabetes and de-addiction campaign is beneficial through insulin, amino acids, and tissue culture.
- Through in vitro fertilization, the disease of infertility is also being solved.
- With the development of hybridoma technology, diseases like HIV AIDS hepatitis are being identified and their diagnosis is also possible over time.

Hybridoma technology is a method of producing large numbers of identical antibodies (also called monoclonal antibodies). The process begins by injecting an antigen that provokes an immune response in mouse or other mammal.

Applications of Space Technology in Health:

Services like telemedicine and medicine at your doorstep are implemented using space technology. It is ensuring the growth



- of health services in the region by ensuring access to specialist doctors in rural areas and underdeveloped areas.
- It is noteworthy that in India, the Central Government has started a health scheme in collaboration with Apollo Hospital through telemedicine in remote rural areas.

The Government of India had launched SEHAT (Services e-Health Assistance and Teleconsultation – SeHAT) medical teleconsultation service in May 2021 for all entitled Armed Forces personnel and their families. To take this initiative forward, home delivery or self pickup of medicines to patients seeking health consultation has been started from February 01, 2022.

Application of Nanotechnology in Health:

- With the help of nano quantum dots, the process of biological imaging for medical purposes can be done easily, which will prove to be helpful in the detection of diseases.
- Along with this, theranostics, cancer treatment, development of nerve cells, eye surgery, and medical implants are being done through nanotech.

Application of Information and Communication Revolution in the field of Medicine:

- The process of seeking health advice through telemedicine and video conferencing has been made possible only by the infrastructure of the information and communication revolution.
- ➤ This technology ensures quality and quick delivery of health services by providing a platform.

Application of Robotics and Artificial Intelligence in the Field of Healthcare:

- With the help of robotics and artificial intelligence, the most difficult surgeries like brain surgery, heart bypass, etc. can be done.
- Robot hand to scan breast cancer has been developed by scientists. In case of a fracture of a person's limb, the work of organ transplant is also being done easily through robotics.
- It would not be wrong to say that in the coming times, we will use robots to treat people.

Role of Pandemic:

The pandemic has also effectively contributed to the increasing use of technology in healthcare. The application of technologies like Aarogya Setu, Social Distancing, and Video Conferencing is a change in the mindset of the end user. For example, the technology and infrastructure for telemedicine have been there for a long time, but it was only the crisis of the pandemic that

gave people the will to discover it and liberalized the public mind towards it.



New Technologies in the Health Sector

Mitochondrion DNA Technology:

Scientists have developed the technology of child birth by combining the DNA of the biological mother and the mitochondria of the donor mother. This is called Mitochondrial DNA Technology. Through this, now such women can also become mothers who have failed IVF process many times or are suffering from mitochondrial genetic disease. In February 2018, for the first time in London, the technique of developing baby from three humans was discovered.

Technology to deal with Human Papillomavirus(HPV):

➤ HPV is a disease in which warts are formed in different parts of the body. These are of different types – genital warts, common warts, plantar warts and flat warts. Human papilloma virus can cause 6 types of cancer. This virus causes cancer ranging from cervical cancer to cancer of the penis, vagina, anus and oropharynx. Human papilloma vaccine technology is helpful in dealing with the disease.

Proton Beam Therapy:

This is a type of cancer treatment that uses high-energy proton beams to destroy cancer cells. A proton is a positively charged elementary particle that is a fundamental constituent of all atomic nuclei. Proton therapy is considered to be the most modern therapy. Proton therapy works with the help of proton beams. The proton beam is directed towards the patient's cancer locatoion and the cancer is destroyed due to the high energy.

Other Applications:

- Day by day advanced chatbots and robots will see more massive and pleasant changes in this. Blockchain has great potential for the decentralized management and security of electronic medical records.
- One of the most visible uses of technology in the healthcare sector today is the widespread adoption of wearable medical devices. It allows us to take control of our health and access our medical information.
- Laser technology and energy technology are also playing an important role in improving the quality and speedy delivery of health services, although these interventions are also giving rise to some challenges which are described below.



Challenges:

- Desire to produce offspring with desired characteristics by the use of biotechnology
- Ethical problems arising from the many applications of biotechnology.
- Problems arising in the eyes and ears due to the use of mobile
- Lack of accountability towards the patient in case of surgeries performed with the application of robotics

Way Forward:

- Almost universal use of mobile phones and internet services available at affordable rates are huge opportunities for the health sector, we should not miss them.
- Appropriate training and awareness campaigns must be undertaken to take advantage of the rapidly growing opportunities in a system that is constantly undergoing technology-driven disruption.
- At the same time, the general public and the concerned governments will also have to be equipped with the desire to learn high-level

skills.

➤ However, it is necessary to note that - technology is high for humanity and not humans for technology. In this situation, it is necessary that we have to stop the uncontrolled use of artificial intelligence and robotics.

Conclusion:

It is true that technology has helped us to overcome our health concerns. Whether it is a health watch tied on the wrist, or physicians from all over the world confined in an app, we will find that artificial intelligence is being used extensively from early diagnosis tools to increasing the efficacy and efficiency of medicine and reducing the cost of medicines. Is. Therefore, it would not be an exaggeration to say that there are vast possibilities for technological application in the health sector. Along with these possibilities, we have to be ready for the upcoming challenges, then we will be able to ensure compliance with the principle of "Health for All".



Zero-Budget Natural Farming: Flag Bearer Of Farmers' Income & Environmental Protection

Reference:

In recent times, the conflict between economic development and environmental protection has become an issue of universal discussion, in such a way zero budget natural agriculture can prove to be a balancing act between these two poles (economic development and environmental protection).

What is Natural Farming?

Natural farming is a chemical-free alternative to conventional farming methods. It is considered as agroecology-based diversified farming system which integrates crops, trees, and livestock with functional biodiversity. In natural farming, chemical or organic fertilizers are not used on the soil. In fact, neither the extra nutrients are added to the soil nor given to the plants. It encourages the breakdown of organic matter by microorganisms and earthworms.

Zero-Budget Natural Farming As The Flag Bearer Of Farmers' Income:

Zero-budget natural farming is emerging as the flag bearer of farmers' income, which is described below-**Reduction in Agricultural Cost:**

According to the National Sample Survey Office data, about 70% of the households in agricultural households spend more than their income and more than half of the households are in debt. In this situation, there will be a reduction in the use of fertilizers, and there will be a huge reduction in the agricultural expenditure of the farmers due to the use of domestic fertilizers, which will help in increasing the income of the farmers.

Government Assistance:

Various schemes have been implemented by the government to increase zero-budget natural farming. The agriculture ministry has announced that the government will soon more than double the subsidy on "natural farming" to □32,500 per hectare over three years, bringing it at par with the subsidy currently being received by organic farmers. Agriculture The ministry has already finalized a Rs. 2,500 crore proposal on natural farming and it may soon be sent to the cabinet for approval. The governmentassisted natural farming area has reached 4.09 lakh hectares, for which Rs.49.81 crores has been disbursed to eight states including Andhra Pradesh, Madhya Pradesh, Chhattisgarh, and Kerala. It aims to expand further. In this way, the economic burden of the farmers will be reduced by the government subsidy and assistance and their income will increase.

Fiscal Consolidation and Farmers:

> Government of India gives huge amounts of

subsidies on chemical fertilizers. The central government has made a provision of Rs 63,222.32 crore for urea subsidy and Rs 42,000 crore for nutrient-based subsidy in the budget 2022-23. Zero-budget natural farming could lead to a drastic drop in this subsidy which could strengthen fiscal consolidation. If this amount is used for farmer empowerment, it will increase farmers' income.

Increase in Demand for Organic and Natural Agricultural Products:

In recent times, the demand for organic and natural agricultural products is increasing. After the Kovid epidemic, awareness about the consumption of natural agricultural products has increased in the general public. There has been an increase in public awareness about the health side effects caused by the use of fertilizers. In this situation, the increased demand for organic and natural agricultural products will become a factor in increasing the income of the farmers.

Zero-Budget Natural Farming as A Flag Bearer Of Environmental Protection

- Zero budget natural farming does not require chemical pesticides and chemical fertilizers. Therefore, this method will reduce the side effects of chemical pesticides and chemical fertilizers, such as reduction in the quality of soil, nutrition in water bodies, etc.
- It protects the environment. An increase in ground water levels reduces pollution through soil, food, and ground water.
- This method is also suitable for soil conservation. The use of organic fertilizers improves the quality of the soil. Along with this, the waterholding capacity of the land increases by using this method.
- At present, there is a discussion on creating a balance between economic growth and environmental protection at the global level. Zero-budget natural farming can play an important role in this context.
- Not only environmental crisis has arisen due to chemical farming, but human health has also declined. Deterioration of human health again becomes a factor of economic and environmental crisis. Thus Zero Budget Natural Farming saves the environment from double jeopardy.
- Protection of the environment will strengthen agriculture and protect farmers from climatic uncertainties.

Challenges Related to Natural Farming

Decrease in Profit:

After some time of the introduction of organic



farming in Sikkim, there has been a decline in the production of organic farming. Along with this, many farmers have returned to traditional farming after a few years due to the decline in yield gains in zero-budget natural farming. It is not completely zero-cost agriculture. There are many types of costs involved in this, such as the maintenance of cows, electricity for irrigation, and the cost of pumps, labor, etc.

Less Focus on Natural Agriculture:

There are only 23.02 million hectares of land under natural farming, which is only 1.27 percent of the total cultivable land (181.95 million hectares) in India.

Inequality in Subsidy:

➤ The central subsidy provided for chemical fertilizers has been one of the major economic burdens of India, but the organic sector receives a subsidy of only Rs 500 crore. Along with this, the inaction of the government at the ground level has also affected natural farming.

Productivity Challenges:

➤ The role of Zero Budget Natural Farming in terms of increasing agricultural productivity and farmer income is still unclear. Productivity will be less in natural agriculture. This can affect the food security of the growing population of the country.

Low Effectiveness:

A study published in the journal 'Nature Sustainability states that while the nutritive value of natural agriculture is effective in low-input farms (farms that use small amounts of fertilizers and pesticides), high-input farms' effectiveness is low. Farmers lack the expertise and patience to manufacture materials used in zero-budget natural farming.

Regional Inequality:

Natural farming is mainly being done in South India. Separation from natural farming has become a big problem among the farmers of North India, basically Uttar Pradesh, Haryana, and Punjab.

Government's Efforts Related To Natural Farming in India:

- Earlier, the support for natural farming was taken from the Bharatiya Prakritik Krishi Patti (BPKP), which was introduced as a sub-scheme of the Paramparagat Krishi Vikas Yojana (PKVY) in 2020-21.
- Under the scheme each farmer gets Rs.12,200/ hectare for three years for cluster formation, capacity building, and continuous handholding.
- In the 2022-23 budget, both BPKP and PKVY have been subsumed under Rashtriya Krishi Vikas Yojana (RKVY).

- The proposed increase in aid comes at the suggestion of the Governor of Gujarat, a key architect of the Center for chemical-free farming. He proposed that farmers practicing organic and natural farming receive equal subsidies.
- > Tribal Area Focused: Initially, the focus will be on tribal and other such areas which are traditionally practicing natural farming to protect the soil from the harmful effects of chemicals in those areas.
- The Ministry of Agriculture constituted a committee in March 2022 to recommend standards for products to be produced through the adoption of natural farming.
- The ministry is also considering renaming the existing National Center for Organic Farming (NCOF) as National Center for Organic and Natural Farming.
- The allocation under RKVY has been increased three-fold from Rs. 3,712.44 crore (BE) in the previous financial year (2021-22) to Rs. 10,433 crore for 2022-23, a five-fold increase over the revised estimate.

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Other Facts

Status of Natural Farming in India

- Sikkim is the first organic farming state in India.
- Andhra Pradesh government has set a target of zero-budget natural farming to reach every village by the year 2024.
- The Government of Himachal Pradesh has also started a project to promote Zero Budget Natural Farming in the state.
- The Paramparagat Krishi Vikas Yojana, launched in 2015, has covered 7 lakh hectares of land and 8 lakh farmers in the last four years. He said that Andhra Pradesh, Karnataka, Himachal Pradesh, and Kerala have adopted natural farming on a large scale.

Conclusion:

Although zero-budget natural agriculture has the potential to combine agricultural growth and environmental protection, the challenges before it are also many. The benefits of using natural agriculture should be conveyed to the farmers by the government, farmer organizations, and civil society. Government should provide subsidies for natural farming by reducing subsidies of chemical fertilizers in a phased manner which can motivate farmers to do natural farming. Along with this, we also have to understand that natural agriculture is necessary to avoid climate change.

Report Of International Narcotics Control Board And NCB On Increasing Drug Smuggling Through Sea Routes

In its latest annual report, the UN agency International Narcotics Control Board (INCB) has said that darknet and sea routes are emerging as preferred modes of drug trafficking. Traditional methods of trafficking through multiple channels are still critical, nevertheless, there has been a significant increase in drug seizures in India over the last five years. The International Narcotics Control Board in its annual report for 2022 also took note of India's "positive regulation" to combat illegal manufacturing of synthetic narcotics in large quantities. Citing information provided by the Narcotics Control Board (NCB) of India, the International Narcotics Control Board has said in its report that during the period 2017-2022, heroin seizures have increased from 2,146 kg in 2017 to 7,282 kg in 2021. At the same time, drug smuggling has expanded through the Arabian Sea. As per the report, opium seizures have also increased by over 70 percent from 2,551 kg in 2017 to 4,386 kg in 2021. The report states that cannabis seizures have registered an increase of more than 90 percent and have increased from 3,52,539 kg in 2017 to 6,75,631 kg in 2021.

Darknet

Darknet refers to encrypted networks on the Internet that can only be accessed with specific software, configuration or authorization, is not indexed by search engines such as Google, Yahoo or Bing. This is a layer of the Internet that can only be accessed using specialized software such as The Onion Router (Tor) or the Invisible Internet Project (I2P). It is used in illegal activities like black market, hacking and piracy. The terms 'dark net' and 'dark web' are sometimes used interchangeably, but there is a subtle difference in meaning. The dark net is a network built on the Internet, while the dark web refers to websites on a darknet.

In March 2022, Sri Lanka Customs at Colombo port seized 350 kg of cocaine from a container that had arrived from Panama via Belgium and Dubai and was destined for India. Nine countries in Asia reported seizures of a total of 1.2 tonnes of tramadol in 2020. Most of this quantity was seized in India. As per the report, India seized 144 kg of tramadol in 2020 while other countries in South Asia combined reported seizures of 70 kg of tramadol. The report said, "The seizure campaign in India has helped dismantle the international network of tramadol and other drug trafficking."

It further states that pharmaceutical opioids and illegally produced methamphetamine,

MDMA, and Illicit manufacturing and trafficking organizations are expected to increase their global activities as the global demand for synthetic drugs such as ketamine increases. Phenobarbital Drug is one of the most traded legal psychotropic substances internationally and was imported into more than 161 countries in the year 2018.

About International Narcotics Control Board (INCB):

- The International Narcotics Control Board (INCB) is an independent and quasi-judicial monitoring body for the United Nations implementation of international drug control conventions. It was established in 1968 under the provisions of the Single Convention on Narcotic Drugs, 1961. Its secretariat is located in Vienna, Austria. The functions of the INCB are set out in the following treaties:
 - » Single Convention on Narcotic Drugs, 1961;
 - » Convention on Psychotropic Substances of 1971;
 - » The United Nations Convention against Illicit Trafficking in Narcotic Drugs and Psychotropic Substances of 1988.
- ➤ Jagjit Pavadia, a retired Indian Revenue Service (Customs) officer, was elected as the chairman of the Vienna-based International Narcotics Control Board (INCB) and is currently serving in the post.
- She is also the former Narcotics Commissioner of India. For the first time, an Indian is heading the INCB and she is the second woman chairman in the history of INCB. The tenure of Jagjit Pavadia is five years. Her tenure will start from March 2, 2020, and will continue till 2025. Earlier in 2014, she was elected to INCB. After this, she also became the Vice-Chairperson of INCB in 2016, Chairperson of the Standing Committee on Estimates in 2015 and 2017.

Functions of the INCB:

- Concerning the legitimate manufacture, trade, and use of drugs, the INCB, in cooperation with governments, seeks to ensure that adequate supplies of drugs for medical and scientific uses are available and that the drugs from legitimate sources are not diverted into illegal channels. The INCB also monitors government controls over chemicals used in the illegal manufacture of drugs and helps governments to prevent the use of those chemicals in the illegal trade.
- With regard to the illegal manufacture, trafficking, and use of drugs, the INCB identifies weaknesses in national and international

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control systems and contributes to correcting such situations. The INCB is also responsible for assessing chemicals used in the illegal manufacture of drugs to determine whether they should be placed under international control.



India's NCB Report on Drug Smuggling Through Sea Route:

- Problem The latest annual report of the Narcotics Control Bureau states that drug smuggling through the sea route and postal service has emerged as a serious challenge. About 70 percent of the total illegal drugs smuggled into India are through the sea route of the Arabian Sea and the Bay of Bengal. This is a serious challenge for law enforcement bodies. The report says that international drug syndicates based in Afghanistan and Pakistan are promoting illegal drugs in India using the sea route, which needs to be effectively tackled. Maritime drug trafficking has increased especially in the western region of India.
- Most of the drugs that have been seized, according to the NCB, were coming from ports in Afghanistan and Iran and were trying to enter Indian states via India's coastal areas. The report states that Heroin is the most trafficked plant that is sent to India by sea route, besides Amphetamine Type Stimulants (ATS), Marijuana, and Cocaine have also been largely seized in Indian territories. In September 2021, the Directorate of Revenue Intelligence seized heroin worth 21 thousand crores at Mundra

- Port, before this, DRI seized 303 kg of cocaine from Tuticorin Port in April 2021. In March and April 2021, NCB seized 300 kg and 337 kg of heroin from Sri Lankan boats respectively. This drug smuggling is dangerous because it gives rise to narco-terrorism.
- The NCB report says that there has been an increase of 300 percent in drug smuggling in India through the sea route in 2020 and 200 percent in 2019. NCB has also talked about how drug smuggling is promoted through courier and postal service, the dark web, or the dark net. There have also been cases of illegal drugs being supplied in small quantities through parcels. NCB further has said in its report that cocaine which is mainly produced in South America is smuggled into India by African people and has been seized at airports. Cocaine is being smuggled into India by packing it in parcels, cosmetic items, kitchen utensils, books, and clothing.
- Apart from this, NCB has told another crucial thing that has made drug smuggling in India more complicated. It says that the threat of New Psychoactive Substances (NPS) in large quantities in India has increased. NPS is known as Legal High, Bath Salts, and Research Chemicals in the drug smuggling markets. NPS includes chemicals like Ethylone, Crotonyl Fentanyl, Carfentanil, and Methoxytil. NCB says that NPS is a big challenge for public health. Along with this, there is also a big challenge in front of India's drug demand reduction policy. It is also difficult to trace a large number of chemically diverse substances in current drug markets.
- NCB has told in its report that drugs are being smuggled from India and Nepal border to states like Orissa, Himachal Pradesh, Manipur, and West Bengal. Assam, Orissa, West Bengal, Bihar, Uttar Pradesh, Nagaland, Maharashtra, and Chhattisgarh have been considered the main traffic route of Cannabis. Apart from this, the work of smuggling heroin on a large scale from the India-Pakistan border to Punjab and Jammu and Kashmir is being done. In this way, drug trafficking poses a serious challenge to India's internal security and human resources. India is situated between the two largest opium-growing regions of the world i.e. 'Golden Crescent' (Afghanistan, Iran, and Pakistan) in the west and 'Golden Triangle' (Myanmar, Laos, and Thailand) in the east, therefore, it becomes important to tackle drug trafficking.







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National Issue



1. E-Prosecution Portal

Why in News:

Recently, the Ministry of Home Affairs' e-Prosecution portal has added a new feature that will help in fixing the accountability of public prosecutors. It will also ensure the timely disposal of criminal cases.

E-Prosecution Portal:

From the e-Prosecution Portal is managed by the Government of India under the Digital India Mission. The portal facilitates communication between the Police Department and the Directorate of Prosecution as part of the Interoperable Criminal Justice System (ICJS). It enables the seamless transfer of data and information between various pillars of the criminal justice system such as courts, police, prisons, and forensic science laboratories.

About Interoperable Criminal Justice System (ICJS):

- ➤ It is a common platform for information exchange and analysis across all pillars of the criminal justice system including police, forensics, prosecution, courts, and prisons.
- Invested under the CCTNS project of the Ministry of Home Affairs, ICJS enables nationwide search on the database of police, prisons, and courts in all states/UTs of the country.
- The National Crime Records Bureau (NCRB) is responsible for the implementation of the project in collaboration with the National Informatics Centre (NIC). The project is being implemented in collaboration with States and Union Territories.
- ➤ Earlier, the core pillars of ICJS including e-Police, e-Courts, e-Prisons, e-Forensic, and e-Prosecution were independently developed as Crime and Criminal Tracking Network and Systems (CCTNS).
- ➤ The system connects over 16,000 police stations across the country with a database of 28.98 crore police records that can only be accessed by law enforcement agencies and the judiciary.

National Crime Records Bureau (NCRB):

It is a government agency responsible for analyzing and collecting crime data as defined by the Indian Penal Code (IPC) and Special and Local Laws (SLL) is headquartered in New Delhi. It is part of the Ministry of Home Affairs, Government of India. The NCRB was set up in 1986 to assist investigators in linking criminals to crimes.

Way Forward:

Speedy justice is not only our fundamental right but also a prerequisite for maintaining the rule of law. With the help of the ICJS platform, all the High Courts and Subordinate Courts will be able to access the data. It is also necessary to comply with judicial orders while ensuring effective time management. This will help in preventing crime.

2. A-HELP Initiative

Why in News:

Recently the Uttarakhand government launched the Accredited Agent for Health and Extension of Livestock Production (A-HELP) program. This new group of community-based functionaries has been formed to fill the void between local veterinary institutions and livestock owners and provide primary services.

About A-HELP:

- ➤ It is an initiative of the Union Ministry of Fisheries, Animal Husbandry and Dairying, and the Ministry of Rural Development. This model will use the services of SHG as livestock resource persons and primary service providers.
- A-HELP are community-based women activists, who assist veterinarians in local departmental activities, help livestock farmers to take loans for entrepreneurship development, fill out the applications, mark the ear tagging of animals, and register them in the INAPH(Information Network for Animal Productivity and Health) portal.

Functions of A-HELP:

- The A-HELP workers will assist in implementing various schemes related to livestock health and productivity efficiency measures and in providing information to farmers at the grassroots level.
- They will give vital contributions to preventing various infectious diseases of animals, artificial insemination under the Rashtriya Gokul Mission (RGM) tagging animal and animal insurance.
- The significant role of women in livestock management and related activities would also be considered in this program. It will also ensure the income and financial security of rural A-HELP workers and the effective participation of the community in government schemes related to livestock.
- Under this mission, additional training will be provided for artificial insemination to A-HELP workers. The guidance and training for better



livestock management are also included in this mission.

Livestock Sector and Rural Economy:

- This sector plays a multifaceted role in providing livelihood security to more than 60% population of the rural population. It is also significant for nutritional security and gender empowerment.
- Despite the phenomenal growth at a CAGR of 12% during the last few years, this sector is still facing a number of challenges. It ranges from scarcity of feed, disease outbreaks(lumpy skin disease), poor livestock extension, and unorganized markets for livestock products.

Rashtriya Gokul Mission:

It is being implemented for the development and conservation of indigenous bovine breeds to increase milk production using developed technologies, since December 2014. It is continued under the umbrella scheme Rashtriya Pashudhan Vikas Yojana from 2021 to 2026.

Way Forward:

A-HELP model is going to increase the reach of livestock extension services into the rural animal husbandry economy. As it would pave the way for the formal animal husbandry sector and substantially add to the knowledge in the livestock sector.

3. APPI and AHSSOH Initiatives

Why in News:

Recently, Union Minister of Fisheries, Animal Husbandry, and Dairy will inaugurate the "Animal Pandemic Preparedness Initiative (APPI)" Animal Health System Support for One Health (AHSSOH) initiative under the auspices of the National One Health Mission at India Habitat Centre in New Delhi.

Animal Pandemic Preparedness Initiative (APPI):

- It would provide a "integrated disease reporting system for enhanced zoonotic and other animal disease surveillance."
- The following are the primary activities under APPI that are at various levels of completion:
- Joint investigation and epidemic response teams (national and state) have been established.
- Creation of comprehensive integrated disease surveillance system (based on the National Digital Livestock Mission) has been envisaged.
- Regulatory system strengthening (e.g., Nandi online portal and field trial guidelines)
- Developing illness prediction algorithms and early warning systems.
- Disaster Mitigation Planning with the National Disaster Management Authority
- > To begin focused R&D to create vaccines,

- diagnostics, and treatments for priority illnesses.
- Create genetic and environmental surveillance tools to increase disease detection's timeliness and sensitivity.

Animal Health System Support for One Health(AHSSOH):

- It is a joint initiative of the Department of Animal Husbandry and Dairying and the World Bank.
- Its goal is to use the One Health concept to establish an ecosystem for better animal health management.
- It will be implemented in five states, with the goal of increasing the ability of stakeholders involved in animal health and disease management.
- Project duration: It would be implemented as a Central Sector Scheme over a five-year period with a financial provision of Rs. 1228.70 Cr.
- The project requests involvement from the Human Health, Forest, and Environment Departments at the national, regional, and local levels in order to create and enhance the One Health architecture, which includes community engagement.

What is One Health?

- One Health is an integrating concept that brings together multiple sectors to tackle health, productivity, and conservation concerns, and it has significant implications for India.
- WHO established the One Health Initiative to unify human, animal, and environmental health efforts throughout the Organisation.
- As part of the One Health Quadripartite, WHO collaborates with the Food and Agriculture Organisation of the United Nations (FAO), the United Nations Environment Programme (UNEP), and the World Organisation for Animal Health (WOAH).

Way Forward:

The One Health method is being used in the APPI project to build an ecosystem for a better animal health management system. To enhance animal health services and results in these states, it will give technical support, capacity building, infrastructure development, and innovation funding. The animal health industry in India and worldwide is anticipated to gain a great deal from the APPI and the AHSSOH initiative. They will increase livestock agricultural productivity and profitability, lessen economic losses brought on by animal illnesses, boost food safety and security, and support environmental sustainability. They will also assist safeguard the health and welfare of animals and people from zoonotic infections.



4. India Ransomware Report

Why in News:

Ransomware incidents in India have gone up by 53 per cent in 2022 over the incidents reported in the previous year, according to the CERT-In, the Indian Computer Emergency Response Team that works under the Union Ministry of Electronics and Information Technology.

About Ransomware:

Ransomware is a type of malicious software or malware that is designed to block access to a computer system, network, or data until a ransom is paid. Examples- WannaCry (2017), NotPetya (2017), and GandCrab (2018)

Major findings of the Report:

- The information technology and IT-enabled services sector was the most impacted sector. This was followed by the finance and manufacturing sectors.
- Ransomware player's targeted critical infrastructure organisations and disrupted critical services in order to pressurise and extract ransom payments.
- Lockbit was the most prevalent ransomware variant in India, followed by Makop and DJVU/ Stop ransomware. Many new variants such as Vice Society and BlueSky were noticed in 2022.
- Ransomware-as-a-service ecosystem (RaaS) ecosystem is gaining strength, double and triple extortion tactics are being used to cause business disruption, forcing the victim to pay the ransom.
- Makop and Phobos Ransomware families mainly targeted medium and small organisations, while Djvu/Stop variants continued to hold the sway when it comes to attacks on individuals.
- The report found some interesting trends in the attacks. Instead of encrypting the whole computer or a complete file, cybercriminals are encrypting just a portion of a file to save time and effort.

Suggestions for the organisations:

- With hackers getting more sophisticated, the CERT-In wants organisations to buckle up and increase surveillance.
- Organisations should have clear visibility on the attack surface.
- Develop and test ransomware incident response plans.
- Plan and implement policies for inventory management.
- Roll out systematic patch management.
- Prioritise patching of public-facing applications.

- Implement identity and access management.
- Have a proper backup management system and business continuity plan.

About CERT-IN:

- The Indian Computer Emergency Response Team is an office within the Ministry of Electronics and Information Technology. It is the nodal agency to deal with cyber security threats like hacking and phishing. It strengthens the security-related defence of the Indian Internet domain.
- It was established in 2004 and headquartered in New Delhi.

Conclusion:

In the field of cyberspace in India, there is a need to strengthen cooperation in infrastructure, people, and processes, along with continuous monitoring for a secure national cyberspace.

5. Farm Distress Index

Why in News:

Scientists at the Central Institute for Dryland Agriculture (CRIDA) have developed an early warning system called Farm Distress Index.

About Farm Distress Index:

- The index can sense imminent distress at least 3-4 months ahead of its actual occurrence.
- The index is based on 21-question survey which captures financial, economic and emotional health status of farmers in vulnerable areas.
- It can integrate the available high-frequency data on key agricultural variables like deviation of monsoon rains, excessive rainfall, drought, and dry spells, variations in temperature and soil moisture, and yield of major crops in the district, among others.
- It would vary across the country as it changes from place to place depending on the stress levels.
- It is a part of the National Bank for Agriculture and Rural Development (NABARD) funded project on 'Farmers Distress and Pradhan Mantri Fasal Bima Yojna (PMFBY)'.

Significance of the Index:

- Bouts of farm distress continue to be reported from different parts of the country.
- Farmers are left unattended; the distress can lead to suicide by farmers.
- Depending on the kind and severity of the distress, the support can be given as a combination of unconditional grants, loan restructuring, and/or a complete debt waiver.
- The index can be used by policymakers and



the government to plan and design a timely and targeted method of supporting distressed farmers.

About CRIDA:

- Central Research Institute for Dryland Agriculture was established in 1985 under the Indian Council of Agricultural Research (ICAR), an autonomous body under the Ministry of Agriculture.
- It was set up with the intention of undertaking agricultural research activities in areas that have low rainfall.
- Headquarters- Hyderabad.

Way Forward:

In the absence of a credible mechanism to identify the distress as it happens, farmers facing hardships are not being attended to at the right time. Farm Distress Index will help identify the stress level and type of support to be given to the farmer.

6. Remission Policy of States

Why in News:

Recently, The Bihar government notified the release of 27 prisoners, including former MP Anand Mohan Singh, days after the Nitish Kumar-led dispensation amended the Bihar Prison Manual, 2012. The decision was taken for the release of prisoners having served actual sentence of 14 years or sentence of 20 years with remission. Prior to the amendment in Bihar Police Jail Manuals, 2012, convicts completing 14 years' sentence were not treated as ones having completed a life sentence because of the grievous nature of the crimes they had committed. These convicts had to spend at least 20 years in jail to qualify as having served a life sentence. Former MP Anand Mohan Singh is currently serving a life sentence for the murder of then Gopalganj district magistrate G Krishnaiah on December 5, 1994.

What is amended in the Bihar Prison Manual, 2012?

- In the meeting, it was decided to free the people who were serving 14 years sentence instead of 20 in the case of murder of a public servant while on duty in Bihar Jail Manual.
- Besides this, the Bihar Police jail manual also dropped the words 'a civil servant on duty'.

About the Remission:

- Remission implies reducing the period of the sentence without changing its character.
- Under Articles 72 and 161 of the Constitution, the President and Governors have the power to pardon, and to suspend, remit, or commute a

- sentence passed by the courts.
- Prisons' is a State subject under the State List of the Seventh Schedule of the Constitution.
- ➤ The management and administration of prisons fall exclusively in the domain of state governments and are governed by the Prisons Act, 1894, and the Prison Manuals of the respective state governments.
- The Prisons Act further says that only states can make rules regarding the release of prisoners on furlough, parole, and remission, as part of the correctional process in jail reforms.
- Section 432 of the Code of Criminal Procedure empowers the 'appropriate government' to suspend or remit the sentence of a prisoner.
- ➤ Section 433A of the Code of Criminal Procedure states that a prisoner, found guilty of an offense punishable with death and whose death sentences were commuted to life imprisonment under Section 433 shall not be released before 14 years.
- Section 435 of the Code of Criminal Procedure states that in cases investigated by the Delhi Special Police Establishment, or by any agency that has investigated an offense under a Central Act other than the CrPC, the States have to act in consultation with the Central government.

Conclusion:

The remission policy of the Bihar government will set a bad example in the society and public service sector. It is also showing the nexus of politics and crime. The decision not only sparked public outrage but also pointed out the shortcomings and inconsistencies in the remission policies. Before granting an exemption, the state government should have followed the guidelines laid down by the Supreme Court on remission.

7. Democratic Decentralisation

Why in News:

Ministry of Panchayati Raj, Government of India in association with the government of Madhya Pradesh celebrated National Panchayati Raj Day (NPRD) on 24th April 2023 as part of Azadi Ka Amrit Mahotsav (AKAM) at Rewa, Madhya Pradesh. The theme of this year is 'Sustainable Panchayat: Building Healthy, Water Sufficient, Clean & Green Villages'. The Panchayati Raj System is a decentralized system of governance in India, where local bodies or Gram Panchayats are given the power to govern themselves and make decisions for the development of their respective areas.

About Democratic Decentralization:

> Democratic decentralization is the process of

devolving the functions and resources to the elected representatives at the lower levels so as to facilitate greater direct participation of citizens in governance. The Government of India introduced the concept of democratic decentralization for the good governance and development of rural and urban areas at the grassroots level. To deal with poverty and sustainable development of the country, the key component is the decentralization of power in which the authority for some functionality and resources is taken from the state government and given to the local government.

In 1992, when the 73rd and 74th Constitutional Amendment Act passed, which was a crucial step toward the decentralization of power. The 73rd Constitutional Amendment Act introduced Panchayati Raj Institutions. The 74th Constitutional Amendment Act was introduced for the development of urban areas where municipal bodies have the power and authority to plan for economic development and implementation of schemes.

Challenges:

Non-Accountability:

Even though the personnel at the Gram Panchayat level deliver crucial services like education, health, and livelihood generation, they are, in most cases, not accountable to the Gram Panchayat and the Gram Sabha.

Lack of Power:

The power to devolve functions to local governments rests with the State Government. Most States have not devolved adequate functions to local government bodies. This has severely affected the system's efficiency and

effectiveness.

Lack of Funds:

Local government expenditure as a percentage of GDP is only 2%. This is extremely low compared to other major economies like China (11%) and Brazil (7%). Most local bodies, both rural and urban are unable to generate adequate funds from their internal sources and are therefore extremely dependent on external sources for funding. Studies show that around 80-95% of revenue is obtained from external sources, particularly State and Union Government loans, and grants

Lack of Coordination:

There is an absence of legitimate collaboration and coordination between the general population and the authorities like Block Development Officers, the District Officers, and so on.

Conclusion:

The Panchayati Raj System has been instrumental in bringing about significant changes in the rural landscape of India. It has given people in rural areas a voice and an opportunity to participate in the decision-making process, leading to the overall development of their respective areas. The system has also helped in decentralizing power and reducing corruption at higher levels of government, as decisions are made at the local level. The system has been successful in bringing about socioeconomic development, promoting social justice, and empowering women in rural areas. However, In order to have a more robust panchayat system, the challenges that local governments in India are facing must be addressed quickly.





International Issue



1. Visit of Russian Deputy Prime Minister Denis Manturov to India

Why in News:

Recently, Deputy Prime Minister of Russia Denis Manturov was on an official visit to India. Both countries agreed to work towards unlocking the full potential of the economic relationship by addressing trade deficit and market access issues. In addition, during the 24th meeting of the India-Russia Inter-Governmental Commission on Trade, Economic, Scientific, Technological, and Cultural Cooperation (IRIGC-TEC), the two sides reviewed all aspects of economic relations.

About IRIGC-TEC Commission:

This Inter-Governmental Commission is a platform for regular monitoring of bilateral progress in the areas of trade and economic cooperation between the two countries which was established in May 1992 by the Agreement on the Inter-Governmental Commission on Trade, Economic, Scientific, and Technological Cooperation. Its first meeting was held on 13-14 September 1994, while the 23rd meeting of this commission was held in Moscow in September 2018.

India-Russia Relations:

- India-Russia relations have always been good and longstanding. The then Soviet Union and now Russia invested in power generation, mining, steel plants, and heavy machinery manufacturing since India's independence. A treaty of peace and friendship was signed between the two countries in August 1971. In the 1990s, the relationship between the two countries also underwent changes following the disintegration of the Soviet Union.
- India-Russia cooperate on shared national interests in multilateral organizations like the UN, BRICS, G-20, and SCO. Both countries exchange views on various issues through the annual summit. Russia has been supporting India's membership in the United Nations Security Council and the Nuclear Suppliers Group.
- Russia has been a major defence partner of India. From S-400 missile systems to Kamov 226 helicopters, INS Vikramaditya, BrahMos cruise missiles, and Sukhoi Su-30 fighter aircraft are examples of strong India-Russia defence ties. Russia is giving training to astronauts of India's ambitious mission Gaganyaan.

Way Forward:

For the last one year, India has been importing crude oil from Russia at a discounted rate, due to which bilateral trade is expected to reach about \$ 50 billion. The Russia-Ukraine war, India's membership of QUAD, and the India-China border dispute have affected India-Russia relations also. Both countries need to understand each other's interests so that bilateral relations can be given a new heights.

2. Exercise Orion

Why in News:

In the first overseas exercise for the Rafale fighter jets, the Indian Air Force (IAF) will participate in the multilateral exercise Orion at Mont-de-Marsan which is an Air Force base of the French Air and Space Force (FASF).

About Exercise Orion:

- It is a multinational exercise hosted by the French Government.
- It is reportedly the largest ever multinational exercise being carried out by the French defence forces which have involved their army, navy, and air force along with their allies US and UK.
- Orion is based on a scenario developed by NATO to apprehend the different phases of a modern conflict and will be on a scale unprecedented in recent decades.
- Besides IAF and the FASF, Air Forces from Germany, Greece, Italy, Netherlands, Spain, the UK, and the US would also be participating.
- It includes ground troops, warships, aircraft carriers and combat aircraft and is meant to boost military cooperation and interoperability among participating nations.
- ➤ The Indian contingent will include four Rafale aircraft, two C-17, two IL-78 aircraft, and 165 air warriors.

About Rafale Aircrafts:

- Total 36 Rafales have been completely inducted into the Indian Air Force.
- These aircraft are the latest fighters which are considered to be the most potent in the entire Asian region.

Specifications:

- 1. Top speed- 1.8 Mach at high altitude,
- 2. Max take-off weight- 24.5 tonnes,



- 3. Length- 15.30 m,
- 4. Ferry range- 3,700 km.
- The Rafale jets come with one of the most advanced Meteor air-to-air missiles.
- The 190-kg missile has a Beyond Visual Range (BVR) of over 100 km, traveling at a top speed of Mach 4.
- The Rafale Jets also come with SCALP, the airto-ground cruise missile with a range of over 300 km. It is a long-range deep-strike missile.

Way Forward:

Participation in Exercise Orion would further enrich the employment philosophy of the Indian Air Force (IAF), by imbibing the best practices from other Air Forces.

3. Platform for Sri Lankan Creditors

Why in News:

Japan, India, and France have announced a common platform for talks among bilateral creditors to coordinate the restructuring of Sri Lanka's debt. The move is expected to serve as a model for solving the debt woes of middle-income economies and particularly Sri Lanka.

About the Initiative:

- This initiative has been announced by Japan, India, and France to coordinate the restructuring of Sri Lanka's debt. Although, it is not clear whether China will join the initiative or not. It is worth mentioning, that China is Sri Lanka's major creditor in recent days.
- ➤ The three G-20 members announced this platform because middle-income economies like Sri Lanka could not apply for relief under the G-20's common framework for debt treatments, which targets only low-income countries. This has put the onus on major economies to come up with an alternative scheme, leading to the creation of a new platform.
- ➤ Sri Lanka owes 7.1 billion dollars to bilateral creditors, with 3 billion dollars owed to China, followed by 2.4 billion dollars to the Paris Club and 1.6 billion dollars to India, according to official data from Sri Lankan government.

IMF Help for Sri Lanka:

Last month Sri Lanka secured a 2.9 billion dollar programme from the International Monetary Fund to tackle its huge debt burden. The IMF's Executive Board approved a 48-month extended arrangement under its Extended Fund Facility (EFF) with an amount of SDR 2.286 billion to Sri Lanka following financing assurances from the creditors.

Conclusion:

The island nation was hit by an unprecedented financial crisis in 2022, the worst since its independence from Britain in 1948, due to a severe paucity of foreign exchange reserves, sparking a major political and humanitarian crisis in the island nation. These types of initiatives brought by India will provide a strategic edge to India in Sri Lanka. India is the first country who given assurance to Sri Lanka for the IMF bailout package. By recent development, India can access Sri Lanka's strategic position and secure maritime boundaries and at the same time it can challenge China in this region.

4. New Geopolitical Equation in West-Asia

Why in News:

Iran and Saudi Arabia have agreed to restore diplomatic ties seven years after breaking ties. The regional rivals committed to reopening embassies in Tehran and Riyadh by May 2023.

About the Peace Deal:

- The deal, brokered by China, also included the implementation of a security cooperation agreement signed in 2001 and a 1998 agreement to enhance cooperation on trade, investment, technology, and culture.
- ➤ The Islamic Republic and the Gulf Kingdom reaffirmed their respect for the "sovereignty of states" and non-interference in internal affairs.
- ➤ The move marked a significant reduction in tensions. For years, the two countries have been at loggerheads over regional conflicts, particularly in Syria and Yemen.

Differences between Saudi Arabia and Iran in the Middle East:

- > Syria: Iran supports President Basar-al Assad with military forces and funds, whereas Saudi Arabia back Sunni protesters.
- Yemen: Saudi-led coalition launches a sevenyear campaign of air strikes against Iran-backed Houthi rebels who seized the capital, Sanna.
- Lebanon: In 2017, Saudi backed PM resigned citing Iran's grip on his country through the Shiite militant group Hezbollah.

China's Interest:

- China's ability to broker the deal reflected its growing influence in the region. For years, China has been a top oil importer for both Iran and Saudi Arabia.
- It sought stability in the Persian Gulf for the safe passage of oil and goods.



Under President Xi Jinping, China has bolstered ties to the region. He visited Saudi Arabia in December 2022 for the China-Arab States Summit, which included 14 Arab leaders.

Importance of West Asia for India:

- The region is in India's proximate neighborhood and within its security parameters.
- It is the principal source of hydrocarbon imports, and increasingly of investments.
- It is an important destination for manpower exports apart from being a major trading partner including projects.
- The official policy has focused on bilateral relations and avoidance of involvement in bilateral and regional disputes.
- India has consciously refrained from speculative ventures in alternate security architectures apart from supporting cooperative security and freedom of waterways and navigation.

Way Forward

India will need to engage with China in West Asia where they have a broad gamut of shared interests in energy security, free and open sea lanes, logistical connectivity, and, above all, regional stability. The region should not be viewed in competition with China without the latter's economic and military capacity. India should not consider itself a surrogate for those who have been outplayed, at least for the moment, in power games for transitory affection.

5. India-UAE Cooperation to Boost Regional Food Security

Why in News:

The United Arab Emirates (UAE), whose food security is based on imports, is focusing on the twin objectives of food access and preparedness to face the supply chain crisis. India, the world's second-largest food producer, is an essential partner of the UAE in strengthening food security. It benefits both countries in several points of convergence.

India-UAE Food Security Partnership:

- The UAE is currently focusing on the twin objectives of food access and preparedness to face the supply chain crisis.
- Through the Food Corridor, food produced and processed in India can reach major international markets including UAE from the Arabian Sea coast.
- The Food Corridor is likely to emerge as a worldclass template for successful agri-business in India, benefitting millions of workers.
- Boosting the food processing sector will not only stabilize the UAE's food supply but also create

- thousands of non-agriculture jobs through private sector projects.
- During the I2U2 (India, Israel, United Arab Emirates, and United States) summit last year, the United Arab Emirates proposed to invest \$2 billion to build two food parks (Madhya Pradesh and Gujarat) in India.

India's Capabilities in the Food Sector:

- India is ranked second overall in global food grain production, because of vast tracts of cultivable land, adequate means of irrigation, and a highly favourable climate.
- India runs the world's largest food subsidy program through the Public Distribution System, under which about 800 million people receive subsidized food grains.
- India under G20 chairmanship is promoting the consumption and cultivation of millets which are nutritious, drought-resistant, and sustainable crops. This demonstrates the flexibility India provides to global food security negotiations.

Way Forward:

India-UAE is working together in various fields like renewable energy, space, defence, and food supply. The two countries signed a Comprehensive Economic Partnership Agreement last year to take bilateral trade to \$100 billion in upcoming years. The UAE works as a gateway for India into West Asia, which is likely to benefit from improved relations with Israel.

6. State of World Population Report: 2023

Why in News:

According to the United Nations Population Fund (UNFPA)'s State of World Population (SOWP) report titled "8 Billion Lives, Infinite Possibilities", released on April 19, 2023, stated that India by the mid of 2023 would became the most populous country in the world. On November 15, 2022, the UN announced that the world's population had crossed the 8 billion mark.

Highlights of the Report:

- ➤ The population of the world is 8,045 million, of which the largest share (65%) is of people between the ages of 15 and 64 years, followed by those in the 10-24 years group (24%). 10 per cent of the population is above 65 years of age.
- Central and Southern Asia is expected to become the most populous region in the world by 2037.
- The global population could grow to around 8.5 billion in 2030, 9.7 billion in 2050, and 10.4



- billion in 2100.
- More than half of the projected increase in global population up to 2050 will be concentrated in eight countries — the Democratic Republic of the Congo, Egypt, Ethiopia, India, Nigeria, Pakistan, the Philippines, and the United Republic of Tanzania.
- One of the reasons for population growth globally has been that of increasing life expectancy. The report finds that life expectancy among men now stands at 71 years while among women it stands at 76 years.

India's Demographic Status:

- The UN report states that India now has 1,428.6 million people and is the most populous country in the world, outstripping China's population.
- ▶ 68% of India's population belongs to the 15-64 years category, and 26% in the 10-24 years group, making India one of the youngest countries in the world.
- The fertility rate in India has been steadily dropping. The National Family Health 5 Survey (2019-21) found that India attained a Total Fertility Rate of 2.0 for the first time, less than the replacement level of 2.1, falling from 2.2 in NFHS 4 (2015-16).
- ➤ India's large population is a result of the "population momentum" from earlier decades, and the country's population is likely to start its decline closer to 2050.
- Life expectancy for men in India is the same as the global life expectancy of 71 years, while it is marginally lower for women at 74 years.

Way Forward:

Despite becoming the world's most populous country, India has a 'Demographic Dividend' in its favour with 68% of its population as youth and working population. This is the situation that India now needs to capitalize on to spur its economic growth further by educating and skilling its youth.

7. India - CARICOM Ministerial Meeting

Why in News:

- External Affairs Minister S. Jaishankar on April 21, 2023, co-chaired the 4th India-CARICOM ministerial meeting with his Jamaican counterpart Kaminaj Smith in Guyana's capital George Town. EAM Jaishankar began his 9-day trip to Guyana, Panama, Colombia, and the Dominican Republic by meeting his counterpart from Surinam, Albert Ramdin in Georgetown.
- Jaishankar also had separate bilateral meetings

- with counterparts from Trinidad and Tobago, St. Kitts and Nevis, St. Vincent, and Grenadines, Grenada, and Barbados. During the bilateral meetings, the minister touched upon various issues including expanding Cooperation in Trade, Climate Change, Counter-Terrorism, digital transformation, health domains, and agriculture.
- ➤ The minister also met Bahamas Parliamentary Secretary Jamahl Strachan, an Indian alumnus, and discussed International Solar Alliance (ISA), and Coalition for Disaster Resilient Infrastructure (CDRI), as well as the UNSC reforms.

What is CARICOM:

Established in 1973, the Caribbean Community (CARICOM) is a grouping of 20 countries: 15 member States and five associate members, most of which are Small Island Developing States. The CARICOM Secretariat is located in Georgetown, Guyana, and the Secretary-General is Ms. Carla Barnett of Belize, who was appointed in 2021. CARICOM was granted observer status before the UN General Assembly in 1991.

India and CARICOM:

- India's relations with the countries of the Caribbean witnessed a new momentum with the meeting of PM Modi with 14 leaders of the CARICOM countries on the UNGA sidelines on 25 September 2019 in New York.
- India announced USD 14 million Grant for Community Development Projects (CDP) in CARICOM and another 150 million Line of Credit for projects related to Solar, Renewable Energy, and Climate Change.
- India announced the setting up of a Regional Centre for Excellence in Information Technology in Guyana, Georgetown, and a Regional Vocational Training Centre in Belize by upgrading the existing India-funded Centers in these countries.

Way Forward:

CARICOM has shown understanding and support for India's point of view on various issues. India and CARICOM share a common position on many global issues and coordinate closely in multilateral fora. CARICOM countries also generally provide support for India's candidature for Permanent Seat in UNSC. The presence of a large Indian diaspora in the region and traditionally close relations of most member countries of CARICOM with India are significant factors in several ways.



Environmental Issue



1. Flash Droughts and Climate Change

Why in News:

A recent study published in Science (A global transition to flash droughts under climate change) reveals that flash droughts are becoming more frequent and developing faster around the world due to anthropogenic climate change.

The Findings of the Report:

- The study, based on the data collected from a computer model on soil moisture between 1951 to 2014, shows that flash droughts have occurred more often than slower ones in tropical places like India, Southeast Asia, sub-Saharan Africa, and the Amazon basin.
- The onset of conventional /slow droughts is also on increase.
- As global warming continues, more abrupt dry spells could have grave consequences on the livelihoods of people dependent on rain-fed agriculture. It also accelerates the terrestrial water cycle, which further contributes to substantially increasing the number of agricultural and hydrological droughts.

Flash and Conventional Droughts:

- Flash drought is characterized by the rapid onset or intensification of drought. It is set in motion by lower-than-normal rates of precipitation, accompanied by abnormally high temperatures, winds, and radiation. It usually occurs during warm seasons and tropical/humid places are more vulnerable to it.
- While Conventional or slow drought is a slowonset (natural) disaster characterized by the lack of precipitation, resulting in a water shortage.

Causes of frequent flash droughts:

- Rising temperatures increase evapotranspiration and atmospheric anomalies (variations) like increased frequency of El-Nino events and anthropogenic greenhouse gas emissions are major factors responsible for this scenario.
- In general, the rapid and intensified drying occurs when the weather is warm and there are scanty rainfalls. In such circumstances, the ground might already be wet from earlier rain or snow, so when the precipitation shuts off intense heating and wind circulations, this results in large amounts of water to evaporate quickly.

Distribution of Flash droughts in India:

- ➤ A big percentage of the flash droughts between 1951 and 2014 occurred in monsoon, impacting the Kharif crops.
- Approx 68% of the country is prone to drought to varying degrees. Monsoon rainfall in India is

- irregular and has spatial-temporal variations.
- The most frequent and severe flash droughts have occurred in the north-western part including Maharashtra, Telangana, south-western part of Uttar Pradesh. The rain shadow zone of Karnataka and the peninsular zone of south India have also seen severe droughts in past.

Mitigation Measures:

The changes made to the soil moisture of land can been seen as the key alarming indicator. To predict future flash droughts the team used a Community Earth System Model. Reforestation at the local level and community forestry can bring a significant change.

Way Forward:

The IPCC' 6th assessment report has shown that the impact of global warming is going to be intensified manifold if precautionary and timely mitigation measures are not taken. The effective implementation of government initiatives like MISHTI, following the ideals of mission LiFE and shifting to sustainable use of energy and resources could not only reduce the frequency of flash drought but aid in conserving the future for the upcoming generations.

2. G7 Climate and Environment Ministers' Meet

Why in News:

Recently, G7 climate and energy ministers held two days of meetings on climate, energy and environmental policy in the northern Japanese city of Sapporo. Indian Union Environment Minister Bhupendra Yadav also participated in the G7 Climate and Energy Ministers summit with India being invited as a 'guest', in the context of its presidency of the G-20.

About G7 Countries:

- ➤ The International Group of Seven (G7) is an intergovernmental political forum comprised of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States; the European Union (EU) is a "non-enumerated member" as well.
- Representatives of the European Union are always present at the annual meeting of the heads of state and government of the G7.
- The G7 is not a treaty-based organization with a permanent administration or headquarters.
- It is run by a president that rotates among the member countries each year, with the presiding state determining the group's goals and holding and organizing its summit; Japan presently has the leadership since 2023.

Important features of the summit:



The following section discusses the key outcomes of the G7 Climate and Energy Ministers Summit in 2023-

Carbon-Free Electricity by 2035:

- Climate and energy ministers and envoys from the G-7 nations vowed to aim for carbon-free power production by 2035 and to accelerate the coal-phase-out process.
- The proposal to establish a 2030 timetable for the abolition of coal was rejected, and the final wording allowed for the option of investing in gas as a temporary solution to meet energy shortages.

Solar and wind energy investments:

As part of their agreements, the participants agreed to accelerate investments in solar and wind energy in order to meet a target of 1,000 GW of solar power and 150 GW of offshore wind power by 2030.

According to IPCC Report:

- The G7 countries believe that meeting these aims would be consistent with the current Intergovernmental Panel on Climate Change (IPCC) findings.
- ➤ The recent IPCC Report 2023 emphasized the need of reducing global temperature rise to 1.5 degrees Celsius over pre-industrial levels by the end of the century.

Towards Net Zero Energy Systems:

They decided to speed up "the phase-out of unabated fossil fuels"--the use of fossil fuels without deploying technology to absorb the accompanying CO2 emissions--in order to reach net zero in energy systems by 2050 at the latest.

Reducing Plastic Pollution:

The participants set a goal of zero extra-plastic pollution by 2040, 10 years ahead of schedule.

Way Forward:

The group also pledged to strengthen efforts to stop plastic pollution by 2040, halt and reverse forest loss by 2030, safeguard marine species at sea, and decrease pollution.

3. Sri Lanka Exported Endangered Monkeys

Why in News:

Sri Lanka on April 20 confirmed China's request for importing 1,00,000 endangered monkeys. The cash-strapped island nation has removed several species from its protected list this year, including all three of its monkey species as well as peacocks and wild boars, allowing farmers to kill them. The toque macaque is known to destroy crops in several parts of Sri Lanka, and even sometimes attacks people.

About Toque Macaque Monkey

The Sri Lankan Toque Macaques (Macaca sinica)

- are the smallest species of Macaca, a goldenbrown colored monkey.
- Locally known as the "Rilawa". It is easily distinguished by the toque-shaped swirl of hair on the top of its head, with the amount of hair on the top of the head being geographically variable within their range.
- They exhibit sexual dimorphism: Males are physically larger than females. They are fitted with exceptionally long, thin tails.
- **Distribution:** They are native and endemic exclusively to Sri Lanka.
- ► Habitat: They generally occupy three types of habitat; hence can be divided into three subspecies. These are
 - 1.The Common toque macaque (Macaca sinica sinica), occurring in dry habitat
 - 2.The Pale-fronted toque macaque (Macaca sinica aurifrons), inhabiting wet areas
 - 3. The Hill-zone toque macaque (Macaca sinica opisthomelas), found at high elevations
- They are highly social animals, living in units of up to 40 individuals.

Threats and Conservation:

- The major threat to these species is extreme habitat loss and habitat fragmentation due to development and urbanization.
- This decreasing species is currently endangered on the IUCN Red List and is protected internationally under CITES Appendix II.
- However, enjoys very little protection as it is considered to be a pest to crops such as coconut, etc.

Ethical Concern:

- Experimental procedures in China can make the macaque monkey experience pain and psychological distress.
- Chinese zoos are known for their notorious treatment of animals in captivity.

Possible Environmental Impact of the Rapid Decline of Macaques:

Toque macaques are mainly frugivorous and involved in seed dispersing. The rapid decline of these monkeys may affect the spread of the plants feeding these monkeys. The rapid decline of macaques can lead to an increase in lizards and small birds because these monkeys are known to feed on them. On the other hand, leopards, fishing cats, pythons, and mugger crocodiles are known to prey on these monkeys. A rapid decline of monkeys can lead these predators to look for alternative prey including domestic animals.

Way Forward:

The dry zone subspecies have earned the nickname "temple monkey" as they are commonly sighted in the



Cultural Triangle of Sri Lanka, where many ancient monuments including temples are situated. This subspecies has been the subject of one of the longest behavioral studies of any primate species conducted in the world. It is time for environmentalists and zoologists to enlighten the public and stop the impending disaster of toque macaques for business profits.

4. First Census of Water Bodies

Why in News:

Ministry of Jal Shakti has launched the 1st Census of Water Bodies in convergence with the 6th Minor Irrigation (MI) Census under the Centrally Sponsored Scheme "Irrigation Census". The census defines a water body as: All natural or man-made units bounded on all sides with some or no masonry work used for storing water for irrigation or other purposes (industrial, domestic or drinking, groundwater recharge, etc).

Highlights of the First Census:

- 24,24,540 water bodies have been enumerated in the country, out of which 97.1% (23,55,055) are in rural areas and only 2.9% (69,485) are in urban areas.
- ➤ The top 5 States in terms of the number of water bodies are West Bengal, Uttar Pradesh, Andhra Pradesh, Odisha, and Assam which constitute around 63% of the total water bodies in the country.
- ➤ The top 5 States in terms of the number of water bodies in urban areas are West Bengal, Tamil Nadu, Kerala, Uttar Pradesh, and Tripura, whereas, in rural areas, the top 5 States are West Bengal, Uttar Pradesh, Andhra Pradesh, Odisha, and Assam.
- > 59.5% of water bodies are ponds, followed by tanks (15.7%), reservoirs (12.1%), Water conservation schemes/percolation tanks/check dams (9.3%), lakes (0.9%), and others (2.5%).
- > 55.2% of water bodies are owned by private entities whereas 44.8% of water bodies are in the domain of public ownership.
- Out of all public-owned water bodies, the maximum water bodies are owned by Panchayats, followed by State Irrigation/State WRD.
- Out of all privately owned water bodies, the maximum water bodies are in the hands of Individual owners/farmers followed by groups of individuals and other private bodies.
- The top 5 States which lead in the privately owned water bodies are West Bengal, Assam, Andhra Pradesh, Odisha, and Jharkhand.
- Out of all 'in use' water bodies, major water bodies are reported to be used in pisciculture

- followed by Irrigation.
- The top 5 States where the major use of water bodies is in pisciculture are West Bengal, Assam, Odisha, Uttar Pradesh, and Andhra Pradesh;
- The top 5 States wherein the major use of water bodies is in irrigation are Jharkhand, Andhra Pradesh, Telangana, West Bengal, and Gujarat.
- > 78% of water bodies are man-made water bodies whereas 22% are natural water bodies. 1.6% (38,496) water bodies out of all the enumerated water bodies are reported to be encroached out of which 95.4% are in rural areas and the remaining 4.6% in urban areas.

Conclusion:

Until the 5th minor irrigation census, water body data was only available at the village level. The first water body census included data on all types of water bodies in both rural and urban areas. For the first time, data on the encroachment of water bodies was also gathered during the census.

5. WMO Annual Report On Global Climate

Why in News:

Recently, World Meteorological Organisation (WMO) published the State of global climate, 2022 annual report.

The Key Highlights of the Report

Climate Change Indicators:

Global Mean Temperature:

➤ In 2022, the global mean temperature was 1.15 [1.02 to 1.28] °C above the 1850-1900 average. The years 2015 to 2022 were the eight warmest in the instrumental record back to 1850. This was despite three consecutive years of a cooling La Niña – such a "triple-dip" La Niña has happened only three times in the past 50 years.

Greenhouse Gases Concentration:

➤ Carbon dioxide, methane, and nitrous oxide – reached record highs in 2021, the latest year for which consolidated global values are available (1984-2021). The annual increase in methane concentration from 2020 to 2021 was the highest on record.

Glaciers Melting:

➤ We have long-term observations that experienced an average thickness change of over -1.3 metres between October 2021 and October 2022. This loss is much larger than the average of the last decade. Six of the ten most negative mass balance years on record (1950-2022) occurred since 2015.

Ocean Heat:

Ocean heat content reached a new observed



record high in 2022. Around 90% of the energy trapped in the climate system by greenhouse gases goes into the ocean, somewhat ameliorating even higher temperature increases but posing risks to marine ecosystems. Ocean warming rates have been particularly high in the past two decades. Despite continuing La Niña conditions, 58% of the ocean surface experienced at least one marine heatwave during 2022.

Effect of Climate Change:

Drought Gripped East Africa:

Rainfall has been below average in five consecutive wet seasons, the longest such sequence in 40 years. As of January 2023, it was estimated that over 20 million people faced acute food insecurity across the region, under the effects of the drought and other shocks.

Excessive Rainfall:

Record-breaking rain in July and August led to extensive flooding in Pakistan. There were over 1 700 deaths, and 33 million people were affected, while almost 8 million people were displaced.

Heat Waves in Europe:

Record-breaking heatwaves affected Europe during the summer. In some areas, extreme heat was coupled with exceptionally dry conditions. Excess deaths associated with the heat in Europe exceeded 15 000 in total across Spain, Germany, the UK, France, and Portugal.

Food Insecurity:

As of 2021, 2.3 billion people faced food insecurity, of which 924 million people faced severe food insecurity. Projections estimated 767.9 million people facing undernourishment in 2021, 9.8% of the global population. Half of these are in Asia and one-third are in Africa.

Displacement:

In Somalia, almost 1.2 million people became internally displaced by the catastrophic impacts of drought on pastoral and farming livelihoods and hunger during the year, of whom more than 60 000 people crossed into Ethiopia and Kenya during the same period. The flooding in Pakistan affected some 33 million people, including about 800 000 Afghan refugees hosted in affected districts.

Conclusion:

From mountain peaks to ocean depths, climate change continued its advance in 2022, according to the annual report from the World Meteorological Organization (WMO). Droughts, floods, and heatwaves affected communities on every continent and cost many billions of dollars. Antarctic sea ice fell to its lowest extent on record and the melting of some European glaciers is, literally, the sign of climate change.

6. Global Conference on Compressed Biogas (CBG)

Why in News:

Global Conference on Compressed Biogas (CBG)' under the theme "Towards Progressive Policy Framework for a Robust CBG Foundation and Growth" was held in New Delhi. The Indian Federation of Green Energy (IFGE) and CBG Producer Forum organised the event with support from the Ministry of Petroleum and Natural Gas.

Focus Area:

The discussion was focused on Feedstock availability, CBG Offtake, Fermented Organic Manure, Carbon Credits, Incentives, Investment and Financing for the CBG Industry, and Biofuel Policies of different States and CBG producers in the state policies as well as the international experiences.

About the CBG:

- Compressed Bio Gas (CBG) means the mixture of hydrocarbon gases and vapours consisting mainly of Methane in gaseous form. CBG is a renewable source of energy that can be produced from agricultural waste, municipal waste, and sewage. The Indian government has set a target to roll out 5000 Compressed Bio Gas plants across India in a phased manner, by 2023-24. These plants are expected to produce 15 million tonnes of CBG per annum.
- Biogas can be compressed after the removal of carbon dioxide and hydrogen sulphide, the same way as natural gas is compressed to CNG, and used to power motor vehicles.

India's Initiative for the Development of CBG:

- by 2070, and it has taken several initiatives in this direction. Compressed Biogas (CBG) has an important role to play in emission reduction and thus it can contribute significantly to the commitment. It is being promoted by the SATAT scheme (Sustainable Alternative Towards Affordable Transportation).
- Union Minister of Petroleum & Natural Gas and Housing & Urban Affairs inaugurated Asia's largest Compressed Bio Gas (CBG) plant in Lehragaga, Sangrur, Punjab.

About the SATAT Scheme:

- 'SATAT' (Sustainable Alternative Towards Affordable Transportation) scheme on Compressed Biogas (CBG) was launched in 2018.
- The main aim of the scheme is to produce compressed biogas (CBG) from waste and biomass sources like agricultural residue, cattle



dung, sugarcane press mud, Municipal Solid Waste (MSW), and sewage treatment plant waste and make CBG available in the market as a green fuel.

Conclusion:

CBG has a higher calorific value and properties similar to CNG and can be utilised as an alternative green renewable that can replace CNG in automotive, industrial, and commercial areas, given the abundance of biomass availability within the country. If CBG production and consumption are increased in the future, it will lead to many benefits that include:

- Responsible waste management, reduction in carbon emissions and pollution
- > The additional revenue source for farmers.
- Boost to entrepreneurship, rural economy, and employment.
- Support to national commitments in achieving climate change goals.
- Reduction in import of natural gas and crude oil.
- Buffer against crude oil/gas price fluctuations.

7. Heat Dome

Why in News:

Unusual warming observed in temperatures in the southwest and east of the United States is believed to be caused by heat domes. It has also been associated with unusually warm periods in India, Bangladesh, China, and some other Asian countries.

About Heat Dome:

- A heat dome is a type of high-pressure system that forms over a large area in the atmosphere and causes extremely hot and dry weather conditions. This air then becomes compressed and heats up, leading to a dome-shaped area of hot air that can persist for several days or even weeks. It is a massive high-pressure system trapping hot air in the shape of a dome.
- Due to climate change, heat domes have not only become more frequent but also a lot more intense. The rising temperatures and changes in weather patterns are creating conditions that are assisting their formation.
- While many people use 'heat domes' and 'heat waves' interchangeably, heat domes are just one of the atmospheric conditions that can contribute to the formation of a heat wave.

Reasons behind the development of Heat Dome:

- Several meteorological elements work together to create a big high-pressure system in the atmosphere, which is what creates a heat dome.
- Locations with a lot of land and relatively dry air, such as plains and deserts, serve as favourable conditions for heat domes to form as well. As the

- planet warms, it can create conditions that are more conducive to the formation of heat domes.
- Climate change is one of the factors that has increased the frequency and intensity of heat domes. It has led to warmer background temperatures, exacerbating the high-pressure

s y s t e m . Regions that have become drier due to the same, can also create conditions t h a t contribute to the



formation of heat domes.

However, while these factors can create conditions for a heat dome to form, the intensity and duration of a heat dome can also be influenced by other factors, such as the amount of moisture in the air and the presence of other weather systems.

Possible Solution for Heat Dome:

- Transitioning to renewable energy sources, improving energy efficiency, and promoting sustainable transport can contribute significantly in reducing greenhouse gas emissions, as well as reducing the effects of heat domes over the long term.
- Cities should invest in green infrastructure, such as parks, green roofs, and tree planting, which can help reduce the urban heat island effect and provide cooling benefits.
- Building codes and standards can help ensure that new buildings are designed to withstand extreme heat and maintain indoor comfort during heat waves and heat domes.
- Cities should take steps to reduce the amount of heat-trapping surfaces, such as asphalt and concrete that can exacerbate the urban heat island effect.

Conclusion:

Heat domes can have significant impacts on human health, particularly vulnerable populations such as elderly individuals, children, and those with pre-existing health conditions that can be aggravated by extreme heat. Construction workers, farmers, and agricultural workers, who work outdoors for long hours, are at increased risk of heat-related illnesses due to their prolonged exposure to high temperatures. It is not possible to completely prevent heat domes from forming. However, their effects can be minimized by cooperation between people and government.



Science-Tech



1. The JUICE Mission

Why in News:

The European Space Agency has launched The Jupiter Icy Moons (JUICE) Explorer mission on April 13, 2023 from its spaceport in French Guinea on an Ariane 5 Launcher. This explorer will reach Jupiter in 2031.

Objective:

- ➤ This is the third mission to explore the Solar System's biggest planet after the Galileo Probe in 1993 and Juno since 2016. These earlier two were orbital exploration mission.
- The JUICE mission will make detailed observations of the Jupiter and its three large ocean bearing moons- Ganymede, Callisto, and Europa, which potentially have habitable environments. This will carry out the exploration by using remote sensing, geophysical and in situ instruments.
- It is constructed by an industrial consortium led by Airbus Defense and Space, a division of Airbus.

Features of the Mission:

- The mission would explore all the 3 moons of Jupiter but the main focus will be on Ganymade, the largest moon in the solar system and only one to generate its magnetic field.
- The primary goal of this mission is to create a comprehensive picture of Jupiter by trying to understand its history, origin and evolution. It will also provide significant insights into how such planetary systems are formed and evolved over time. The basic information about creation of habitable environments around Jupiter like systems would also be considered.
- It will also analyze the chemistry, structure, dynamics, weather and climate of Jupiter and its ever-changing atmosphere.
- The three moons, Ganymade, Callisto and Europa are believed to hold immense amounts of water, potentially making them habitable. Juice is not equipped to detect life but can find out that the places around Jupiter and its icy moons have necessary conditions such as water, biological essential elements, energy and stability to sustain life are present.

Significance of the Mission:

This will provide significant portion of knowledge about the largest planet in solar system which is not yet possible. It is expected that the life might be present underneath the icy crust of Jupiter. According to European Space Agency,

life on these moons could be in the forms of microbes.

Way Forward:

This is one of the prominent extra-terrestrial missions headed towards the Jupiter. The findings from this mission will substantially add the evolutionary theories about the planets and the knowledge about the other habitable environment present in Solar System. By the time JUICE will reach Jupiter in 2031, the other exploratory spacecraft of NASA's Europa Clipper would already be orbiting the planet.

2. Magnetoresistance

Why in News:

Recently a UK-based Nobel Laureate-led team discovered the quality of magnetoresistance in "wonder material" graphene. This discovery further distinguished this super material- which is a single-atom-thick layer of carbon atoms bonded in a honeycomb pattern.

About Magnetoresistance:

- Researchers have found that graphene displayed an anomalous giant magnetoresistance (GMR) at room temperature. GMR is the result of the electrical resistance of a conductor being affected by magnetic fields of the adjacent materials.
- ➤ GMR is a phenomenon where the electrical resistance of a conductor is affected by magnetic fields of the adjacent materials. When the magnetic materials are magnetized in the same direction, the electrical resistance in the conductor is low, and when the directions are opposite to each other, the resistance increases.
- ➤ The GMR observed in the graphene-based device was found to be almost 100 times higher than that observed in other known semimetals in the magnetic field range.

Significance of Discovery:

- ➤ GMR is used in hard-disk drives, magnetoresistive RAM in computers, biosensors, microelectromechanical systems, and medical imagers. GMR-based devices are particularly used to sense the magnetic field.
- The new study found that a graphene-based device, unlike conventional counterparts, wouldn't need to be cooled to a very low temperature to sense these fields.

Graphene: Wonder Material

Graphene is an atom-thick sheet of carbon atoms arranged in a honeycomb-like pattern.



It is an allotrope of carbon. It is considered to be the world's thinnest, strongest, and most conductive material- of both electricity and heat.

It has the potential to revolutionize entire industriesin the fields of electricity. conductivity, energy generation, sensors, and more. It is the most heat-conductive material which is strong and light. Therefore, it can be used in microelectronics (LED lighting) as well as in thermal foils in mobile devices. The high energy storage capacity makes it a very promising material for use in batteries and superconductors.

Way Forward:

The recent finding adds a new facet to the significance of graphene materials and would also encourage India's only Graphene Innovation Centre in Kerala to look more into the benefits of graphene. Since it is the future material for advanced cutting-edge tech-driven devices.

3. Blastomycosis

Why in News:

Recently, cases of a rare fungal infection of Blastomycosis have been reported in Michigan. This rare fungal infection is found in the midwestern, south-central, and south-eastern states of the USA. A total 100 cases of this infection including a fatality have been reported from the Sweden-based paper mill.

Blastomycosis:

Blastomycosis is a rare fungal infection caused by the genus of Blastomyces. This fungus is found in moist soil and decomposing wood and leaves in many parts of the USA according to CDC (Centre for Disease Control and Prevention). The spread of the infection is caused by airborne spores. This is not a human-to-human transmitted fungal disease.

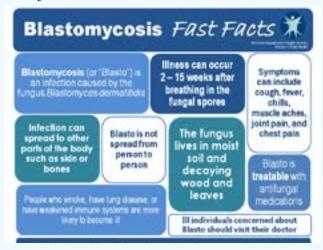
Symptoms:

- The symptoms of infection include fever, cough, breathing difficulty, and muscle aches. In the severe phase, the infection can affect the lungs and other organs, like the skin, bones, and brain.
- These symptoms may appear between three weeks to three months after exposure.

Testing and Treatment:

This infection can be diagnosed with blood and urine-based samples or imaging of the lungs. The tests based on body fluids and tissue culture can also indicate the infection but the

- report may take up to a couple of weeks to be generated.
- The treatment is done through anti-fungal medication that may take up to six months or a year.



The Rarity of the Infection:

- This infection is found to be very rare as only 5 cases have been reported in the last five years. The fungus can get dispersed in the air and travel freely. Human beings get infected by inhaling the spores of fungi. This infection does not spread from human to human.
- The industrial outbreak of this fungal infection is one of a kind. But common outbreaks have been recorded earlier. The disruption activities in the soil such as construction or excavation or recreational activities near lakes or rivers such as hunting, fishing, or camping are causing the common-source outbreaks of Blastomycosis.

Way Forward:

As people who smoke, have lung disease, or have weakened immune systems are more likely to become ill, therefore, screening of people with morbidities can be a viable solution. This infection is endemic to Michigan but research on the new fungal and bacterial diseases should be done extensively with coordinated efforts of appropriate agencies.

4. Supercritical Carbon Dioxide for Enhanced Oil Recovery

Why in News:

Researchers from IIT Madras have developed a new process of underground carbon sequestration which will also help in flushing out oil from depleting wells through the use of supercritical carbon dioxide.

What is Supercritical Carbon Dioxide?



- Supercritical carbon dioxide is a fluid state of carbon dioxide where it is held above its critical temperature and pressure. Thus it shows the properties of both liquid and gas. It possesses liquid-like density and gas-like diffusivity.
- Supercritical carbon dioxide acts as a good agent for simultaneous carbon dioxide sequestration and enhanced oil recovery (EOR) from depleted reservoirs when it is used along with surfactants in a 'surfactant-alternating gas (SAG) injection' approach.
- In this approach, carbon dioxide gas is injected into the depleted reservoir, where critical temperature and pressure are applied to it, followed by injection of water or surfactant solution. Supercritical carbon dioxide reduces oil viscosity inducing in situ swelling of the oil and reducing the interfacial tension of the insitu fluid system.

What is Carbon Sequestration?

- Carbon dioxide being a potent greenhouse gas is largely responsible for global warming. The process of removal of carbon dioxide from the atmosphere and its long-term storage in plants, soils, geological formations, and oceans is known as carbon sequestration.
- Underground carbon sequestration such as in depleted oil and gas reserves is an effective method of climate change mitigation. It is estimated that a barrel of oil when burnt emits 0.4 tonnes of carbon dioxide; correspondingly, 0.3-0.6 tonnes of the gas can be sequestered per barrel extracted thus making the hydrocarbons carbon-neutral.

Advantages:

- This new method promises enhanced oil recovery (EOR) as supercritical carbon dioxide helps in flushing out oil and gas from depleted reserves.
- ➤ It also results in greater storage of carbon dioxide for both water-alternating gas (WAG) and SAG approaches making way for enhanced carbon sequestration.
- Also, normal carbon dioxide is not miscible with oil or water, leaving the boundaries at fluid-fluid interfaces quite distinct. But supercritical carbon dioxide helps solubilize the oil to interact better with the reservoir rock for improved carbon dioxide sequestration.

Way Forward:

In a world battling with severe energy crisis and rapid climate change, this new technique promises improved oil recovery while simultaneously ensuring safe and permanent carbon sequestration.

5. Genome India Project

Why in News:

The Department of Biotechnology (DBT) under the Ministry of Science and Technology has stated that the Genome India Project will complete the sequencing of 10,000 Indian human genomes by the end of 2023. The Genome India Project was started in 2020, with the objective of better understanding the unique genetic variations and disease-causing variations in the diverse population groups of the Indian population.

The Genome India Project:

This project was inspired by the internationally collaborated Human Genome Project (1993-2003) which decoded the entire human genome. The Genome Project of India aims to sequence 10,000 sequences of genome and so far 7,000 have been sequenced by the DBT and 3,000 of these are already available for public access.



Aim:

- This project aims to create a large database of Indian human genomes so that they can learn the unique genetic variations and underlying genetic causes of disease. Thereby they can develop customized therapies for cancer and other rare diseases. It will also assist in the development of predictive diagnosis mechanisms and precision medicine.
- The project is collaborated by the 20 premier Indian Institutions and is being led by the Centre for Brain Research (IISc) in Bangalore.
- Similar programs are active in other countries also like the UK, USA, and China on a large scale.

Significance of GIP:

This project will create a database of Indian Genomes and will enable researchers worldwide to learn about genetic variants unique to India. GIP aims to develop personalized medicine based on a patient's genome to anticipate and modulate diseases.

www.dhyeyaias.com

- As genome variations may explain why cardiovascular disease leads to heart attacks in South Asia but to strokes in most parts of Africa.
- The analysis of genetic variations in plants and their susceptibility to pests, and insects will help in moving toward natural and sustainable agriculture.
- ➤ The global community would also get benefits from the output of this project as India is home to 4,600 diverse population groups. These groups have unique genetic variations and disease-causing mutations that cannot be compared to other populations.

Challenges:

- Many authorities across the world have anticipated the fear of scientific racism, data privacy, and medical ethics associated with the GIP. It may reinforce the heredity and racial purity-related stereotypes. Similar scientific studies in the past have been used to justify slavery and discrimination.
- In the absence of comprehensive data privacy legislation, there are concerns about the misuse of genetic misinformation collected by the GIP. The probability of gene modification by doctors for monetary gains also poses a grave concern.

Genome and Genome Sequencing:

The Genome of an organism is the complete set of its genetic material, including all of its genes. It contains all the information required to build and maintain the organism. While determining the order of bases or DNA sequence of an organism is called genome sequencing.

Way Forward:

Genome sequencing at the national level holds an arena of possibilities and opportunities in various fields of the socio-medical sector. But the exposure of such sensitive information to the public without appropriate regulatory mechanisms can pose grave threat to the country and humanity itself.

6. Discovery of Genetic Markers associated with Premature Births

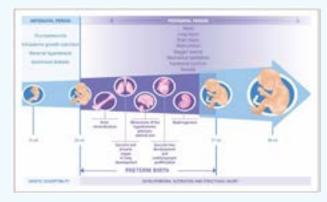
Why in News:

For the first time in South Asia, Indian scientists working in the Garbh-Ini programme, an interdisciplinary group for advanced research on birth outcomes, have identified 19 single nucleotide polymorphisms (SNPs), or genetic markers, that have been found to be associated with premature birth.

The study is significant since preterm birth is the largest cause of neonatal deaths and complications, especially in India and Southeast Asia.

About Preterm Birth:

- Preterm birth, also known as premature birth, refers to the birth of a baby before the completion of 37 weeks of gestation.
- There are sub-categories of preterm birth, based on gestational age:
 - 1. Extremely preterm (less than 28 weeks)
 - 2. Very preterm (28 to 32 weeks)
 - 3. Moderate to late preterm (32 to 37 weeks)



- It is a significant public health issue, especially in India and Southeast Asia, and is associated with delayed mental and physical development in infants and increased risks of diseases in adulthood.
- ➤ Globally, one in every 10 births is preterm. Also, of all babies born annually in India, about 13% are born preterm, accounting for 23.4% of preterm births globally.

Fatality:

- Preterm babies are two to four times at higher risk of death after birth in comparison to those born after 37 weeks of gestation.
- When these babies become adults, they also become at higher risk of diseases such as Type-2 diabetes, hypertension, and cancer.

What are Genetic Markers?

- Genetic markers, also known as DNA markers or genetic variants, are specific sections of DNA that are associated with particular traits, characteristics, or conditions.
- Genetic markers can be either DNA sequences or specific variations in the DNA sequence, such as single nucleotide polymorphisms (SNPs), which are the most common type of genetic marker.

Significance:

- They are used in genetics research and clinical practice to identify and study genetic variations that may be linked to diseases, disorders, or other biological traits.
- These SNPs are known to regulate important biological processes such as inflammation, apoptosis, cervical ripening, telomere



maintenance, selenocysteine biosynthesis, myometrial contraction, and innate immunity.

About Garbh-Ini Programme:

- Garbh-Ini (Interdisciplinary Group for Advanced Research on Birth Outcomes—DBT India Initiative) was initiated by the Department of Biotechnology (DBT), in 2014 as a collaborative interdisciplinary program.
- This program is led by the Translational Health Science and Technology Institute (THSTI), NCR Biotech Cluster, Faridabad.

7. Unauthorized Use Of Calcium Carbide

Why in News:

The Food Safety and Standards Authority of India (FSSAI) has urged food commissioners of all states and Union Territories to take action against the unauthorized use of artificial fruit ripening agents, such as calcium carbide, which has been prohibited. **About Artificial Ripening:**

- Artificial ripening is the process by which ripening is controlled to achieve desired characteristics intended for better consumer acceptance and improved sales. It is generally done for climacteric fruits such as mango, papaya, banana, etc. to achieve faster and uniform ripening characteristics.
- As per **FSSAI** the Regulations 2011, the use of calcium carbide also known as "masala" is prohibited as a ripening agent for artificial the ripening of fruits.
- FSSAI permits the use of ethylene gas at a

An artificially ripened
fruit will ...

I not have the natural fresh
aroma of a ripe fruit

I have a smooth, wrinkle-free
and shining skin

I have yellow skin but the insides
will be green in colour

I have patches of green on the
yellow skin

I be very dry and not
juicy as ripe fruits

concentration of up to 100 ppm (100ul/L) depending upon the crop, variety, and maturity for the artificial ripening of fruits.

About Calcium Carbide:

- Calcium carbide, also known as calcium acetylide, is a chemical compound with the chemical formula of CaC2.
- It is also known as 'masala' which is used as a

- fruit ripening agent.
- It is manufactured by heating a lime and carbon mixture at 2000°C in an electric arc furnace.

Uses of Calcium Carbide (CaC2):

- Calcium Carbide is used in producing polyvinyl chloride, as acetylene is the derivative of calcium carbide and it is used as a raw material for PVC production.
- Calcium Carbide is also used in the production of acetylene and calcium hydroxide.
- It can be used in the removal of sulphur from iron. The removal of sulphur from any material is referred to as desulphurization.
- It can use it to produce calcium cyanamide.
- This compound can also be used as a ripening agent such as ethylene.
- It is also used as a deoxidizer, which means it helps in oxygen removal during steel manufacturing.
- It is also used in bamboo cannons and big-bang cannons.

About FSSAI:

- The Food Safety and Standards Authority of India (FSSAI) was established in September 2008 under the provisions of the Food Safety and Standards (FSS) Act, 2006.
- It works under Ministry of Health & Family Welfare, Government of India.
- Headquarters: New Delhi.

Statutory Powers Granted to FSSAI:

- Framing of Regulations to lay down food safety standards.
- Laying down guidelines for accreditation of laboratories for food testing.
- Providing scientific advice and technical support to the Central Government
- Contributing to the development of international technical standards in food
- Collecting and collating data regarding food consumption, contamination, emerging risks,
- Disseminating information and promoting awareness about food safety and nutrition in India.

Conclusion:

Eating fruits that are ripened using calcium carbide can cause cancer, liver, and kidney damage. Along with causing allergies in the body, artificial ripening also reduces the natural nutrients found in fruits. Further, eating such fruits can also cause stomach pain, vomiting, and diarrhoea. Calcium carbide comes under the category of chemicals that cause poisoning, so people should be made aware of the effects of consuming such artificially ripened fruits.



Economic Issues



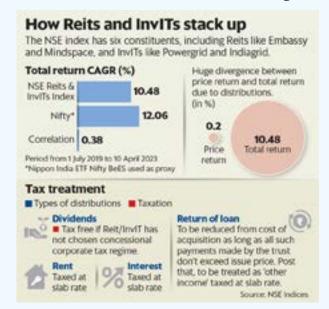
1. NSE launched India's First REITs and InvITs Index

Why in News:

NSE Indices Ltd, an arm of the National Stock Exchange (NSE), launched the country's first ever Real Estate Investment Trusts and Infrastructure Investment Trusts Index- Nifty REITs and InvITs Index.

What is Real Estate Investment Trust (REIT):

- > REITs were introduced by the SEBI in 2007 in India.
- ➤ REIT or an infrastructure investment is an investment vehicle that owns revenuegenerating real estate.
- REITs invest in real estate projects and are modelled on the lines of mutual funds and provide investors with an extremely liquid way to get a stake in real estate.
- It is a type of security that provides all types of investors, big or small, with an outlet for regular income, portfolio diversification, and long-term capital appreciation.
- REITS can be listed on the stock exchange.



What is Infrastructure Investment Trust (InvITs)?

- An InvITS generate income through dividends from the operational infrastructure assets.
- This is similar to a mutual fund, where funds are pooled from investors for investing in operational infrastructure assets. InvITs are listed on exchanges just like stocks through IPOs and are regulated by SEBI.

About Nifty REITs & InvITs Index

- The index aims to track the performance of REITs and InvITS that are publicly listed and traded on the NSE.
- The weights of securities within the index will be based on their free-float market capitalization, subject to a security cap of 33 percent each, and the aggregate weight of the top three securities is capped at 72 percent.
- The Nifty REITs and InvITs index has a base value of 1,000 and the index will be reviewed and rebalanced quarterly.

About NSE Indices

- NSE Indices was set up in 1992.
- Headquarters: Mumbai.
- It is a subsidiary of the National Stock Exchange of India which provides a variety of indices and index-related products and services to Indian capital markets.

Way Forward:

REITs and InvITs are recognized as strong alternative financial instruments to raise funds against the cash generating infrastructure and real estate projects. For investors, these instruments provide exposure to real state or infrastructure assets and offer diversification of risk from regular asset classes like equity, debt, and gold and generate regular income.

2. 'Dabba Trading' in India

Why in News:

Recently, the National Stock Exchange (NSE) issued string of notices naming entities involved in 'dabba trading'. The bourse cautioned retail investors to not subscribe or invest using any of these products offering indicative/assured/guaranteed returns in the stock market as they are prohibited by law.

What is Dabba Trading?

- Dabba' (box) trading refers to informal trading that takes place outside the purview of the stock exchanges.
- Traders bet on stock price movement without incurring a real transaction to take physical ownership of a particular stock as it is done in exchange.
- In simple words, it is gambling centred around stock price movements.
- The primary purpose of such traders is to stay outside the purview of the regulatory mechanism, and thus, transactions are facilitated using cash.
- The mechanism is operated using unrecognized software terminals.

Issues with 'Dabba Trading':

- Since there are no proper records of income or gain, it helps dabba traders escape taxation.
- They would not have to pay the Commodity Transaction Tax (CTT) or the Securities Transaction Tax (STT) on their transactions.
- The use of cash also means that they are outside the purview of the formal banking system.
- It results in a loss to the government exchequer.
- The primary risk entails the possibility that the broker defaults in paying the investor or the entity becomes insolvent or bankrupt.
- It also means that investors are without formal provisions for investor protection, dispute resolution mechanisms, and grievance redressal mechanisms.
- It could potentially encourage the growth of black money alongside a parallel economy.

Legal Implications:

- ▶ Dabba trading is recognised as an offence under Section 23(1) of the Securities Contracts (Regulation) Act (SCRA), 1956.
- Upon conviction, it can invite imprisonment for a term extending up to 10 years or a fine up to Rs.25 crore or both.

Way Forward:

Dabba trading is an offence that needs to be checked by the government by putting stricter regulations, increasing awareness, and monitoring social media and mobile apps.

3. Skills Shortage Hampering Farm Mechanization

Why in News:

Recently, NCAER released a white paper on 'Making India a Global Power House in the Farm Machinery Industry'.

Key Highlights of the Report:

- The report highlighted a mismatch between what the organized industrial sector is producing, especially in the non-tractors segment, and what small and marginal Indian farmers want.
- Farm mechanization in India is 40-45 percent which is very low compared to the US (95 percent), Brazil (75%), and China (57%).
- Despite having low levels of mechanization in India, skills shortages, and a lack of awareness among farmers about technology and machinery management pose significant obstacles to progress.

What is Farm Machinery Industry?

Farm mechanization refers to the development and use of machines that can replace human

- and animal power in agricultural processes with the end objective of enhancing overall productivity and production with the lowest cost of production.
- Examples- tractors, combine harvesters, irrigation systems, tillers, etc.

Demand and Supply-side Challenges:

- > Skill Shortage- It results in a low-equilibrium trap for the industry. The village craftsmen, who fall at the bottom of the pyramid in the industry, form the largest group and are the ones who end up largest catering to Indian farmers in terms of supply, repair, and maintenance of farm machinery.
- Lack of Adequate Information- there is a lack of adequate information and awareness amongst farmers about the technology and the management of machinery. Consequently, the selection of machinery is poor, often making it a wasted investment.
- Lack of Skilled Personnel- Micro, Small, and Medium Enterprises (MSMEs) suffer lack of skilled personnel. Fabrication of agricultural tools and machinery is often done by semi-skilled workers without proper equipment. Finding qualified personnel for testing machinery is also a challenge.
- **High capital cost-** farmers may not have adequate resources to invest in expensive equipment.

Suggestions by NCAER:

- ➤ Training Famers/Owners/Operators- Extension programs need to be strengthened to address demand-side issues. State agricultural universities, ICAR, and other institutes should be made responsible for training and providing information on developments in mechanization.
- Addressing skill shortage- the Agricultural Skills Council of India should work at the district level to address skilling shortages on the demand side; PPP with Custom Hiring Centres may be useful; Short courses by ICAR institutes can be leveraged.
- Front-Line Demonstration- Handheld training to users of new-generation farm machinery may encourage the extension and adoption of farm power.
- Provisioning available technical knowledge and skills- The District Industries Centre should work with local industrial clusters so that it is can provide relevant courses with latest available technical knowledge and skills.

Way Forward:

India has the potential of becoming the production and export hub for non-tractor farm machinery



when the recommended measures are implemented effectively and efficiently.

4. Preparing Industry for Carbon Border Tax

Why in News:

The developed countries including UK, Canada, Japan, the US and the EU will soon tax imports to prevent local industries from shifting to countries with less stringent environmental laws.

What is Carbon Border Tax (CBT)?

- CBT is a duty placed on imports based on the amount of carbon emission that results from the production of the product in question.
- It is different from National Carbon Tax which is a fee that a government imposes on any company within the country that burns fossil fuels.
- The ultimate purpose of CBT is to limit and eventually abolish the dependency on fossil fuels.
- The tax also aims to discourage carbon emissions. As a trade-related measure, it affects production and exports.



Significance of Carbon Border Tax (CBT) for Industries:

- Focus on Greener production- The CBT rate depends on the amount of carbon emitted during production to make the product. So, industries would explore green production options for the concerned commodities.
- Minimizing impact- The CBT would affect small and big firms by being an important component of overall costing.
- ➤ **Data Sharing-** The precise emission data related to steel, aluminium, fertilizer, hydrogen, and electricity will need to be shared with concerned CBT authorities. It also requires energy auditors

to scientifically capture the emission data.

Issues with CBT:

- The BASIC group (Brazil, India, South Africa, and China), which is heavily dependent on fossil fuels, have opposed the CBT at COP27 and called it 'discriminatory'.
- Some experts call CBT 'unjust' because there is less concern about lowering wasteful consumption.
- The CBT is non-consensual with Rio Declaration's Article 12 which states that standards applied to developed countries cannot be applied to developing countries.
- The CBT can be regarded as a disguised form of protectionism, so-called 'green protectionism'.

Way Forward:

Green technologies adoption may be encouraged by the systems such as carbon border tax. It needs to be consensual and encouraged with sufficient funding and support for newer technologies in developing countries.

5. PTP-NER Scheme

Why in News:

Recently, the Union Minister of Tribal Affairs has launched the "Marketing and Logistics Development for Promotion of Tribal Products from North-Eastern Region (PTR-NER) scheme for the benefit of schedule tribes of North-East India.

What is the PTR-NER scheme?

It is a central sector scheme launched by the Ministry of Tribal Affairs. It has envisioned bolstering livelihood opportunities for tribal artisans of North East thus helping them to become self-reliant. It aims to enhance efficiency in the procurement, logistics, and marketing of tribal products from northeastern states.

How the scheme will be implemented?

- This scheme will apply to all the northeastern states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim. A substantial Budget of around Rs. 143 Cr has been allocated for its implementation.
- It envisages the organization of 68 Tribal Artisan Melas (TAMs) in several districts of the North Eastern Region starting on April 18, 2023, for the purpose of empanelment of tribal artisans.
- These melas will be organized in consultation and support of District Administration and other relevant organizations/ departments working in that field. All the empanelled artisans will be provided direct exposure through a variety of exhibitions such as Purvotar Aadi Mahotsav, Purvotar Aadi Bazaar, Exclusive North East



Craft Mela, etc.

- The scheme will promote revenue increasing exercises through the provision of backward and forward linkages, incubation support, aggregation, skill and entrepreneurial development, sourcing and procurement, marketing, transportation, and publicity.
- In this regard, national and international marketing linkages will be provided to the tribal products of NER through various online and offline modes.
- Furthermore, it includes regular Design & Skill Development training sessions tailored to the needs of the market for tribal recipients. Thus it will not only improve market access but also provide market insights.

Implementing agencies:

- North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC) under the Ministry of Development of North Eastern Region (due to its vast experience and presence in NER)
- India Post (to provide logistics support)
- > NE State Govt. Departments/Agencies

Way Forward:

NER is constitutionally a tribal region with distinctive culture and lifestyle. This scheme is a welcome step that will complement the Centre's efforts, for the development of NER and schedule tribes, such as PM-DevINE, PVTG Development Mission, Van Dhan Yojana, etc.

6. Mission 50K-EV4ECO

Why in News:

Recently, Small Industries Development Bank of India has announced the launch of a pilot scheme 'Mission 50K-EV4ECO' for better financing in Electric Vehicle space and strengthening the whole EV ecosystem.

What is Mission 50K-EV4ECO?

- Under this Mission, SIDBI will directly provide loans to eligible small and medium enterprises (SME) for the purchase of EVs and developing charging infrastructure, including battery swapping. The pilot scheme, which is the precursor to EVOLVE scheme by SIDBI-World Bank, has two components -- direct lending and indirect lending.
- Under direct lending, SIDBI will directly give loans to eligible MSMEs for the purchase of electric vehicles and develop charging infrastructure, including battery swapping.
- The indirect scheme targeted at NBFCs, actively

engaged in EV financing, will reach out to the last mile by inducing access to funds.

National Mission of EV30@30:

As per India's EV Vision 2030, the Government of India has targeted 30% EV penetration by 2030. With the market for EVs set for significant growth, a broad and diverse ecosystem, encompassing EVs and EV component technologies is expanding.



EV Ecosystem in India:

- ➤ The Economic Survey 2023 predicts that India's domestic electric vehicle market will see a 49 percent compound annual growth rate (CAGR) between 2022 and 2030, with 10 million annual sales by 2030. Additionally, the electric vehicle industry is projected to create around 50 million direct and indirect jobs by 2030
- ➤ The Government wants India to be a 100%, electric vehicle nation by the year 2030. Under the new plan of the government, every car which will get sold in India from 2030 will be electric.
- The government of India approved the National Mission on Electric Mobility in 2011 and subsequently National Electric Mobility Mission Plan (NEMMP) 2020.
- ➤ Department of Heavy Industry has formulated a scheme namely FAME India (Faster Adoption and Manufacturing of Electric Vehicles in India) for implementation with effect from 1st April 2015.

Way Forward:

Access to adequate finance, including the competitive rate of interest, is a challenge faced by MSMEs and NBFCs, catering to the EV ecosystem. To support India's commitment to EV30@30, SIDBI taking the lead in launching the Mission 50K-EV 4 ECO scheme is a step in the right direction. This will enable access to affordable financing for EVs. The transition to electric vehicles (EVs) is a critical cornerstone for transport sector decarbonisation and low carbon growth in the energy and transport

sector.

7. Unicorns in India

Why in News:

Recently, the Global Unicorn Index 2023 was published by Hurun, according to which India remains the third largest country in the world after America and China, where the number of unicorns is the highest.

Key Findings of the Report:

- BYJU'S, an ed-tech decacorn, Swiggy, a food-tech platform, and Dream11, a fantasy gaming company, are India's top unicorns.
- ➤ BYJU'S is also one of the top 10 unicorn startups worldwide that experienced a significant increase in valuation since the pre-COVID-19 era, with a valuation of \$22 billion. Meanwhile, Swiggy and Dream11 are both valued at \$8 billion each, according to the list.
- The report mentioned that the number of Indian unicorns established outside of India is higher than those located within India.
- The list further disclosed that India has a total of 138 unicorns, out of which 70 were established by Indian co-founders but have their headquarters located outside India, while 68 are based in India.
- Hurun's report also revealed that India ranks third in terms of the number of gazelles, which are startups established in the 2000s and valued at over \$500 million, not yet listed, and likely to become unicorns within three years.
- However, when it comes to the Hurun Global 500 companies, which is a list of the most valuable non-state-controlled businesses globally, India ranks fifth.
- According to the report, China and India have a higher proportion of gazelles and unicorns, which is expected to result in a higher number of Hurun Global 500 companies over the next five years.

Government Initiatives for Helping Start-Ups:

- Credit Guarantee Fund: The scheme was formally launched on August 30, 2000, and is operational with effect from 1st January 2000. The corpus of CGTMSE is being contributed by the Government and SIDBI in the ratio of 4:1 respectively. Under the scheme, collateral-free credit is available to the micro and small enterprise sector (MSME).
- MUDRA Scheme: Pradhan Mantri Mudra Yojana is a Government of India scheme, which enables a small borrower to borrow from banks, MFIs,

- and NBFCs for loans up to 10 lakh for non-farm income-generating activities. Generally, loans up to `10 lakh issued by banks under Micro Small Enterprises are given without collaterals.
- Fund of Funds for Start-ups (FFS): Rs10,000 Crore corpus fund was established in line with the Start-up India action plan under SIDBI for extending support to start-ups.

			Cursuistine Valuation		
lank	Sector	Companie		No.of Gunkin	No.01 Chestina
•	FinTech	27	11,550	13	14
	E-commerce	14	6,130		10
0	SaaS	11	2,900		6
	EdTech	7	3,020	4	1
	Artificial Intelligence		2,150	2	3
•	AgriTech		2,870	3	3
0	Consumer Goods		2,080	1	
0	Neo Bank	5	1,940	2	3
	Shared Economy	4	2,620	4	0

- Tax Sops: Tax exemption on Capital gain tax, Removal of Angel tax, Tax exemption for 3 years, and Tax exemption in investment above Fair Market Value.
- ➤ SETU (Self-Employment and Talent Utilization) Fund: The government has allotted Rs 1,000 Cr to create opportunities for self-employment and new jobs mainly in technology-driven domains.
- **E-Biz Portal:** It is India's first government-to-business portal that integrates 14 regulatory permissions and licenses at one source.

Conclusion:

The report is a good sign from India's economic point of view that a large number of startups have become unicorns. However, startups in India face several hurdles such as a paucity of skilled workforce, bureaucratic hurdles and stiff competition from established businesses, regulatory ambiguity, inadequate infrastructure, etc. resulting in startups facing significant challenges. These problems should be resolved so that India becomes a global hub for start-ups and Indian start-ups set up their headquarters in India.



Miscellaneous Issues



1. Teja Singh Sutantar

Why in News:

Recently Punjab Chief Minister Bhagwant Mann has unveiled the statue of former Sangrur MP and revolutionary leader Teja Singh Sutantar at Nihalgarh village in Sangrur district. Who not only fought against the colonial rule but also fought to secure the rights of the farmers of Punjab from the feudal lords.

About Teja Singh Sutantar:

Born as Samund Singh in 1901 in Aluna village of Gurdaspur district. After completing his schooling, he joined Khalsa College, Amritsar. After the Jallianwala Bagh massacre of 1919, he joined the Akali Dal to participate in the movement to free the Gurdwaras from the fallen Mahants. In September 1921, he formed his own troupe called 'Sutantar Jatha' (also known as Swatantra/Swatantra). In the first attempt, the group successfully freed the Gurdwara from the mahants in Teja village of Gurdaspur district. This success earned him the nickname Teja Singh Sutantar from his supporters. He died of a heart attack on 12 April 1973 in the Central Hall of Parliament.

How Teja Singh Sutantar become a revolutionary?

- In early 1923, Teja Singh went to Kabul as a Sikh missionary. There he came in contact with some leaders of Gadar Party. Ghadar leaders gave Teja Singh military training and he joined the Turkish Military Academy in 1925 under the pseudonym Azad Beg. Teja Singh later went to Berlin and then to Canada and the United States where he addressed meetings of Indians.
- After visiting several countries and briefly attending a university in Moscow in December 1934, Teja Singh returned to India and became a prominent leader of the Communist Party (CPI).
- ▶ He contributed revolutionary articles to the magazine Kirti. He often wrote about the issues troubling the farmers. On January 16, 1936, he was arrested along with other communist leaders for their "seditious" activities.

Important points Regarding Teja Singh Sutantar and his political journey:

Due to his popularity, Teja Singh was elected unopposed to the Punjab Legislative Assembly in May 1937 as a candidate of the Indian National Congress while he was in jail at that time.

- He remained a member of the Punjab Legislative Assembly till 1945. He was also the Secretary of the Communist Party (Punjab) from 1944-1947.
- After independence, Teja Singh led many peasant movements against the government and landlords. He was a prominent leader in the PEPSU Muzara movement.
- Teja Singh formed the Kirti group of the Punjab Communist Party with the Red Party as its centre.
- ➤ He became a member of the Punjab Legislative Council from 1964-1969. He edited Lal Jhanda, a monthly magazine in Urdu, Lal Savera, a Punjabi weekly, and contributed to various newspapers.
- In 1971, he was elected to the Lok Sabha from the Sangrur parliamentary constituency. He contested the election on a CPI ticket.

2. Uttaramerur Rock Inscription

Why in News:

Recently Prime Minister Narendra Modi mentioned the Uttaramerur inscription in Kanchipuram, Tamil Nadu while discussing the democratic history of India. India is the oldest democracy in the world, the mother of democracy. The walls of the Vaikunda Perumal temple at Uttaramerur are inscribed with details revealing the system of local governance from the 10th century CE.

About Uttaramerur Rock Inscription:

- Uttaramerur is located in present-day Kanchipuram district, about 90 km south-east of Chennai. It is known for its historical temples built during the Pallava and Chola rule.
- ➤ Uttaramerur has many inscriptions spanning the centuries. The most famous being referred to by Modi is from the reign of Parantaka I (907–953 AD). These provide a detailed account of the self-government of the village.

Important points related to the Uttaramerur inscription:

- The details of the functions of the local assembly ie Gram Sabha are found in the records.
- The Uttaramerur inscription details the selection of members, the qualifications required, their roles and responsibilities and even the circumstances under which they were removed.
- > To appoint representatives in the Assembly.
- The process of formation of Sabha, 30 wards, all the people living in these 30 wards used to gather and elect a representative for the Gram Sabha. The qualifications for such a representative include ownership of a certain



- amount of land, having a house, being between 35 and 70 years of age, and knowing mantras and brahmins. An exception can be made on the ownership of land if the person has learned at least one Veda and four Bhashyas.
- ➤ The inscription describes several important committees within the assembly with their own specific functions. These include garden committee, tank committee, annual committee, committee for supervision of justice, golden committee etc.
- This committee work lasted for 360 days, after which the members had to retire.
- Anyone in the committee who was involved in any wrongdoing was immediately removed.

Is the Uttaramerur inscription an example of democracy?

The Uttaramerur inscription gives details of local self-government but on closer inspection it is far from a truly democratic system. It not only limits the membership of the Sabha to a small sub-class of zamindar brahmins but also does not hold proper elections. However, this does not mean that this inscription should not be presented as an example for democratic functioning.

Conclusion:

The idea of democracy as it is understood today is a recent phenomenon. The United States, often touted as the epitome of a liberal democracy, only granted universal adult suffrage to its population in 1965. The Uttaramerur inscription details a system of local self-government outside the direct authority of the king. This inscription is like a constitution – it describes both the responsibilities of the members of the assembly as well as the limits of authority of these members. If the rule of law is an essential component of a democracy, the Uttaramerur inscription describes a system of government that follows exactly that.

3. Ambedkar Circuit Tourist Train

Why in News:

Recently the government has launched the first Ambedkar Circuit tourist train which will cover major places associated with the life of BR Ambedkar as well as important Buddhist heritage sites. Tourism, Culture and DoNER Minister Shri G. Kishan Reddy and Social Justice and Empowerment Minister Dr. Virendra Kumar flagged off Bharat Gaurav Tourist Train Yatra on Ambedkar Circuit from Hazrat Nizamuddin Railway Station. Its 8-day tour includes visits to places associated with Dr. Ambedkar like New Delhi, Mhow, Nagpur, Sanchi, Sarnath, Gaya, Rajgir and Nalanda.

Important points related to Ambedkar Circuit Tourist Train:

- The 'Bharat Gaurav Tourist Train' is being operated under the 'Dekho Apna Desh' initiative which aims to promote domestic tourism. It is a joint collaboration between the Ministry of Tourism and the Railways. Bharat Gaurav Train is an effective step to promote Ek Bharat Shreshtha Bharat under Dekho Apna Desh. The government has developd sites related to Babasaheb Ambedkar not only in India but also in London.
- Bharat Gaurav Tourist Train aims to give a glimpse of the life of Bharat Ratna Baba Saheb Ambedkar to all the passengers.
- The train also aims to promote domestic tourism and the spirit of Ek Bharat Shreshtha Bharat.
- The tourist train has a well equipped pantry car to rustle up freshly made vegetarian food for the tourists. From clean toilets to CCTV cameras for tourists, security guard services were also available on board.
- The train is fitted with an infotainment system for the entertainment of passengers as well as public announcements.

Ambedkar Circuit Tourist Train Tour:

- Pharat Gaurav tourist train journey started from Hazrat Nizamuddin railway station today. Visited Baba Saheb Ambedkar Memorial in New Delhi. After that the birth place of Dr. Bhim Rao Ambedkar (Bhim Janmabhoomi) Dr. Ambedkar Nagar (Mhow) then the train proceeded to Nagpur Railway Station where tourists visited Deekshabhoomi, an iconic monument of Navayana Buddhism. Sanchi's places of interest include the stupa of the same name and other Buddhist sites. Sanchi was followed by Varanasi where a visit to Sarnath and Kashi Vishwanath Temple was part of the day's sightseeing.
- After this the holy site of Bodh Gaya where tourists visit the famous Mahabodhi Temple and other monasteries then sightseeing tour of Rajgir and Nalanda. The Buddhist sites and ruins at Nalanda are major sites of the destination.

Way Forward:

Babasaheb faced very challenging situations in his life and his life journey of empowering the last man in the hierarchy and removing discrimination on the basis of caste is very inspiring. Babasaheb worked for equality and brotherhood throughout his life and today the train is representative of that equality and the traveling passengers will come back with a lot of memories and knowledge about the principles of Babasaheb Ambedkar. The introduction of Bharat Gaurav Tourist Train is in line with the "Dekho Apna Desh" initiative of the Government of India to promote circuits of special interest in domestic

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tourism.

4. Maharashtra Jivhala Scheme

Why in News:

Maharashtra Department of Prisons has started a financing program called Jivhala for prisoners in Maharashtra's numerous prisons. The program has been launched in Pune's Yerawada Central Jail by the Department of Prisons and Maharashtra State Cooperative Bank. According to bank and jail authorities, this credit program for prisoners who are still incarcerated might be the first of its type in India.

Key Features of the Jivhala Scheme:

- It has been started largely for criminal defendants serving sentences of more than three years in jail. The Maharashtra State Cooperative Bank is providing the loan program.
- The program's prototype version was launched for inmates in Pune's Yerawada Central Jail, and it will eventually be expanded to almost 60 jails around the state.
- This is India's first prisoner credit program of any type. The current loan programs for prisoners are intended to aid in their rehabilitation after serving their sentences.
- In accordance with this plan, the authorized family members will get a loan in the inmate's name. An initial loan of Rs 50,000 with a 7 percent interest rate would be made available. One percent of the interest the bank generates will be contributed to the Prisoners' Welfare Fund and returned to the system.
- An offender is allocated labor in various industrial and manufacturing units inside the jail after being classified as skilled, semi-skilled, or un-skilled upon entering the prison system. They receive daily compensation for this labor ranging from 50 to 70 rupees.
- The funds that have been placed into their accounts can be utilized to send home or to purchase necessities from the prison canteen. After being released from prison, convicts get their earnings from the penitentiary. When a prisoner takes out a loan, the computed Equated Monthly Installment is immediately withdrawn from their accounts.

About Yerwada Jail:

- Yerwada Central Jail Pune, is one of India's oldest jails, which was constructed many years ago by the British.
- This prison, which houses over 5,000 inmates across multiple barracks and security zones in addition to an open jail outside its walls, is the

- biggest in the state of Maharashtra and one of the biggest in all of South Asia.
- Many famous nationalist fighters including Mahatma Gandhi and Jawaharlal Nehru have been lodged in this jail.

Way Forward:

The scheme that started on Maharashtra day, i.e. May 1, has benefited 18 prisoners who sought a loan for children's education, to pay health-related bills and lawyers' fees. This scheme will improve the economic condition of the prisoners' families and they can also earn their livelihood.

5. India's Clinical Trial Registry

Why in News:

Recently, speedy approval of Covid-19 vaccine raised several question regarding clinical trials.

About Clinical Trial:

- A clinical trial is a research study conducted on human participants to evaluate the safety, efficacy, and effectiveness of an intervention such as a drug, device, or behavioural therapy.
- Clinical trials are an essential component of the drug development process and are necessary to determine the benefits and risks of a new drug/ device.
- They are governed by the Drug and Cosmetic Act, 1940, the Medical Council of India Act, 1956, and the Central Council for Indian Medicine Act, 1970.

About India's Clinical Trial Registry:

- It was launched in 2007.
- It is a free online public record system for the registration of clinical trials conducted in India.
- It is hosted by ICMR national institute of medical statistics.
- ➤ In 2009, the Drugs Controller General of India (DCGI) mandated all trials to be registered in the CTRI.
- It is one of the 18 primary registries recognized by the World Health Organization (WHO).

Issues Regarding Clinical Trial Registry in India:

- Much of the data is missing for example- Only 281 of 606 (46%) trials were updated after the final enrolment.
- Unclear data, such as the same acronym being used for two organizations or a clinical trial site being listed twice with the same principal investigator
- Wrong data about whether a trial is registered prospectively or retrospectively
- A number of entries are inaccurate due to confusion over definitions, such as



- some 'interventional trials' being listed as 'observational trials'
- Non-standardized information about cities causes confusion and repetition in the registry

Solution:

- The CTRI should ensure the registration of all clinical trials in India
- The CTRI should comply with the WHO guidelines and provide information for each trial, including audit trails, results fields, and data-sharing plans.
- The CTRI could be made a permanent activity with staff on a five-year contract, instead of relying on temporary staff for 15 years.
- Registration of trials accurately.
- Improving the inner workings for CTRI.
- Bringing all the documentation into one platform
- Allow public access to the registry.

Conclusion:

Ethical committees should work with investigators for potential harms of the clinical trials and how they can be monitored as per the research proposals with minimum risk.

6. Global Buddhist Summit

Why in News:

The first Global Buddhist Summit was held in New Delhi which was inaugurated by Prime Minister Narendra Modi. It was attended by Buddhist monks and others from about 30 countries. The summit was jointly organized by the Union Ministry of Culture and the International Buddhist Confederation (IBC) under the Amrit Mahotsav of Independence of India. IBC is an umbrella organization that provides a platform for Buddhists around the world. Its theme was: 'Responses to contemporary challenges, philosophy to practice'.

Objective:

The main objective of this summit was to spread universal values like philosophical and cultural while promoting cooperation among Dhammasevaks. It also aims to address global challenges and develop a sustainable model for a peaceful and harmonious future.

About Buddhism:

Buddhism is a non-theistic (having no belief in God) religion, which is considered both a philosophy and a moral discipline. It was started in India by Gautama Buddha in the 6th century BC. The Mauryan emperor Ashoka the Great sent many Dhammasevaks to spread Buddhism not only in India but throughout Central and South East Asia. The four primary pilgrimage sites in Buddhism are: Lumbini (the birthplace of Lord Buddha), Bodhgaya (where Buddha attained enlightenment), Sarnath (the place of Buddha's first sermon), and Kushinagar (where Buddha attained parinirvana).

Major Branches of Buddhism:

The Theravada branch of Buddhism became popular majorly in Sri Lanka, Myanmar, and Thailand. Under this, there is a need to strictly follow the basic principles of Buddhism. The Mahayana branch of Buddhism influenced countries like China, Korea, and Japan, in which by following the Buddha path one can reach the level of a Buddha. The Vajrayana branch of Buddhism is more popular in Tibetan Buddhism which is also commonly known as 'Lamaism'.

Way Forward:

In today's unstable world varieties of problems prevail, be it climate change or terrorism and every other country is in a blind race of development to serve their interests. Buddhism shows a way out of unsustainable practices, by emphasizing protecting nature and adopting a middle path. It insists on increasing non-violence among human beings and promotes harmony between human and nature, therefore, Buddhism become more relevant even today.

7. Thawe Festival of Bihar

Why in News:

Recently, the Thawe Festival was co-organized by the Department of Tourism and the Department of Art and Culture on April 15th and 16th in Gopalganj, Bihar. The festival's goal was to boost tourism in Gopalganj and bring people to the Thawe Durga Temple.

Key Features of Thawe Festival:

- In Gopalganj, Bihar, the 11th Annual Thawe Festival recently took place. Tejashwi Yadav, the deputy chief minister of Bihar, opened the festival. Since 2012, the event has been held every year.
- The Thawe Festival is a biannual event held in Gopalganj, Bihar. The festival's goal is to promote tourism in the area and encourage travelers to visit the Thawe Durga Temple, a popular site in the area.
- ➤ Since 2012, the festival has been planned and features a variety of cultural and entertaining events. The Home Guard Ground, near the Thawe Durga Temple, is where the celebration



will take place.

Politicians and well-known members of the entertainment sector are among the festival's noteworthy participants and contributors.

About Thawe Mandir:

- Thawe, in the Gopalganj District in the Indian state of Bihar, is home to the Thawe Mandir, the temple dedicated to Maa Thawewali.
- Maa Shakti has several monikers and guises. Maa Thawewali is one of the various names and forms by which Bhaktas (devotees) worship her.
- There are 52 "Shaktipithas" in India, and this location is one of them. According to legend, Maa traveled here from her other sacred location in Kamrup, Assam, where she is known as "Maa Kamakhya," thanks to the intercession of her devoted follower "Shree Rahshu Bhagat Ji." "Singhasini Devi" and "Rahshu Bhawani" are other names for Maa.

Famous Fairs and Festivals of Bihar:

Rajgir Festival: It is a three-day event held in

- October every year that celebrates Bihar's rich cultural legacy.
- Sonepur Pashu Fair: It is one of the biggest cattle fairs in Asia and is organized every year in November.
- Chhath Puja: It is one of the most important festivals in Bihar and is celebrated to worship the Sun God.
- Sama-Chakeva Bihula: This is one such festival that is celebrated every year in November.

Way Forward:

The Thawe Durga Temple is a monument of India's cultural heritage and a symbol of devotion and legacy. Its history and architecture make it an important site. The temple is a popular tourist site as well as a place of worship for believers. The importance of the temple and its festivals offer a window into India's rich cultural past and religious diversity.



News Of National and International Importance

1. Ranking - World's Most Criminal Countries

- Recently World of Statistics has shared the ranking of the world's "Most Criminal Countries". In this list, Venezuela has been given the top spot, followed by Papua New Guinea, Afghanistan, South Africa, Honduras, Trinidad, Guyana, Syria, and Papua New Guinea, Somalia and Jamaica.
- According to the World of Statistics, India ranks 77th in list, while the US ranks ahead of India at 55th position and the UK at 65th position.
- Turkey, Germany and Japan are among the least criminal countries at 92nd, 100th and 135th rank respectively. Corruption, drug trafficking and kidnapping are various forms of crimes including assassination. Other forms of crime could be robbery and assault due to the high unemployment rate in the country.
- The total number of any type of crimes reported is divided by the total population, then multiplied by 100,000, yielding the overall crime rate.

2. International Flight Safety Standards

- India retains top status in International Flight Safety Standards. India received Category One status after the Federal Aviation Administration (FAA) of the United States of America conducted an audit of the Directorate General of Civil Aviation (DGCA) in the areas of aircraft operations airworthiness and personnel licensing. The FAA, under its International Aviation Safety Assessment (IASA) program, determines whether a country complies with safety standards established by the International Civil Aviation Organization (ICAO).
- India had achieved an Effective Implementation (EI) of 85.65% from the previous EI of 69.95%, thereby increasing its global ranking. The FAA commended the DGCA for demonstrating its commitment to ensure effective safety oversight of India's aviation system.
- This allows Indian airlines to continue operating flights to the US and codeshare with US carriers. India's Category 1 determination comes at a time when the Indian aviation sector is on a high growth trajectory and is a testimony of India's commitment to effective safety oversight for the civil aviation system.

3. Inca Civilization

- Recently archaeologists in the Peruvian Andes have discovered an Inca bath complex built half a millennium ago.
- Archaeologists believe that it was more likely to serve the elite of a vast empire larger than once dominated large areas of South America. Its structure was "more hierarchical, restricted and sacred space within the Inca administrative centres because instead of performing a utilitarian or hygienic function, they also served for religious functions and ancestor worship."

About the Inca Civilization:

➤ The Inca civilization flourished in ancient Peru between 1400 and 1533 CE. The Inca Empire eventually extended across western South America from Quito in the north to Santiago in the south. It was the largest empire ever seen in the Americas and the largest in the world at that time. Inca society was highly stratified. Its rulers ruled with the help of an aristocratic bureaucracy, exercising power with harsh and repressive controls. Inca technology and architecture

Quite Inca Lampier

Make Parke
Care

South America

were highly developed, although not strikingly original. Their irrigation systems, palaces, temples and fortifications can still be seen throughout the Andes. Their economy was based on agriculture. Features of Inca religion include animism, fetishism and the worship of nature gods. The Inca language Quechua is still spoken by about eight million people in the world.

www.dhyeyaias.com



4. Kanti Velugu Program

- The Kanti Velugu program is an initiative of the Telangana State Government to prevent controllable blindness. The Kanti Velugu program has achieved a milestone by screening one crore people for eye problems. The second phase of this program started on January 19, which will run till June 15, 2023. The program was launched in August 2018 with an aim to reduce the prevalence of avoidable blindness in the state.
- Under the Kanti Velugu program, ten trained healthcare professionals conduct free eye tests in every village and urban ward in the state. This examination is carried out in a specially designed mobile unit van equipped with state-of-the-art ophthalmic equipment. The program also includes awareness campaigns to educate people about regular eye check-ups and the importance of maintaining good eye health. The program also helps in the detection and management of other eye-related problems such as cataracts, glaucoma and diabetic retinopathy.



5. R21 Malaria Vaccine

- Recently a new malaria vaccine called R21/Matrix-M, has become the first vaccine to exceed the World Health Organisation's target of 75% efficacy.
- It has been developed by the University of Oxford and has received its first approval in Ghana as the African country steps up its fight against the disease that claims the life of a child every minute.
- Malaria vaccine development has long been hampered due to the complex structure and life cycle of malaria.
- This is one of the several initiatives aimed at combating the mosquito-borne disease (which kills more than 600,000 people annually), mostly affecting children in Africa.
- ➤ The vaccine has been approved for use in children aged 5-36 months, the age group at the highest risk of death due to malaria.



6. Pralay ballistic missiles

- Indian Armed Forces are going to get about 250 more Pralay ballistic missiles to further enhance the firepower of the forces and to strengthen the northern borders.
- Pralay is India's first conventional semi-ballistic missile and is capable of responding to any conventional missile attack from northern or western borders. It has been developed by DRDO. It is powered by a solid propellant rocket motor and features other new technologies. The missile guidance system includes state-of-the-art navigation system and integrated avionics.
- Its range is 150 km to 500 km. It is capable of carrying conventional ordnance ranging from about 350 kg to 700 kg, which makes it even more lethal. It is part of the Prahar missile programme, which was first tested in 2011.
- The missile has been developed in such a way that it is capable of countering interceptor missiles and also has the capability to change its course after traveling a certain distance in mid-air. India's Pralay missile can be compared to China's Dong Feng 12 and Russian Iskander missile used in the ongoing war with Ukraine.





7. Buzi Bridge in Mozambique

- Recently, the Buzi Bridge in Mozambique, constructed under the 132 km Tika-Buzi-Nova-Soffala road project was virtually inaugurated by the External Affairs Minister of India.
- The Buzi River originates in the Eastern Highlands (or Manica Highlands) on the border between Mozambique and Zimbabwe and flows eastwards through Mozambique's Manica and Sofala provinces. It drains west of Beira into the Mozambique Channel. The Buzi River is 374 kilometers (232 mi) long, with a catchment basin of 31,000 square kilometers. The Revue River is the main northern tributary, which originates in the eastern highlands near Machipanda.

8. AMRUT Bharat Station Scheme

The railway infrastructure in East Bengaluru will be given a facelift, under the Amrit Bharat station scheme launched by the central government. The scheme was launched by the Central government to upgrade and modernize 1275 railway stations. The objective of AMRUT Bharat Station Scheme is to develop stations with better facilities like better station approach, circulating area, waiting room, toilets, lift/escalator. Besides this it also includes developing stations with better facilities like cleanliness, free Wi-Fi, kiosks for local products, better station accessibility, circulating area, waiting rooms, toilets, lifts/escalators etc. The scheme further aims at improvement of railway buildings, multimodal integration, facilities for Divyangjan, provision of sustainable and ecofriendly solutions and construction of ballastless tracks.

9. The Cinematograph (Amendment) Bill 2023

- Recently the Union Cabinet approved the Cinematograph (Amendment) Bill, 2023. The Bill seeks to amend the Cinematograph Act, 1952 to provide for stricter punishment for film piracy and to introduce new age categories for classifying films. The bill will be introduced in the upcoming monsoon session of Parliament.
- Punishment for film piracy: The draft bill proposes imprisonment of up to three years and a fine of Rs 10 lakh for those involved in film piracy.
- New age categories for movie classification: The CBFC currently provides three age categories for mainstream films.
- The draft Bill expanded the U/A category to U/A 7+, U/A 13+ and U/A 16+.
- The new age categories may allow filmmakers to address mature subjects without getting an A certificate. This is important to the industry because an A certificate limits a film's potential audience.
- The new categories can help classify movie content more accurately.

10. Epstein-Barr virus (EBV)

- Recently, a study published in the Nature journal has shown that a virus that spreads mainly through saliva can develop into cancer. This virus is called Epstein-Barr virus or EBV and is the cause of infectious mononucleosis or mono and other infections.
- Phis virus can be transmitted by people sharing drinks or food which affects more than 90 percent of the world's population. This virus is often dominant without any symptoms. Most EBV infections are small and transient, however, in some cases, the virus may lie dormant and become active again at a later stage. Long-lasting latent infections, i.e. infection by an organism that has been dormant in the body for some time, are associated with many cancers as well as many chronic inflammatory disorders. This virus induces fragmentation of human chromosome 11 and triggers genomic instability, which may activate aberrant oncogene in leukaemia. There is no vaccine available to prevent EBV infection.



11. Garra Laishrami

- Recently in a significant discovery, a rare freshwater fish species Garra Laishrami has been found by the researchers of Central University and Zoological Survey of India (ZSI) in Odisha's Koraput district.
- While carefully examining some fishes of the Garra genus, researchers at CUO identified the new species and named the species as "Garra Laishrami". The species is named after Dr Laishram Kosygin of the Zoological Survey of India to honor his remarkable contribution in the understanding of the taxonomy of Indian freshwater fishes.
- Fishes of the genus Garra are characterized by the presence of gular disc developed from the tissues of the gular region. These groups of fishs are found from Borneo, South China and Southern Asia through Middle East Asia, Arabian Peninsula and East Africa to West Africa. However, the new species Garra Laishrami is found only along the Kolab River in the Eastern Ghats of Odisha. The maximum length of this fish is 76 mm to 95.5 mm. The local people use this species for food.



12. Pitta bird

- In the first census of mangrove pitta bird conducted in two coastal districts of Odisha, 179 birds were found.
- Pitta bird is a near-endangered species found in some parts of eastern India, including Bhitarkanika in Odisha and the Sunderbans in West Bengal. Its scientific name is Pitta Megharencha.
- Bhitarkanika National Park:
- Bhitarkanika National Park is located in the north eastern corner of Kendrapara district in Odisha, India. It is located in the delta region of the Brahmani-Baitarani river system and is surrounded by the Bhitarkanika Wildlife Sanctuary. Bhitarkanika is home to a diverse range of fauna including the endangered saltwater crocodile.



13. Galapagos Islands

Recently, a scientific expedition has discovered previously unknown coral reef on Galapagos Islands of Ecuador. The reef contains more than 50% living coral.

About Galapagos Islands:

- The archipelago is a group of 19 islands, 13 large and 6 small, and dozens of islets and reefs that cover an area of more than 17,000 square miles.
- It is 600 miles off the west coast of Ecuador in South America.
- > The Galapagos Islands and their surrounding waters form the Galapagos Province of Ecuador, the Galapagos National Park and the Galapagos Marine Reserve.
- It is also home to giant tortoises, albatrosses, cormorants and other species, some of which are endangered. It has been designated as a UNESCO World Heritage Site in 1978.
- Mount Azul is the highest point in the Galapagos Islands at 5,541 feet.



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Current Affairs at a Glance

- 1. Chennai-based drone startup Garuda Aerospace has become the first company to receive the government's agri-drone subsidy for agricultural drones. The Garuda Kisan drone approved by the Directorate General of Civil Aviation will help farmers manage and monitor the health of crops as well as detect and identify areas in need of water or fertiliser.
- 2. IIT Indore, NASA-Caltech, and Sweden's University of Gothenburg have developed a low-cost camera setup called CL-Flam to capture multispectral images of four chemical types of fire using a single DSLR camera. The device could revolutionize scientific imaging by simplifying a complex system that previously required four cameras to capture the same data.
- 3. Kerala has become the first state in India to adopt water budgeting to tackle water scarcity in some areas. Water budget is a tool that gives data on the availability and consumption of water in an area.
- 4. City Union Bank has launched India's first voice biometric authentication to log into its mobile banking app.
- 5. Renowned economist of national and international repute, Utsa Patnaik has been selected for the Malcolm Adiseshiah Award 2023. The award is given every year by the Malcolm and Elizabeth Adiseshiah Trust. The Malcolm Adiseshiah Award for Development and Social Justice is an annual award in India given to individuals who have made significant contributions to the development and empowerment of underprivileged communities in the country.
- 6. Recently Saurashtra Tamil Sangam started in Somnath, Gujarat, with an aim to promote cultural ties between Gujarat and Tamil Nadu. The program is being organized under the 'Ek Bharat Shreshtha Bharat' initiative.
- 7. Arun Sinha has been appointed as the chairman of the National Technical Research Organisation. National Technical Research Organization (NTRO) is a technical intelligence agency established in 2004 in India. Arun Sinha has been a consultant in NTRO for two years. He is a 1984 batch IPS officer in Kerala cadre.
- 8. The combined Index of Eight Core Industries (ICI) increased by 3.6 percent (provisional) in March 2023 as compared to the Index of March 2022.
- 9. Gallantry Medal awarded to Wing Commander Deepika Mishra. She has been awarded the Vayu Sena Medal (Gallantry) in 2021 for her conspicuous gallantry during flood relief operations in Madhya Pradesh. In this relief operation, she helped in saving the lives of 47 people including women and children.
- 10. The PM Gati Shakti National Master Plan initiative received the award for excellence in public administration.
- 11. Angela Merkel has received Germany's highest Order of Merit.
- 12. India has secured 38th rank in the Logistics Performance Index (LPI) 2023 of the World Bank.
- 13. UAE is the second most important export destination for India during the financial year 2022-23.
- 14. For the first time, the Election Commission has introduced the vote from home option in the Karnataka Legislative Assembly.
- 15. Canara Bank and NPCI Bharat Billpay Limited (NBBL) have launched cross border bill payment services for citizens of Indian origin living in Oman. Non-Resident Indians (NRIs) can now take advantage of the robust platform of Bharat Bill Payment System to make bill payments on behalf of their family members.
- 16. According to the annual AI Index report of Stanford University, India ranks 5th in the list of countries with the highest investment in AI.
- 17. India's first underwater metro trial has been started by Kolkata Metro.
- 18. According to ADR report, Jagan Mohan Reddy is the richest Chief Minister of India.

Theme

The theme of the event is "Access for All: Prevention of bleeds as the global standard of care".

About Hemophilia

- Hemophilia is usually an inherited bleeding disorder in which the blood does not clot properly.
- This can lead to spontaneous bleeding as well as bleeding following injuries or surgery
- Blood contains many proteins called clotting factors that can help to stop bleeding.
 - People with hemophilia have low levels of either factor VIII (8) or factor IX (9).
- is determined by the amount of factor in the The severity of hemophilia that a person has,
- The lower the amount of the factor, the more likely it is that bleeding will occur which can lead to serious health problems.

Treatment

Schnabel, who founded the World Federation of Hemophilia (WFM). The purpose of this day is to

raise awareness and provide information about

hemophilia and other bleeding disorders.

annually, commemorating the birthday of Frank April 17th is observed as World Hemophilia Day

Why In Broadcast

- The best way to treat hemophilia is to replace the missing blood clotting factor so that the blood can clot properly.
- This is done by infusing (administering through a vein) commercially prepared factor concentrates.

Its vision of Treatment for All is for a

Vision of WFM

world where all people with inherited bleeding disorders have access to care,

regardless of their type of bleeding

disorder, gender, or where they live.

World Hemophilia Day

Signs and Symptoms

Common signs of hemophilia include:

swelling and pain or tightness in the joints; it Bleeding into the joints. This can cause often affects the knees, elbows, and ankles.

inherited bleeding disorders

around the world.

Its mission is to improve and sustain care for people with

Mission of WFM

- muscle and soft tissue causing a build-up of blood in the area (called a hematoma).
- and Bleeding of the mouth and gums,

- Bleeding into the skin (which is bruising) or
- bleeding that is hard to stop after losing a tooth.

factor IX.

Hemophilia B (Christmas Disease): This type is caused by a lack or decrease of clotting

factor VIII.

Hemophilia A (Classic Hemophilia): This type is caused by a lack or decrease of clotting

A

There are several different types of hemophilia.

The following two are the most common:

- shots, such Bleeding after having vaccinations.
- Bleeding in the head of an infant after a difficult delivery.
- Blood in the urine or stool.
- Frequent and hard-to-stop nosebleeds.

Why In Broadcast

Recently GI tags were issued to Kumbum Panneer Thrachai Grapes, Nagari Dubraj Rice, Sharbati Wheat, Sundarja Mango and Morena's Gajak. It was issued by the Geographical Indication Registry under the Department of Industry Promotion and Internal Trade, Ministry of Commerce and Industry, Government of India.

Recently Awarded GI Tags

Kumbum Panneer Thrachai Grapes:

- Kumbum Angoor, also known as Kumbum Panneer Thrachai, from Tamil Nadu has got GI tag.
 - It accounts for 85% of the grapes grown in Tamil Nadu.
- The Cumbum Valley on the Western Ghats in Tamil Nadu is known as the 'Grape City of South India.

Nagari Dubraj Rice:

- Nagari Dubraj is an aromatic rice variety from Chhattisgarh.
 - It is also known as "Basmati of Chhattisgarh".

Sharbati Wheat:

- Sharbati wheat of Madhya Pradesh is mainly found in Sehore, Narsinghpur, Hoshangabad, Harda, Ashoknagar, Bhopal and Malwa.
- It is rich in many nutrients.
- It contains 1 gram of fat, fiber and 21 grams of carbohydrates, 5 grams of protein, 40 milligrams of calcium and 0.9 milligrams of iron with 113 grams of calories.

Sundarja Mango of Rewa:

Sundarja mango has also been included in one district one product scheme of Rewa district, M.P.

Morena's Gajak:

- Morena's Gajak is 100 years old and good in taste.
- Its flavor has spread to many varieties including samosas, sonpatti, chikki and gujiya.

About Geographical Indication

Geographical indication (GI) is a sign or a name given to a certain product that relates to a specific geographical location or origins like a town, region or country.

Importance of GI tag

GI tags are regarded as a certification that the particular product is produced as per traditional methods and it has certain specific qualities or it has a particular reputition because of its geographical origin.

Significance of GI in Rural Development

Mostly traditional products which are produced by rural communities for generations and have gained fame in the market for their precise quality get GI tags. Impact on rural development can be as follows:

- Preservation of traditional expertise and traditions
- Supply chains can be built around a product's reputation
 - Higher price for the GI product

GI Tags

- Product's natural resources or ingridents can be preserved.
 - Tourism ecosystem system can be built.

Measures taken by Government to Promote GI tag in India

- Reduced fee structure for the registration of an authorised user of a registered Geographical Indication
 Social media campaigns launched like.
- 1. Gift a GI
- 2. Spot the GI

a first-of-its-kind Geographical Indication Festival of India with an aim to provide a platform for GI producers to display their product virtually.

Why In Broadcast

The Central Bureau of Narcotics (CBN) has launched an integrated portal to facilitate licensing and EXIM (Export and Import) authorizations for the pharmaceutical and chemical industries.

Way Forward

- will serve as a stepping stone towards greater transparency and compliance for narcotic drugs, psychotropic substances (NDPS), and prohibited substances in the The inauguration of the CBN's single site country.
- of the pharma and chemical industries for synergistic growth of the drugs and pharma sector and boosting the economy for "Aatma Nirbhar Bharat." accountability in department users, with the dual goal of catering to the needs instill The CBN's unified portal will transparency, efficiency,

About Central Bureau of Narcotics

- The CBN is a central government agency tasked with enforcing the NDPS Act of 1985 and other international treaties governing the trafficking of narcotics, psychotropic medicines, and precursor chemicals.
- Three Deputy Narcotics Commissioners (DNC), who are in charge of the units in the opium-growing states of Madhya Pradesh, Rajasthan, and Uttar The Central Bureau of Narcotics headquarters is located at Gwalior. Pradesh, support the Narcotics Commissioner of India.

About Unified Portal

This site is set up for database integration and ingestion with other government services like as Bharat Kosh, GST, PAN-NSDL validation, e-Sanchit, and UIDAI, allowing for one point services for getting CBN licences.

- Applicants may file applications from anywhere and at any time, 24X7, removing the need for actual interaction.
- Applicants may raise quarries, which will be answered through the portal.
 - time' and conserving the resources of the trade for This will leverage drastic reduction in 'processingother fruitful business activities.

Central Bureau of Unified Portal by Narcotics

Responsibilities of CBN

- Supervision over licit cultivation of opium poppy in India which is spread across 22 Districts 102 Tehsils/ Parganas in the States of Madhya Pradesh, Rajasthan and Uttar Pradesh.
 - Investigation of cases under the NDPS Act, 1985 and filing of complaint in the Court. Preventive and enforcement functions especially in the three poppy growing States.
- Action for tracing and freezing of illegally acquired property as per the provisions of Chapter V-A
- of the NDPS Act, 1985.
 - Issue of licences for manufacture of synthetic narcotic drugs.
- Issuance of Export Authorisations/ Import Certificate for export/ import of Narcotic Drugs and Psychotropic Substances.
- Issuance of No Objection Certificate (NOC) for import/export of a select number of Precursor Chemicals.
- All import contracts for item shall compulsory be registered with the Narcotics Commissioner, Gwalior prior to import.

Narcotic Drugs and Psychotropic Substances Act, 1985

The Narcotic and Psychotropic Substances Act of 1985 (NDPS Act) was enacted on November 14, 1985, to make it illegal to produce, cultivate, possess, sell, acquire, transport, store, or use narcotics without approval from the relevant authorities.

Financial Prospects

BloombergNEF research report says that the total value of carbon credits produced and sold could reach \$1 trillion globally by 2037.

Why In Broadcast

- stands committed to reducing the Under its Nationally Determined emissions intensity of its GDP by 45 India now percent by 2030, from the 2005 level, and achieving net zero by 2070. Contributions (NDCs),
 - (Amendment) Act 2022 aims to Conservation manoeuvre India on the right track. The Act gave a green signal to the Centre for creating a carbon credit Energy trading scheme.

India's Emission

- India's per capita emissions currently stand at a mere 1.8 tons of CO₂.
- India is the world's third-largest emitter at 2.9 Giga Tons CO₂ equivalent.

About Carbon Trading

- Carbon trading is a market-based mechanism that incentivizes companies to reduce their greenhouse gas emissions by allowing them to trade carbon credits, representing the right to emit a certain amount of carbon dioxide.
- This creates a financial incentive for companies to reduce their emissions and helps countries meet their emissions reduction targets, making it an
 - India leads the pack, accounting for 40-50 percent of annual carbon credits sales and having 1,685 projects registered under UNFCCC's CDM (Clean important tool in the fight against climate change. Development Mechanism) as of March 2022.

Challenges

- The process of turning carbon credits from a concept to reality can be challenging, as it often involves:
- Upfront investment
- Lengthy gestation periods
- The possibility of not being approved

Generating Carbon Credits with Indian Railways

Transport Sector

According to India's Third Biennial Update Report (2021) to UNFCCC, the transport sector is estimated to have contributed to 274 million tonnes of CO2 equivalent emissions per year in 2016, accounting for roughly 11 percent of the total emissions generated by the entire economy.

Contribution:

Roadways:

movement can be attributed to the road sector alone, which is Around 70% of freight movement and 90% of passenger the most carbon-intensive mode of all available options.

Railways:

Rail freight produces lower emissions per tonne-km than road freight, mainly due to the more fuel-efficient locomotives and the lower rolling resistance of trains compared to trucks.

Metro:

- were generated through innovative technologies of regenerative The Delhi Metro has earned 4.4 million carbon credits which braking etc. and due to Modal Shift.
 - In December 2022, the Ministry of Housing and Urban Affairs advised metro rail corporations to register for carbon credits.

Why In Broadcast

Chief Justice of India D.Y. Chandrachud on April 24 announced that the Supreme Court has created a special webpage for the Kesavananda Bharati case in which a 13-judge Bench, the largest constituted in the court's history, through a wafer-thin majority of 7:6, held that the Parliament cannot amend the Basic Structure' of Constitution.

Basic Features of the Constitution

- Supremacy of the Constitution
 - Republican and Democratic Form of Government
 - Secular character of the Constitution
- of the Constitution
 Separation of
 Powers between
 the Legislature,
 Executive and the
 - Judiciary Federal character
- of the Constitution
 The mandate to
 build a Welfare
 State contained in
 the DPSP
 - une Drar Unity & Integrity of

- the Nation
 Sovereignty of India
 D e m o c r a t i c
 character of the
 polity
 - Unity of the country
 Essential features
 of the individual
 freedoms secured
 to the citizens
- to the citizens

 Mandate to build a welfare state

 Sovereign Demo-
 - Sovereign Democratic Republic Parliamentary
- Democracy
 Three Organs of the State

Kesavananda Bharati case, 1973 Habeas Corpus case during the darkest days of Emergency, was overlooked for Chief Justiceship.

As an aftermath of the judgment, Justice A.N. Ray, the fourth in line of seniority and who was part of the minority which upheld

Need of the Collegium system

the Constitution, had superseded Justices J. M. Shelat, K.S. Hegde and A. N. Grover to

become the 14th Chief Justice of India. All

the unlimited power of Parliament to amend

These incidents could be directly linked to the Supreme Court evolving the Collegium system to protect judicial independence, which is also part of the basic structure doctrine.

Evolution of the Basic Structure Concept

A similar supersession followed when Justice H. R. Khanna, after his lone but

three of his colleagues had resigned.

historic dissent upholding the fundamental right to life and personal liberty in the

The concept of the basic structure of the constitution evolved over time. Some

More Info

- The webpage, the Chief Justice said in court, would host the complete submissions, petitions and judgments in the historic case, also called the Fundamental Rights Case.
- Chief Justice Chandrachud had recently compared the basic structure' of the Constitution to the North Star, an unfailing guide which shows the way when the path appears convoluted.

The Basic Structure Doctrine

- The Kesavananda Bharati judgment held that Parliament cannot use its constituent power to alter the essential features of the Constitution.
- The basic structure or framework of the Constitution was its living spirit, holding up the body of its text.
- Its existence cannot be pin-pointed to any particular provision of the text. It was the "soul" of the Constitution.

landmark judgements related to this doctrine are as follows.

- Shankari Prasad Case (1951)
 - Golaknath Case (1967)
- Kesavananda Bharati Case (1973)
- Indira Nehru Gandhi v. Raj Narain Case (1975)
 - Minerva Mills Case (1980)
- Waman Rao Case (1981)
- Indra Sawhney and Union of India (1992) S.R. Bommai Case (1994)

Encouragement for NGEs

The policy allows non-government entities (NGEs) to

space-based

International

and

National

offer the following:

object

space

for

Operate ground facilities

operations,

communication services,

On April 20, 2023, the Indian Space Policy-2023 was made public, with a focus on research and development of advanced technologies.

Why In Broadcast

The Responsibilities

Indian National Space Promotion and Authorisation Centre (IN-SPACe):

Provide authorizations to both government bodies and NGEs for space activities.

ground facilities for space object operations, including

telemetry, tracking, and command (TT&C) Earth

Stations and Satellite Control Centres (SCCs).

Engage in end-to-end activities in the space sector. The policy encourages NGEs to establish and operate

NGEs are also encouraged to use Indian orbital resources and/or non-Indian orbital resources to

establish space objects for communication services

- Define frameworks for developing space industry standards, based on global standards.
 - Authorize the use of space objects for communication/broadcast services in coordination with the departments concerned.
- Incentivize NGEs that acquire new orbital resources through filings in the UN's International Telecommunication Union (ITU)

NewSpace India Limited (NSIL):

- It will be responsible for commercializing space technologies and platforms created through public expenditure.
 - It will also manufacture, lease, or procure space components, and service the spacebased needs of users.

Indian Space Policy

ISRO's Role

Space Transportation

Space applications

Focuses on R&D:

- The Policy states that ISRO, as the national space agency, will focus primarily on the research and development of new space technologies and applications and on expanding the human understanding of outer space.
- SEO shall carry out applied research and development of newer systems so as to maintain India's edge in the sector in the following areas:
 - » Space Infrastructure

Commercial Space Resour

- The Indian Space Policy-2023 also permits NGEs to engage in the commercial recovery of an asteroid resource or a space resource.
- Any NGE engaged in such a process shall be entitled to possess, own, transport, use, and sell any such asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of India.

The Policy states that ISRO shall transition out from the existing practice of being present in the manufacturing of operational space

A

Transitioning from Operational Space Systems:

Human spaceflight.

Capacity building

Mature systems shall be transferred to

systems.

industries for commercial exploitation.

Commercial Recovery of Space Resources

Design and develop reusable, recoverable, and

systems,

reconfigurable technologies and systems for space

transportation.

Manufacture and operate space transportation

The policy also encourages NGEs to

over India and outside.

Why In Broadcast

membership is for a term of four Recently, Indiawas unanimously elected to the United Nations after a gap of two decades. The Statistical Commission (UNSC) years, beginning in January

SNA India's Role in the Revision of 2025

- role in the forthcoming India should play a key SNA to bring about a consensus enable on including additional digital industries and clearly measure the contribution Jo products and t Commission's of digitalization. countries revision
- relating to the can help achieve a \$5 important implementing the same of well-Incorporating economic revised SNA of 2025 and trillion economy with a \$1 the impact climate change, etc. into measurement activities issues being, Other

trillion digital economy.

Role: The UNSC is responsible for setting international statistical standards, promoting the use of those standards, and coordinating statistical activities among UN agencies and member states.

Composition: The UNSC is composed of 24 member countries elected by the Economic and Social Council on the basis of equitable geographical distribution.

Term: Members serve for a term of four years. It was established in 1947.

meets annually in standards and methods, and to discuss New York to review and approve statistical Meetings: The UNSC About United Nations Statistical Commission

emerging issues in global statistics.

making, and monitoring progress towards the Work Program: The UNSC's work program promoting the use of statistics for policyincludes developing statistical methods, improving the coverage and quality of data, Sustainable Development Goals.

India & UNSC

India had two prominent statisticians chairing the Commission.

The first Indian to hold its chair was P.C. Mahalanobis (1954 and 1956 respectively), followed by V.R Rao (1976).

Mahalanobis created a sub-commission on statistical sampling, which paved the way for the application of Rao strengthened the statistical organizations of He is also credited with having chaired the only ever many developing countries across several regions, especially for carrying out household sample surveys. session of the UNSC held outside a UN duty station, held in New Delhi, 1976, at the invitation of the Indian sample surveys in various fields of official statistics. government.

Deliberations during India's Tenure

Finalization and implementation of the System of National Accounts (SNA) 2025, a framework adopted by Emerging economies like India and developing countries across the global south are at a disadvantageous UN member countries for the formulation of national accounts.

position on account of non-measurement of certain economic activities, such as unpaid work by women. Need to redefine and develop methods to measure the value addition of unpaid work.

Changes in production, consumption and expenditure patterns due to digitalization have resulted in a shift from physical to online transactions and also given rise to new types of economic activities beyond the old SNA framework.

India's growth in the digital-economy industries estimated at around 21% compared to developed countries' growth of around 10-12%.



Statistical Commission United Nations



MCQs based on Preliminary Exam

- **1.** Which of the following statements is **incorrect** regarding *Humayun*'s *tomb*?
 - (a) The tomb was built in the tradition known as "eight paradises" or "Hasht-Bihisht".
 - (b) The central towering dome and the tall gateway (pishtaq) were first visible in Humayun's tomb.
 - (c) This tomb was placed in the centre of a huge formal chahar bagh (four gardens).
 - (d) None of these
- **2.** With reference to *Megasthenese accounts* of *Mauryan society*, consider the following statements:
 - 1. Megasthenese could not properly comprehend the Indian society and failed to distinguish between jati, varna and the occupation
 - 2. Forced labour and bonded labour did exist on a very limited scale
 - 3. Slavery existed in India

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3
- **3.** Cripps Mission was sent to India:
 - (a) To seek Indian support for the World War
 - (b) To satisfy Indian demands for Selfgovernment
 - (c) To discuss and plan for the transfer of power from the British Government to Indian leadership
 - (d) To make Indian leadership agree to suspend Quit India movement
- **4.** The Nehru Report :
 - 1. Proposed new dominion status for India
 - Recommended federal form of government with residuary powers vested in the center
 - 3. Provided for separate electorates for minorities

Which of the above statement/s is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3
- **5.** Consider the following statements regarding 'Ramanuja':
 - 1. Ramanuja propounded the 'doctrine of

- Vishishtadvaita' in that the soul even when united with the supreme God remained distinct.
- 2. Ramanuja's doctrine greatly inspired the new strand of bhakti which developed in north India subsequently.

Which of the statement/s given above is / are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **6.** All those who entered into Subsidiary Alliance with the British had to accept certain terms and conditions. Which of the following was **not** the condition of Subsidiary Alliance?
 - (a) The British would be responsible for protecting their ally from external and internal threats.
 - (b) In the territory of the ally, a British armed contingent would be stationed and British will provide the resources for maintaining this contingent.
 - (c) The ally could enter into agreements with other rulers or engage in warfare only with the permission of the British.
 - (d) None of these.
- **7.** Consider the following statements :
 - 1. The Provincial Committees of the Congress were based on linguistic regions, rather than on the artificial boundaries of British India.
 - 2. Nehru and Patel represented two distinct political tendencies within the Congress.

Which of the statement/s given above is/are **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **8.** Consider the following statements :
 - 1. Arya Samaj sought to revive vedic learning and combine it with modern education in the sciences.
 - 2. Arya Samaj began to improve Hindusim in response to western influences.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **9.** With reference to *'The Lucknow Pact'* consider the following statements :
 - 1. The Lucknow Pact demonstrates an

- understanding between the Congress and the Muslim League.
- 2. Under this pact the congress did not accept the separate electorates.
- 3. The pact provided a joint political platform for the moderates, extremists and the Muslim League.

Which of the statement/s 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
- **10.** With reference to *Second Round Table Conference*, consider the following statements :
 - 1. In the Second Round Table conference Mahatma Gandhi opposed the demand for separate electorates for 'lower castes'.
 - 2. The Second Round Table conference was very conclusive for India because in this conference so many important decisions were taken in the interest of India.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **11.** With reference to 'working of Indian Parliamentary System', consider the following statements:
 - 1. Constitution provides for 'principle of collective responsibility' and 'principle of individual responsibility'.
 - 2. Constitution has provision of Council of Ministers to aid and advise the President.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **12.** Which of the following grant is given when the amount authorised by the Parliament through the appropriation act for a particular service for the current financial year is found to be insufficient for that year?
 - (a) Additional Grant
 - (b) Excess Grant
 - (c) Supplementary Grant
 - (d) Exceptional Grant
- **13.** Consider the following statements regarding *Powers of President*:
 - 1. Remission means postponement of the execution of a sentence to future.
 - 2. Respite means reduction in the amount

of punishment without changing the character of punishment

Which of statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **14.** Which of the following statements is **not** correct?
 - (a) The judges of a High Court are paid such salaries, as are determined by President of India.
 - (b) The Chief Justice of High Court is appointed by the President in consultation with the Chief Justice of India and the Governor of that State.
 - (c) A High Court can also start contempt proceedings against anyone who tries to influence the Judges.
 - (d) The President may after consultation with the Chief Justice of India transfer a Judge from one High Court to another High Court.
- **15.** *Central Administrative Tribunal (CAT)*:
 - 1. Exercises original jurisdiction in relation to recruitment and all service matters of public servants covered by it
 - 2. Is a multi-member body consisting of a chairman and members
 - 3. Is bound by the procedure laid down in the Civil Procedure Code of 1908
 - 4. Is guided by the principles of natural justice

Which of the above statement/s is/are correct?

- (a) 1 and 4 only
- (b) 1, 2 and 4 only
- (c) 2 and 3 only
- (d) 1, 2, 3 and 4
- **16.** Fundamental Rights:
 - 1. Protect citizens against the arbitrary and absolute exercise of powers by the State
 - 2. Are referred to as the 'conscience' of the Indian Constitution
 - 3. Are non-justiciable rights

Which of the above statement/s is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3
- **17.** *'Right to Information':*
 - 1. Secures access to information under the control of public authorities
 - 2. Promotes transparency and accountability in the working of every public authority
 - 3. Preserves confidentiality of sensitive

information

Which of the above statement/s is/are correct?

- (a) 1, 2 and 3
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1 and 2 only
- **18.** Attorney-General of India shall:
 - Hold office during the pleasure of the President
 - 2. Receive such remuneration as the Parliament may determine

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **19.** With reference to *Regulating Act of 1773*, consider the following statements:
 - 1. It recognised, for the first time, the political and administrative functions of the East India Company.
 - 2. It prohibited the servants of the company from engaging in any private trade.
 - 3. It laid the foundation of decentralised administration in India.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) 1 and 2 only
- (d) 1, 2 and 3
- **20.** The Charter of 1726 was issued for the administration of East India Company in India. Which of the following is **not** correct in this regard?
 - 1. The power to legislate was given to the Governor of Calcutta, Bombay and Madras presidency by this Charter.
 - 2. The power to promulgate ordinance was given to the East India Company and Governor General in council by this Charter and in the case of violation of its administrative instruction, the Company had power to punish.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **21.** In the efforts of making a constitution for India, the Cabinet Mission, 1946 is an important landmark. Which of the following is **incorrect** in this regard?
 - (a) It recommended the abolition of British sovereignty on India.
 - (b) All residuary powers would be vested in the provinces.

- (c) This Mission suggested direct election based on proportional representation by means of the single transferable vote to elect the members of Constituent Assembly.
- (d) This Mission suggested formation of an Interim Government with the consent of all political parties.
- **22.** Article 368 of the Indian Constitution is related to constitutional amendment process. Which of the following is **not** true about the provisions of this article?
 - 1. For the amendment in the fifth and sixth schedule, special majority along with the ratification by the Legislatures of not less than one-half of the states is required.
 - 2. Special majority refers to the two-third majority.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **23.** Which of the following statement/s is/are correct in the context of *Dickie Bird Plan?*
 - 1. It was presented by Lord Mountbatten in April, 1947.
 - 2. Under this plan, India and Pakistan were partitioned as two separate nations. Select the correct answer using the code given
 - (a) 1 only

below:

- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **24.** Which of the following statement/s is/are correct about *Fundamental Rights*?
 - 1. Fundamental Rights under Indian Constitution have such a wide spectrum that they cover all the rights mentioned under the Universal Declaration of Human Rights of United Nations.
 - 2. It is possible for any person to waive his fundamental right.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **25.** If a person holds on a public post and is not performing his obligations, then the Supreme Court can direct him to perform his duty by issuing a writ against him. Such writ can **not** be issued against:
 - 1. The President
 - 2. The Governor

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3. Judges who are performing their administrative obligations.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3
- **26.** Who will fulfil the responsibility of President during the absence of President and vice *President?*
 - (a) Person nominated by President
 - (b) Chairperson of Rajya Sabha
 - (c) Chief Justice of Supreme Court
 - (d) Person nominated by the Chief Justice of Supreme Court
- **27.** Which of the followings are **not** included in the electoral college of the President?
 - 1. All Central Ministers
 - 2. All State's CMs
 - 3. Members of Legislative Council

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 3 only
- (c) 1, 2 and 3
- (d) None of the above
- **28.** Which of the following statement/s is/are correct about 98th Constitutional Amendment Act, 2012?
 - 1. This amendment authorises the President by enclosing special provision related to Karnataka and Andhra pradesh. The President can allot the Governor additional responsibilities, if needed.
 - 2. The Governor of Karnataka may take initiative for the establishment of Separate Development Board for Hyderabad-Karnataka region. They can also take initiative for the availability of equal opportunities and facility to the people of this region by proportional reservations in the educational training institutions and public foundations situated in this region.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **29.** Consider the truthfulness of the following statements:
 - 1. The State Election Commissioner is appointed by the Governor.
 - 2. The State Election Commissioner holds office at the pleasure of the Governor. If the Governor desires, then he can remove the State Election Commissioner on

the advice of the Chief Minister and his Council of Ministers.

Which of the above statement/s is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **30.** If a Panchayat is dissolved before the completion of its terms, then:
 - 1. Fresh elections will be scheduled within the three months after the dissolution.
 - 2. Newley elected panchayat will have five years tenure.

Which of the above statement/s is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **31.** Consider the following statements:
 - 1. The main carbohydrates found in our food are in the form of starch and sugars.
 - 2. If a food item contains starch then it can be tested with the help of dilute iodine solution.

Which of the statement/s given above is / are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **32.** Consider the following statements:
 - 1. During the process of photosynthesis, the carbohydrates ultimately get converted into starch.
 - 2. The presence of starch in leaves indicates the occurrence of photosynthesis.

Which of the statement/s given above is / are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **33.** Consider the following events:
 - 1. In a high jump athletic event, the athletes are made to fall either on a cushioned bed or on a sand bed
 - 2. While catching a fast moving cricket ball, a fielder in the ground gradually pulls his hands backwards with the moving ball

Which of the following *law* is applicable in the events given above?

- (a) The first law of motion
- (b) The second law of motion
- (c) The third law of motion
- (d) Galileo's ideas on force and motion

34. Correctly match the following pairs:

Minerals

Relevance

- A. Phosphorus
- 1. Constituent of hair and nails
- B. Sodium
- 2. Essential for intracelluar osmotic pressure
- C. Potassium
- 3. Important constituent of body fluid
- D. Sulphur
- Essential for the formation of bones and teeth

Code:

Α В C D

- (a) 4 2 1 3
- (b) 4 3 2 1
- 4 2 3 1 (c)
- (d) 2 3 1 4
- 35. Which one of the following statements regarding *Water Gas* is **incorrect**?
 - Water gas is a mixture of carbondioxide and hydrogen.
 - (b) Water gas burns with a smokeless flame.
 - Water gas is produced by passing steam over red hot coke at about 1000°C temperature.
 - It's reaction is endothermic.
- Which one of the following is called White 36. Pollution?
 - High consumption of plastics and their wastes.
 - Impurities present in dairy milk.
 - Pollution of seas and oceans. (c)
 - (d) Corruption and red tapism in Bureaucracy.
- Consider the following statements in regard with the Law of Conservation of Mass:
 - Mass can neither be created nor be destroyed in any chemical reaction.
 - The number of atoms of each element remains the same, before and after a chemical reaction.

Which of the statement/s given above is/are correct?

- 1 only (a)
- (b) 2 only
- Both 1 and 2
- (d) Neither 1 nor 2
- Consider the following statements:

- When pH value of rain water is less than 1. 5.6, then it is called acid rain.
- 2. When acid rain flows into the rivers, it rises the pH value of the river water.
- The survival of aquatic life in such rivers becomes difficult.

Which of the statement/s given above is/are correct?

- 2 only (a)
- (b) 1 and 3 only
- 1 and 2 only (c)
- (d) 1, 2 only 3
- 39. Which of the following statements is not correct regarding 'Jaundice'?
 - (a) The liver is affected.
 - (b) Skin and eyes turn yellow due to the deposit of bile pigments.
 - The bowel movements occur irregularly.
 - (d) None of the above
- What is *Phototaxis / Phototropism*?
 - (a) The tendency of animals and plants to be attracted towards light.
 - (b) The actual reason by which stars seems to twinkle.
 - (c) The study of light's effect during sunrise and sunset.
 - (d) The principle which defines LED's luminous effect.
- 41. Which of the following is/are the main eaters of Ozone present in the Ozonosphere?
 - 1. Aerosol sprays
 - 2. Coolants
 - 3. Cleaning Agents
 - 4. Insulants
 - 5. Plastic Foam

Select the correct answer using the codes given below:

- (a) 2 only
- (b) 1, 2 and 5 only
- (c) 1, 2, 3 and 5 only
- (d) 1, 2, 3, 4 and 5
- 42. With reference to 'Solar Winds' which of the following statement/s is/are correct?
 - 1. 'Solar wind' is the persistent steam of gas which blows out of chromosphere.
 - 2. 'Solar wind' sweeps to a distance of about 40 astronomical units.
 - 3. 'Solar wind' sweeps at subsonic speed. Select the correct answer using the codes given below:
 - (a) 1 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

- With reference to the *measurement of depth of* oceans which of the following statement/s is/ are correct?
 - 1. Supersonic waves are used to measure the depth of oceans.
 - 2. The principle behind it is known as SONAR.

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- With reference to *Bridgmanite mineral* consider the following statements:
 - 1. It is the most abundant mineral in the world.
 - 2. It makes up approximately 70% of the Earth's crust.
 - 3. It amounts to about 38% of the Earth's total volume.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 only
- (d) 1, 2 and 3
- 45. Consider the following statements:
 - 1. Superconductivity is a material property associated with a loss of thermal resistance.
 - 2. If a metal can be drawn into wires relatively easily then it is called ductile.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- **46.** Consider the following statements:
 - 1. The instrument that measures arterial blood pressure is known as Sphygmomanometer.
 - The power of a lens is measured in Diopter.
 - Electric current is measured in Ampere.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3
- **47.** On which planet is the tallest mountain in the Solar System?
 - (a) Mars (Olympus Mons)
 - (b) Mercury (Caloris Montes)
 - (c) Venus (Maxwell Montes)
 - (d) Moon (Mons Huygens)
- Consider the following statements about

Cloud Computing:

- It is a service that is generally offered by a third party.
- It includes only software services and not hardware services.
- 3. It is generally offered on 'one-to-one basis'.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 3 only
- (d) 1, 2 and 3
- Quartz crystals normally used in quartz clocks etc. are chemically:
 - (a) Silicon dioxide
 - (b) Germanium oxide
 - (c) A mixture of germanium oxide and silicon dioxide
 - (d) Sodium silicate
- 50. Why do the bacteria develop resistance after slowly being exposed to a particular antibiotic?
 - 1. Due to mutation in genes
 - 2. Due to Horizontal Gene Transfer
 - 3. Due to Vertical Gene Transfer

Select the correct answer using the codes given below:

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

13. (d) 26. (c)

ANSWER

1.	(d)	14.	(a)	27.	(c)	40.	(a)
2.	(b)	15.	(b)	28.	(b)	41.	(d)
3.	(a)	16.	(b)	29.	(a)	42.	(b)
4.	(b)	17.	(a)	30.	(d)	43.	(b)
5.	(c)	18.	(a)	31.	(c)	44.	(b)
6.	(b)	19.	(c)	32.	(c)	45.	(b)
7.	(d)	20.	(d)	33.	(b)	46.	(d)
8.	(c)	21.	(c)	34.	(b)	47.	(a)
9.	(c)	22.	(c)	35.	(a)	48.	(a)
10.	(a)	23.	(a)	36.	(a)	49.	(a)
11.	(c)	24.	(d)	37.	(c)	50.	(b)
12.	(c)	25.	(a)	38.	(b)		

39.

(c)



MCQs Based on Current Affairs

- 1. Consider the following statements with respect to Real Estate Investment Trust (REIT).
 - 1. Real Estate Investment Trusts invest in real estate by raising money from investors and provide an outlet for long-term capital growth.
 - 2. REITs can be listed on the stock exchange. Which of the statements given above is/are true?

A.1 only

B. 2 only

C. Both and 2

D. Neither 1 nor 2

Answer – C

- 2. Consider the following statements regarding Agricultural Mechanization in India.
 - 1. Farm mechanization in India is 40-45 percent which is very less as compared to US and other developed countries.
 - 2. The level of farm mechanization is assessed by the Indian Council of Agricultural Research (ICAR) for major cereals, pulses, oilseeds, millets and cash crops.

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

Answer - C

- 3. Consider the following statements regarding Dabba trading.
 - 1. Dabba trading is a form of informal trading that takes place outside the purview of the stock exchange.
 - 2. Dabba trading is illegal in India.

Which of the statements given above is/are not correct?

A.1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer – D

- 4. Consider the following statements regarding Farm Distress Index.
 - 1. The index has been developed by CRIDA, an autonomous institute under the Ministry of Commerce.
 - 2. The index is based on a 21-question survey that captures the financial, economic, emotional health status of farmers in vulnerable areas.

Which of the statements given above is/are true?

A.1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer - B

- Consider the following statements regarding Carbon Border Tax (CBT).
 - 1. CBT is a duty levied on imports based on the amount of carbon emissions generated during the production of a product.
 - 2. The ultimate objective of CBT is to limit and eventually eliminate dependence on fossil fuels.
 - 3. India is in favour of carbon border tax.

Which of the statements given above is/are correct?

A. 1, 2

B. 2. 3

C. 1, 3

D. 1, 2, 3

Answer- A

- Consider the following statements regarding Compressed Bio Gas (CBG).
 - 1. Compressed Bio Gas (CBG) means the mixture of hydrocarbon gases and vapours consisting mainly of Methane in gaseous form.
 - 2. CBG is a renewable source of energy that can be produced from agricultural waste, municipal waste, and sewage.

Which of the given statements is/are correct?

A.1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer - C

- Consider the following statements regarding difference between Saudi Arabia and Iran in the Middle East.
 - 1. In Syria, Iran supports President Basar Al Assad with military forces and funds, whereas Saudi Arabia back Sunni protesters.
 - 2. In Yemen, Saudi led coalition launched air strikes against the Iran backed Houthi rebels who seized the capital Sanna.
 - 3. In Lebanon, Saudi backed P.M resigned citing Iran's grip on his country through the shitte militant group Hezbollah.

Which of the statements given above is/are correct?

A.1, 2 C.2, 3 B.1, 2, 3 D.1, 3

Answer - B

- Consider the following statements regarding use of Calcium Carbide.
 - 1. Calcium Carbide is used in producing polyvinyl chloride as acetylene, which is the derivative of calcium carbide and is used as a raw material for PVC production.
 - 2. Calcium Carbide is also used in the production of acetylene and calcium hydroxide.

3. It can be used in the removal of sulphur from iron.

Which of the statements given above is/are true?

A.1, 2 C.1, 3

B.2, 3 D.1, 2, 3

Answer - D

- Consider the following statements regarding National Panchayati Raj Day.
 - 1. Ministry of Panchayati Raj, Government of India in association with Government of Madhya Pradesh celebrated National Panchayati Raj Day (NPRD) on 24th April, 2023
 - 2. The theme of this year is 'Sustainable Panchayat: Building Healthy, Water Sufficient, Clean & Green Villages'.

Which of the statements given above is/are true?

A.1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer - C

- **10.** Consider the following statements with respect to artificial ripening.
 - 1. Artificial ripening is the process by which ripening is controlled to achieve desired characteristics intended for better consumer acceptance and improving sales.
 - 2. As per the FSSAI Regulations 2011, the use of calcium carbide also known as "masala" is prohibited as a ripening agent for artificial ripening of fruits.
 - 3. FSSAI permits the use of ethylene gas as a concentration of up to 100 ppm (100ul/L) depending upon the crop, variety and maturity for the artificial ripening of fruits.

Which of the statements given above is/are correct?

A.1, 2 C.1, 3 B.2, 3 D.1, 2, 3

Answer – D

- 11. Consider the following statements regarding Remission.
 - 1. Remission implies reducing the period of the sentence without changing its character.
 - 2. Under Articles 72 and 161 of the Constitution, the President and Governors have the power to pardon, and to suspend, remit, or commute a sentence passed by the courts.
 - 3. Prison is a State subject under the State List of the Seventh Schedule of the Constitution. Which of the above statements is/are correct?

A.1, 2

B.2, 3

C.1.3 Answer- D

D.1, 2, 3

- 12. Consider the following statements regarding census of water bodies.
 - 1. Ministry of Jal Shakti has conducted the 1st Census of Water Bodies in convergence with the 6th Minor Irrigation (MI) Census under the Centrally Sponsored Scheme "Irrigation Census".
 - 2. According to the report, top 5 States in terms of number of water bodies are West Bengal, Uttar Pradesh, Andhra Pradesh, Odisha and Assam which constitute around 63% of the total water bodies in the country.

Which of the statements given above is/are not true?

A.1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer - D

- 13. Consider the following statements regarding state of global climate, 2022 annual report.
- Recently, World Meteorological Organisation (WMO) has published state of global climate, 2022 annual report.
- 2. According to report, the years from 2015 to 2022 were the eight warmest years since in the

Which of the statements given above is/are true?

A.1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer - C

- 14. Consider the following statements regarding clinical trial.
 - 1. A clinical trial is a research study conducted on human participants to evaluate the safety, efficacy, and effectiveness of an intervention such as a drug, device, or behavioural therapy.
 - 2. Clinical trials are an essential component of the drug development process and are necessary to determine the benefits and risks of new drug/device.
 - 3. They are governed by Drug and Cosmetic act, 1940, Medical Council of India Act, 1956 and Central council for Indian medicine Act, 1970.

Which of the above statements is/are correct?

A.1, 2

B.2, 3

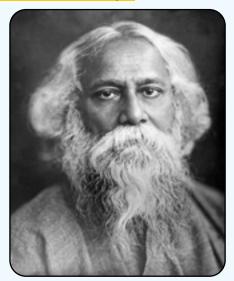
C.1, 3

D.1, 2, 3

Answer- D



Personality



Rabindra Nath Tagore

Gurudev Rabindranath Tagore was a famous Bengali poet, story writer, lyricist, musician, playwright and painter. He not only introduced the Indian culture to the western countries but also played an important role in introducing India to the culture of western countries.

Gurudev Rabindranath Tagore was the first non-European person to receive the Nobel Prize in Literature. He is the only poet in the world whose compositions became the national anthem of two countries - the national anthem of India 'Jana Gana Mana' and the national anthem of Bangladesh 'Amar Sonar Bangla'. He liberated Bengali literature from the influence of classical Sanskrit, giving a new direction to Bengali literature and music.

Rabindranath Tagore was born on 7 May 1861 in Thakurbari, Jorasan, present day Kolkata. His father's name was Devendra Nath Tagore and mother's name was Sharda Devi. His father was a leading leader of the Brahmo Samaj. The Tagore family made an important contribution to the 'Bengali Renaissance'. Rabindranath Tagore's elder brother Dwijendranath was a philosopher and poet, while his second brother Satyendra Nath Tagore was the first Indian to join the Indian Civil Service.

Rabindranath Tagore was married to Mrinalini Devi in 1883. In 1901, Rabindranath Tagore went to Shantiniketan and established an ashram here.

Rabindranath Tagore stopped coming out near 1940 due to poor health, but whenever he was healthy, he created one of the finest works. Finally this great soul died on 7th August 1941.

As an Art Lover:

Rabindranath Tagore developed an interest in writing poetry at an early age. In the 1890s, many of his poems, stories and novels were published and he became famous in Bengal. He wrote many short stories on the background of the then rural Bengal.

In 1913 it was decided to award the Nobel Prize in Literature to Rabindranath Tagore on the basis of Gitanjali and his other works. After this, he was awarded a knighthood by the British government in 1915, which was returned by him in protest against the Jallianwala Bagh massacre.

Rabindranath Tagore wrote poems as well as novels, articles, short stories, travelogues, dramas and thousands of songs. About 2220 songs written by him are called Rabindra Geet which is an integral part of Bengali culture. Some of his important songs include the national anthems of India and Bangladesh. Apart from this, Rabindranath Tagore was also a skilled painter.

The Indian Renaissance and the immediate European conditions had a great impact on Rabindranath Tagore. He placed humanism over nationalism in the immediate period. He considered colonialism, racism and radical nationalism as enemies of humanity. He was a strong advocate of universal brotherhood and therefore he strongly advocated internationalism instead of nationalism.

The nationalism envisioned by Rabindranath Tagore had two basic elements - first humanity and second freedom. Considering humanism absent in the concept of nationalism, he considered it as an instrument of public self-interest. He always kept humanism above patriotism and nationalism, so he openly opposed any kind of violent movement including armed rebellion and revolution.

the extremist concept nation-state Tagore was opposed to of nation. nationalism, so he kept away from the national movement but it was not that he remained indifferent to the national movement. In the Swadeshi movement, he took forward Bengali unity through the song 'Amar Sonar Bangla', while participating in the same movement, suggesting to celebrate Rakshabandhan day, participating in the Swadeshi movement. He always condemned the oppressive nature of the British government through his speeches and articles. He left the extremist ideology of nationalism and supported the national movement.

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