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Lithium Opening The Doors
Of Development For India

Operation Dost: India's
Proactive Soft Diplomacy

Empowerment Of
India By Skill
Development

Role Of Payment
Aggregators In
Financial Inclusion

PM PVTG Mission:
A Potential Milestone
For Tribal Development

Controversy Over
The Appointment Of
Governor & His Actions

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1. First of all, Perfect-7 Current Affairs Magazine is published **every 15 days** to keep students up-to-date with current affairs, while other coaching institutes have monthly magazines which aggregate the current affairs of the month. Due to large number of current affairs, students are often unable to read all the articles. Eventually they become dependent on annual and half yearly magazines.
2. Perfect-7 magazine has been created keeping in mind the **UPSC and State PCS centric exams**, whereas the magazines of other coaching institutes include unnecessary and extra material in the name of UPSC and State PCS exams, causing confusion among the students.
3. **Perfect-7 magazine has 7 editorial articles by subject experts on important events during 15 days, 42 articles on important events, 7 brain-boosters in creative style, current affairs, one liner, preliminary and mains exam related questions etc.** are given. Along with this there is also a section on eminent personality which shows the contribution of the historical personality towards the country and society. In this way, no important information and news is missed in the period of 15 days for UPSC and State PCS exams.
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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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Message



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.

PERFECT



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Operation Dost: India's Proactive Soft Diplomacy

On February 6, a 7.8- magnitude earthquake struck Turkey and Syria, killing more than 45,000 people and leaving more than a million people homeless. India was among the first to provide help to Turkey and Syria during this crisis. India launched Operation Dost for relief and rescue operations to help the victims in both countries. India sent a large amount of relief material to Turkey and Syria and also ran a mobile hospital. Two hundred and fifty soldiers of the Indian Army were also deployed in the most affected areas of Turkey and Syria. India took every possible step to help the people trapped in the devastating earthquake in Turkey and Syria.

In the time of this natural tragedy, Operation Dost launched by the country put India's human values on the world stage and even Turkey openly praised this policy of India. Under this operation, several teams of NDRF were sent to Turkey and Syria for relief work as well as medical facilities were provided to both countries. India sent 841 cartons of medicines, safety equipment, and diagnostics to Turkey and Syria under this operation. The medicines being sent from the Indian side included Paracetamol, Ceftriaxone GM INJ, Propofol INJ, etc. At the same time, protective equipment such as gowns, gloves, shoe covers, and caps were also provided. The medical support included electrocardiograph channels, syringe pumps, and a physiological monitor system. The Indian Army also established a field hospital under 'Operation Dost'.

The Indian Army Field Hospital in Iskenderun, Turkey has started functioning with medical, surgical, and emergency wards, X-ray labs, and medical stores. Indian teams worked 24x7 to provide relief to the affected people. Indian Army teams of medical experts were on the 24X7 job providing relief to the injured. The last NDRF team returned after the announcement of stopping the rescue operation in Turkey.

Evidence of India's policy of humanitarian assistance:

➤ Humanitarian assistance and humanitarian intervention have been key components of Indian foreign policy. Whenever there has been any tragedy, disaster, or natural calamity in any part of the world, every time India has tried to provide immediate help to the concerned country. Relief and rescue operations have been carried out by India based on the concept

of 'Vasudhaiva Kutumbakam'. Whether it is a matter of providing humanitarian assistance to Tamils in Sri Lanka through Operation Pawan or it is a matter of providing assistance to Maldives through Operation Cactus, India has kept humanitarianism at the core of its foreign policy. Bringing back Indian citizens from Kuwait during the Gulf War in 1990 was the biggest ever evacuation operation. Around 1,77,000 Indians were stranded during the Gulf War. At that time, Air India operated around 500 flights in two months.

- After the Indian Ocean tsunami in 2004, India provided immediate humanitarian assistance to the Indian Ocean countries. India was the first to send aid in this area as a net security provider which shows the positive thinking of India. During the 2004 Tsunami, India demonstrated its naval capability by not only providing security to Tamil Nadu and the Andaman and Nicobar Islands during such natural calamities, but also to its neighbors Maldives, Sri Lanka and Indonesia. 32 Indian ships and 5500 personnel provided humanitarian assistance to neighboring countries during the Indian Ocean Tsunami from India.
- During the Lebanon War (2006) the Indian Navy also launched Operation Sukoon as a humanitarian aid for the safe return of citizens of India, Sri Lanka and Nepal, who were stranded in Lebanon. It was one of the biggest rescue operations undertaken by the Indian Navy, in which a total of 2,280 people were rescued.
- Similarly, on February 26, 2011, the Government of India started Operation Safe Homecoming to evacuate Indian citizens trapped in the Libyan Civil War. Both the air route and the sea route were operated by the Indian Navy and Air India. About 15,000 civilians were rescued in this humanitarian operation.
- In the year 2015, India once again set an example by presenting its vision of humanitarian assistance to the world. Operation Maitri was conducted by the Government of India and the Armed Forces of India as a part of the rescue and relief operation in the devastating earthquake in Nepal in 2015. Around 5,188 people were evacuated by the Indian Armed Forces, while transit visas were granted to around 785 foreign

tourists.

- India's next major humanitarian aid operation was Operation Rahat. During the 2015 Yemen crisis, more than 4640 Indian nationals along with 960 foreign nationals from 41 countries were evacuated from Yemen under Operation Rahat launched by the Indian Armed Forces. The campaign was conducted both by air and sea route.
- Operation Ganga has also been seen as an event in which the Government of India, meeting all the parameters of humanitarian, democratic, diplomatic, and courage, saved not only 22500 citizens of India but also 147 citizens of 18 other countries were saved amid war. Amidst the ongoing war between Russia and Ukraine, the biggest concern was to evacuate Indians from there. In this situation, the Government of India launched a mission to airlift the Indians trapped in Ukraine, which was named 'Operation Ganga'.



- Operation Sankatmochan is also seen prominently as India's humanitarian aid operation. The Government of India sent two C-17 aircraft to South Sudan to evacuate its 600 citizens stranded there. The Government

of India named it Operation Sankatmochan and the operation was led by General VK Singh, Minister of State for External Affairs. Heavy fighting between ex-rebels and soldiers in several parts of the city of Juba in South Sudan led to such insecurity that an operation to secure the Indians had to be carried out.

- Seven Indian Naval Ships namely Kolkata, Kochi, Talwar, Tabor, Trikanth, Jalashwa, and Airavat received Liquid Medical Oxygen-Filled Cryogenic Containers and related medical equipment that were positioned for shipment from various countries, in support of the country's fight against COVID-19 and as part of Operation Samudra Setu II. INS Kolkata and INS Talwar, deployed for a mission in the Persian Gulf, were the first batch of ships that were immediately diverted for this duty and they played their part by arriving at Manama, Bahrain on 30 April 2021.

India-Turkey Relations:

- There have been historical interactions between India and Turkey. Diplomatic relations were established between the two countries in 1948 and ambassadors of both countries were sent to each other. India's first visit to Turkey at the Prime Ministerial level took place in 1960 and the country's first Prime Minister Jawaharlal Nehru visited Turkey. In 1965, Indian Vice President Zakir Hussain also visited Turkey in the interest of bilateral relations between the two countries. Prime Minister Rajiv Gandhi visited Turkey in 1988. Since Rajiv Gandhi became Prime Minister in 1984, there have been several attempts to improve relations with Turkey. One of the major reasons for this was the issue of Kashmir which started gaining momentum in the late 80s. At that time OIC, an organization of Muslim countries, had formed a group to investigate the human rights situation in Kashmir and countries like Turkey and Saudi Arabia were showing a lot of activism in it.
- This was followed by President Shankar Dayal Sharma in 1993, President KR Narayanan and Vice President Krishna Kant in 1998, Atal Bihari Vajpayee in 2003, and Hamid Ansari and Pranab Mukherjee in 2011 and 2014 respectively. In 2015, the then External Affairs Minister Sushma Swaraj visited and in 2015, Indian Prime Minister Narendra Modi participated in the G20 Summit held in Antalya, Turkey.

Controversy Over The Appointment Of Governor & His Actions

The post of governor is constitutional in a democratic country like India, whose responsibilities, roles, and nomination process have been clearly mentioned in the constitution of the country. However, various controversies emerge from time to time concerning the appointment process of the governor and his power to issue ordinances, the power to reserve the bill for his consideration or the consideration of the President, and greater loyalty to the Central Government. Former Supreme Court judge Abdul Nazeer retired on January 4. A month later, he was appointed as the Governor of Andhra Pradesh. There was a lot of protest by the opposition parties on this.

Nevertheless, this is not the first case of a retired Supreme Court judge being made the governor of a state. Former Chief Justice of the Supreme Court P. Sathasivam and former judge M. Fathima Beevi. At the same time, the name of Supreme Court Justice Sir Syed Fazal Ali is also included among the former judges who reached the Raj Bhavan after retiring from the Supreme Court. The NDA government at the Center had appointed former Supreme Court Chief Justice P. Sathasivam as the Governor of Kerala in 2014. He became a judge in the Supreme Court in 2007 and remained the Chief Justice from 2013 to 2014.

Controversies regarding the post of Governor in different states of India:

- The states of Kerala, Telangana, Tamil Nadu, West Bengal, and the Union Territory of Delhi, all these states have a non-BJP government but one thing is common in all the states and that is the dispute between the state government and the governor.
- In recent times, the conflict between the governors and the ruling government in the three South Indian states has increased significantly. Tamil Nadu seeks recall of Governor RN Ravi, Kerala proposes ordinance route to replace Governor Arif Mohammed Khan with educationists as chancellors of state universities, and Tamilisai Soundararajan at Telangana suspects that his phone is being tapped.

Controversy to the post of Governor in Kerala:

The ruling LDF in Kerala has had several clashes with Governor Khan in the past. The LDF said it has decided to bring an ordinance to replace the governor with eminent educationists as chancellors in state universities. Both the Congress and the Bharatiya Janata Party (BJP) have opposed the decision. According to a statement from the chief minister's office, it was decided in the cabinet meeting that the governor would be recommended for approval of the ordinance, which would remove the clause relating to the appointment of vice-chancellors in the university laws. This section states that the governor will also be the chancellor of the 14 universities of the state.

The Kerala state government brought a bill to remove the governor from the post of chancellor, after which the Kerala assembly passed the University Laws (Amendment) Bill to remove the governor from the post of chancellor of universities in the state and to appoint other eminent educationists. The Governor of Kerala last year warned ministers that personal statements by ministers that bring down the dignity of the governor's office would be dealt with, severely. After this move of the Governor, there was an attempt to make this post controversial in Kerala.

Controversy related to the Governor in Rajasthan:

- Rajasthan is also preparing to bring a law that will not allow the Governor to occupy the post of Chancellor. The Rajasthan state government is now preparing to abolish the role of the governor from all 28 government universities. For this, Umbrella Act is being brought for all the universities, where instead of the governor, the chief minister or an educationist nominated by the chief minister will play the role of chancellor. The governor will be the visitor in the same way as the president is in a central university, who is only invited to preside over the convocation. This act will be common for all universities.
- A committee of nine members has prepared the draft of the new Act for Umbrella Act. The chairman of the committee formed to prepare the draft is former VC of JNVU Professor PC Trivedi. Rajasthan will be the third state to bring such an act, and the role of governor will be shrunk to the role of a visitor only. This is already the case in Telangana and Bihar. Preparations are going on for this in West Bengal as well. Telangana government has also brought such an act in 2015. Under this, the state government appoints the chancellor of every university.
- The chief minister has been made chancellor of 3 universities in Bihar. This change was made in 2021. In Bengal too, the process is going on of giving the position of the Chancellor to the chief minister. In West Bengal, it has now been agreed to replace the Governor with the Chief Minister as Chancellor of all government universities in the state. Along with this, the cabinet has also approved this proposal.
- The West Bengal cabinet also decided to remove the Governor from the post of 'Visitor' of private universities. After this, the cabinet also approved another proposal to appoint the state education minister in his place. The cabinet has given its consent to make the chief minister the chancellor of all government universities, including agriculture and health universities.

Role of Governors in State Universities:

- In most cases, the governor of a state is the ex-

officio chancellor of the universities in that state.

- As Governor he acts with the aid and advice of the Council of Ministers, as Chancellor he acts independently of the Council of Ministers and takes decisions on all matters of the University.

Cases related to Central Universities:

- Under the Central Universities Act, 2009, and other statutes, the President of India shall be the Visitor of a Central University.
- With their role limited to presiding over the convocation, chancellors are nominal heads in central universities, appointed as visitors by the President.
- The Vice-Chancellor is also appointed by the Visitor from a panel of names selected by Search and Selection Committees constituted by the Central Government.
- The Act also states that the President, as a Visitor, shall have the power to inquire into and authorize the inspection of academic and non-academic aspects of universities.
- The Chancellor is vested with the power as an appellate authority by which he can set aside the decisions of various university bodies/authorities if in his opinion they appear to be against the Acts, Statutes, Ordinances, and Regulations.

Controversy related to Governor in Telangana:

The Governor of Telangana claimed the 'undemocratic' situation in Telangana Rashtra Samithi (TRS)-ruled Telangana. Tamilisai Soundararajan suspected that his phone was being tapped in Telangana. Controversy is now deepening as the governor made this statement. Telangana CPI senior leader K Narayan even said that the governor system is not useful for our country and they called upon PM Modi that all governors should be removed immediately.

What is the controversy related to the Governor in Tamil Nadu:

Concerning Tamil Nadu, the Secular Progressive Alliance (SPA) led by the ruling DMK approached the Rashtrapati Bhavan demanding the sacking of Governor Ravi alleging that he had "incited communal hatred". The petition submitted to the President's office also listed the bills pending with the Raj Bhavan and questioned the delay in seeking approval. These bills also include a bill with a provision to exempt the state from the purview of NEET medical examination.

Controversy related to the post of Governor in West Bengal:

Relations between the then Governor of West Bengal Jagdeep Dhankhar and Chief Minister Mamata Banerjee were not good. Both have publicly criticized each other. The controversy started after the lockdown due to Corona when the governor regularly pulled up the state administration and police for their "failures" to effectively enforce the lockdown. On April 15, 2020, he tweeted that "lockdown protocols have to be fully implemented to overcome the coronavirus. Police and

West Bengal administration have failed to follow social distancing or curb religious gatherings." Subsequently, in September 2020 the controversy took a new turn as the CM wrote a nine-page letter to the Governor criticizing him for questioning the handling of law and order in Bengal by the then Director General of Police (DGP) Virendra. Jagdeep Dhankhar, the then governor of the state, reprimanded and summoned the state's police chief for sending "two-line" answers to his questions about the law and order situation.

Governor's appointment process:

- Article 157 in the Constitution of India 1949 states that no person shall be eligible for appointment as Governor unless he is a citizen of India and has completed thirty-five years of age. The governor is also the chief executive head of the state, who acts on the advice of the council of ministers of the respective state. Furthermore, the Governor has a dual role, as he also acts as an 'agent of the central government'.
- Under Article 153, each state will have a governor. The executive power of the State shall be vested in the Governor and shall be exercised by him directly or through officers subordinate to him. The governor of the state would have executive, legislative, financial, and judicial powers, but would not have the diplomatic, military, or emergency powers that the President of India has.
- Article 156 states that the tenure of the Governor is normally five years and he holds office at the pleasure of the President. The eligibility requirements for the post of Governor have been specified under Articles 157 and 158. Eligibility for this is- He should be a citizen of India, should not be at least 35 years of age, should not be a member of any House of Parliament or State Legislature, and should not hold any office of profit.

Recommendations of Sarkaria and Punchhi Commission on the Role of the Governor:

- The Sarkaria Commission on Centre-State Relations, set up in 1983, proposed that the selection of governors should be done after consultation between the President and the Speaker of the Lok Sabha, and the Prime Minister.
- The Justice Madan Mohan Punchhi Committee on Centre-State Relations, constituted in the year 2007, in its report said that the Governor should be selected by a committee consisting of the Prime Minister, the Home Minister, the Vice President, the Speaker of the Lok Sabha and the concerned Chief Minister.
- The Punchhi Committee recommended the removal of the "principle of pleasure" from the Constitution, but upheld the right of the Governor to approve the sanction for prosecution of ministers who acted against the advice of the state government. It supported the provision of impeachment of the Governor by the State Legislature.

PM PVTG Mission: A Potential Milestone For Tribal Development

The concept of socio-economic justice, as emphasized in the Preamble of the Constitution of India, makes various organs of governance responsible for the protection of the rights of the Particularly Vulnerable Tribal Groups of India. Keeping this constitutional responsibility in mind, the Government of India has laid special emphasis on the welfare of particularly vulnerable tribal groups in the budget for the financial year 2023-24. The Central Government has become sensitive to the socio-economic welfare of a total of 75 PVTGs in the country identified by the Ministry of Tribal Welfare of India. Since many tribal groups are going through a crisis of existence and a crisis of identity, their language is also facing the threat of extinction. Many PVTGs are facing serious health challenges, and on many occasions, such tribal groups have also been forced to bear the brunt of displacement. Keeping their conditions in mind, the budget mentions the Pradhan Mantri PVTG Vikas Mission which will be started to improve the socio-economic conditions of especially sensitive tribal groups (PVTGs).

In the Pradhan Mantri PVTG Vikas Mission, basic amenities like safe housing, clean drinking water, and sanitation, education, health and nutrition, road and telecom connectivity, and sustainable livelihood opportunities will be fully provided to the PVTG families and their habitations.

The Indian Finance Minister has said during the budget speech this time that under the Development Action Plan for Scheduled Tribes, an amount of Rs 15,000 crore will be made available to implement this mission in the next three years. Apart from this, the budget 2023-24 talks about strengthening the infrastructure of Eklavya Model Residential School for the welfare of the tribal community. Explaining this, the Finance Minister had said that in the next three years, 38,800 teachers and supporting personnel will be appointed for 740 single-model residential schools being run by the Center for 3.5 lakh tribal students.

In the Union Budget for the financial year 2023-24, an announcement has been made to launch a mission to eliminate sickle cell anemia by 2047. Efforts will be made to tackle genetic diseases in tribal areas through collaborative efforts of Central

Ministries and State Governments. To address the challenges in the diagnosis and management of sickle cell disease, the State Hemoglobinopathy Mission has been established in Madhya Pradesh.

About 'Especially Vulnerable Tribal Groups':

➤ PVTGs are Particularly Vulnerable Tribal Groups. They are groups of tribes spread across India that are more vulnerable in comparison to other tribes in social, economical, political, and cultural fields. In other words, PVTGs are tribal groups that face challenges at different levels. Their lifestyle, food habits, dress, language, and culture are more seriously threatened than other communities.

Criteria for PVTG:

The Ministry of Tribal Affairs, Government of India generally adopts the following criteria for notifying PVTG clusters in the country-

- **Pre-Technical Agricultural Level:** Tribal groups that do not use technology in agricultural practice. New technologies are now being used in agriculture so that production can be maximized. But these tribal groups still practice agriculture in the same way as it was before the advent of technologies in agriculture.
- **Stagnant or Declining Population:** Stagnant or Declining population is also one of the criteria for determining PVTG status.
- **Extremely Low Literacy:** Tribes in which the level of education is very low, that is, their access to the Indian education system is negligible.
- **Subsistence Level of Economy:** The criterion of subsistence level of the economy means that such groups do economic activities only for their living, that is, they have almost no surplus.

Other important facts related to Particularly Vulnerable Tribal Groups (PVTGs):

- Presently 75 PVTG clusters are officially notified in the country based on the above criteria specified for PVTG clusters by the Ministry of Tribal Affairs, Government of India. The nodal agency for this is the Ministry of Tribal Affairs, Government of India. These PVTG groups reside in 18 states and one union territory (Andaman and Nicobar Islands) of the country.
- Odisha has the highest number of PVTG groups (13) among states, while Rajasthan, Manipur,

and Tripura have one PVTG group each. Andaman and Nicobar Islands have 5 PVTG groups, namely Great Andamanese, Jarawa, Ong, Sentinelese, and Shompen.

- The population of PVTGs in the country is approximately 27,68,322. There are 12 PVTGs that have a population of 50,000 or more, while the other groups have a population of 1,000 or fewer. PVTG 'Saharia' living in Rajasthan has the highest population of '4,50,217', while Sentinelese and Great Andamanese of Andaman and Nicobar Islands have the least number of 39 and 43 respectively.

Other Major Schemes for Tribal Welfare:

- **Prime Minister Adi Adarsh Gram Yojana:** The scope of the existing scheme of SCA to TSS has been expanded, wherein 36,428 villages will be developed as Adarsh Grams under 'Pradhan Mantri Adi Adarsh Gram Yojana' in coordination with the concerned Ministries for comprehensive development of these villages. The tribal population in these villages is more than 500 and up to 50% of the total population. An amount of Rs 1354 crore has been allocated which will be used as a gap-filling arrangement for tribal welfare programs in addition to the STC component of Rs 87,524 crore allocated to various ministries for their respective schemes. The cabinet has approved an amount of Rs 7276 crore for the next five years.
- **Prime Minister's Tribal Development Mission:** The mission aims to achieve livelihood-driven tribal development in the next five years through the formation of Van Dhan Clusters. These Van Dhan clusters are organized as Van Dhan Kendras. The MFP(minor forest produce) collected by the tribals will be processed in these centers and marketed through Van Dhan Producer Enterprises. New haat bazaars and goods warehouses will be developed in the next 5 years as part of the "Atmanirbhar Bharat campaign". TRIFED will be the nodal agency to implement the scheme. Forest products will be marketed through Tribe India stores. Under the mission, an amount of Rs 1612 crore has been earmarked for the next five years.
- **Venture Capital Fund for ST:** An amount of Rs 50 crore has been approved for the new scheme of 'Venture Capital Fund for Scheduled Tribes (VCF-ST)', which aims to promote entrepreneurship among the ST community. The VCF-ST scheme

will be a social sector initiative to promote ST entrepreneurship and develop and support start-up mindset in ST youth.

- **Special Initiative for PVTG in Jharkhand:** In keeping the children of Vulnerable Tribal Groups (PVTGs) engaged with education, the 'PVTG Pathshala' under the Udaan project is bringing a positive change in Jharkhand. The objective of the project is to bring a positive change through 'PVTG Pathshala' to the especially vulnerable tribal group children living in remote villages, forests and difficult geographical conditions. To achieve this objective, the initiative of Jharkhand State Livelihood Promotion Society under Rural Development Department has started showing positive results. Through this, efforts are being made to enroll children in school, to consolidate their basic education and to inculcate in them the habit and interest in reading and writing. About 73 thousand PVTG families live in the state. These groups have their own social and cultural identity. This group is also completely dependent on nature for livelihood. With the aim of providing education to the children of PVTG families, 140 PVTG schools are being operated at the village level in Pakur, Dumka, Deoghar, Godda, Garhwa, Latehar, Palamu, Gumla, Seraikela and East Singhbhum of the state under the Udaan project. In these, about 3000 especially vulnerable tribal group children are studying.
- **Mamta Scheme for PVTG in Odisha:** The Odisha government had decided to extend the benefits of the Direct Benefit Transfer of the 'Mamta' scheme to Particularly Vulnerable Tribal Groups (PVTGs) in the state for another five years from the year 2019. While pregnant women from other communities can get conditional cash transfer maternity benefits on the birth of two children, PVTG women have been kept out of this purview. "This provision for PVTG women is applicable since 2014 and the State Women and Child Development Department has extended it for five years till 2024. Under the Mamta Yojana, pregnant women get a cash incentive of Rs 5000.

Role Of Payment Aggregators In Financial Inclusion

The RBI has for the first time released a full list of the entities to which it has granted a payment aggregator licence, as well as those whose applications are still in process, and those whose applications it has rejected. In this list, the payments arm of big technology companies Amazon and Google and Indian giants like Reliance Payment Solutions, and the payments platform of Zomato, are among 32 firms that have been given in-principle approval by the Reserve Bank of India (RBI) to operate as online payment aggregators.

Payment Aggregator:

- A payment aggregator is a service provider that integrates various options of online payments together and brings them into one place for merchants. It facilitates different types of payment transactions, including cash/cheque, online payments through multiple payment sources, or offline touchpoints (in-store kiosk, in-field payments, remote link-based payments, or billing counters).
- They act as intermediaries between the customer, the merchant and the financial institutions.
- The RBI introduced Guidelines for Regulating PAs and Payment Gateway in March 2020.

Payment Aggregator and Financial inclusion:

- Financial inclusion is defined as the availability and equality of opportunities to access financial services. It refers to the provision of affordable and accessible financial services to underserved and unserved segments of society. These include banking, loan, equity, and insurance products.
- The seven cornerstones of financial inclusion, i.e., Accessibility, Availability, Affordability, Awareness, Acceptability, Assurance and Appropriateness.
- The process of financial inclusion is influenced by both demand and supply side factors. Demand side factors include financial literacy and awareness, felt need for the products, credit absorption capacity, etc. On the other hand factors, such as, product availability, delivery methods, service providers, etc. influence the supply side.
- The COVID-19 crisis has changed how people make their day-to-day transactions, there is greater reliance on electronic payments however in many developing countries, large segments of society have until now remained largely excluded from the benefits of bank accounts and other financial services. Payment aggregators – and attractive opportunities to make use of them – are a key part of the puzzle when it comes to the inclusion of small merchants and consumers in the formal financial system.

- The drivers of financial inclusion via payment aggregators are access to cheap mobile phones and cheap internet, and Aadhaar based identity system, which has nudged more merchants towards electronic payments, even drawing in unbanked small-scale vendors.

Functions of Payment Aggregator:

- They typically provide a range of payment options to customers, including credit and debit cards, bank transfers, and e-wallets.
- They collect and process payment information, ensuring that transactions are secure and reliable.
- By using them, businesses can avoid the need to set up and manage their own payment processing systems, which can be complex and expensive.

Types of Payment Aggregators:

- **Bank Payment Aggregators-** e.g.; Razorpay and CCAvenue.
- **Third-Party Payment Aggregators-** e.g.; PayPal, Paytm and Google Pay.

RBI's Criteria for Approving an Entity as Payment Aggregator

- Under the payment aggregator framework, only firms approved by the RBI can acquire and offer payment services to merchants.
- A company applying for aggregator authorisation must have a minimum net worth of Rs 15 crore in the first year of application, and at least Rs 25 crore by the second year.
- It must also be compliant with global payment security standards.

Payment Aggregators role in Financial Inclusion:

- **Providing access to digital payments-** They have made digital payments accessible to people who may not have had access to traditional banking services. They offer simple, user-friendly interfaces that allow users to send and receive money, pay bills, and make purchases online.
- **Enabling cashless transactions-** They have reduced the dependence on cash, which has been a barrier to financial inclusion in India. By enabling cashless transactions, payment aggregators have made it easier for people to participate in the digital economy.
- **Offering financial services to unbanked and underbanked populations-** They have partnered with banks and financial institutions to offer financial services such as savings accounts, insurance, and loans to unbanked and underbanked populations.
- **Facilitating micro - transactions:** Payment aggregators have made it possible to conduct micro-transactions. This has opened up new opportunities for people to participate in the digital economy, such as buying digital content,

paying for public transportation, and making small purchases.

- **Promoting financial literacy-** Payment aggregators have launched initiatives to promote financial literacy among their users. They offer tools and resources to help people understand financial products and services, and make informed financial decisions.
- **Multiple Payment Options-** Payment aggregators offer a range of payment options to customers, making it easier for them to pay for goods and services.
- **No need of bank account-** It allows merchants to accept bank transfers without setting up a bank-based merchant account.
- **Secure Payment Processing-** Payment aggregators use advanced security measures to ensure that transactions are safe and secure.
- It acts as a catalyst on the supply side of financial inclusion by way of appropriate designing and efficient delivery of products, processes and systems.
- **Fraud Detection and Prevention-** Payment aggregators use algorithms and machine learning to detect and prevent fraud, reducing the risk of chargebacks and other payment disputes.
- **Interoperability-** They provide integration with various payment providers to provide an all-inclusive solution for payment acceptance.
- **Payment Tracking and Reporting-** Payment aggregators provide detailed reports on payment transactions, making it easier for businesses to manage their finances and reconcile their accounts.
- **Integration with Other Systems-** Payment aggregators can integrate with a range of other systems, such as accounting software and inventory management systems, to streamline the payment process and make it easier to manage business operations.
- **Customizable-** They provides solutions customized to the needs of the merchants thus are more user friendly.
- In line with Payment System Vision 2025 that aims is to ensure payment and settlement systems in the country are safe, efficient, interoperable, authorised, accessible, inclusive and compliant with the international standards.
- **Last mile delivery of financial services-** They provide necessary support to expand the reach particularly for the banks, crossing the proverbial last mile.

Concern Related to Financial Aggregators:

- Aggregators are still struggling to make profits from this business segment due to the high costs of customer acquisition and service provision, and still low volumes associated with bulk disbursements.
- **Lack of financial literacy-** According to report by ADB, only 27% of Indian adults – and 24% of

women – meet the minimum level of financial literacy as defined by the Reserve Bank of India.

- Dominance of two or three players in the market of aggregators can hamper competitiveness in long run and can cause increase in prices of financial services provided by it.
- Security of personal and financial data- Payment aggregators collect a significant amount of sensitive information from users, such as credit/debit card details, bank account numbers, and personal identification information. If this data is not properly protected, it could be vulnerable to cyberattacks, data breaches, and identity theft and also in absence of privacy laws there is an ambiguity on the part of aggregators on how to process and store personal data of customers.
- Unaddressed regulatory issues like complete wavering of Merchant discount rates, delay in licensing of aggregators etc.

Steps taken by RBI to boost Fintech in India:

RBI's upcoming White-List-

- RBI has prepared a “white-list” of digital lending apps (List of Approved Lenders) in order to curb rising malpractices in the digital lending ecosystem.

Digital Lending Norms-

- In order to curb rising malpractices in the digital lending ecosystem, the RBI last August issued guidelines for entities engaged in digital lending that stated that all digital loans must be disbursed and repaid through bank accounts of regulated entities only, without the pass-through of lending service providers (LSPs) or other third parties.
- And recently in a fresh set of clarifications issued on these norms, the regulator said that digital lenders should, at the time of sanction of loan, convey the name and other details of empanelled recovery agents authorised to contact the borrower in case of default.

RBI's Fintech Regulatory Sandbox-

- Established in 2018 with the primary objective of being a controlled regulatory environment for testing fintech products.

Payment System Operators license-

- This initiative was brought in in order to scrutinize the ever-expanding payments landscape in India.
- Payment aggregators are an important part of the digital payment landscape, and their role is likely to become even more critical as digital payments continue to gain popularity and become the preferred mode of payment for businesses and consumers alike.

Way Forward:

The RBI has said that the scrutiny of applications of payment aggregators is an “ongoing process”, but it is releasing the status until February 15 for “ensuring greater transparency” and the list will be updated fortnightly.

Empowerment Of India By Skill Development

Reference:

- Recently, the government has constituted six working groups to give suggestions on some major budgetary schemes such as Pradhan Mantri Kaushal Vikas Yojana 4.0, Skill India Digital Platform, and Skill India International Center.
- Some time ago the Advisor to the Deputy Governor of Jammu and Kashmir said that about 80,000 youths have been skilled in various fields.
- Indian industrial thinkers have expressed concern over the gap between MSMEs and ITIs and have said that skill upgradation in India is not in line with the standards of the industrial sector, hence it needs to be addressed.

Introduction:

- At present, India is emerging as an important youth country. India is the largest labor supplier in the world. In this situation, India's population must be converted into a demographic dividend. In this context, the Government of India is continuously making efforts for skill development for the youth of the country. Skill development is not only essential for demographic dividend but it can also play a vital role in ending rising unemployment in India. Presently, skill development of youth in education, health, labor, industry, village, city, government, corporate, technology, etc. has become an essential condition in every field related to nation-society.

Need for Skill Development:

For Demographic Dividend:

- According to the United Nations Population Fund, a demographic dividend is a potential for economic growth that arises from changes in the age structure of a population. The demographic dividend is high in countries where the working population (15-64 years) is more than the dependent population (under 15 years and above 64 years). At present, more than 62% of the Indian population comprise people that belong to the age group of 15 years to 60 years. India is one of the most populous countries in the world and due to the changing technological scenario, it is necessary to give priority to skill development to provide employment and economic benefits to this large population.

For employment growth:

- According to the recently released Economic Survey, although both in the labor market, urban and rural, employment has decreased from the pre-Covid level and the unemployment rate has come down from 5.8 percent in 2018-

19 to 4.2 percent in 2020-21. The mainstay of India's economic growth during FY2023 has been private consumption and capital formation, which has helped in job creation. However, according to the PLFS report, only 57% of men and 25% of women participate in the labor force in India. These figures can be further increased through skill development.

Employment scenario changing as a result of Covid-19:

- After the Corona pandemic, there has been a rapid change in the employment scenario. Today, technological intervention has become mandatory in almost all fields. In this situation, the importance of skill development has increased.

Industrial Revolution 4.0:

- The present world is standing on the threshold of the fourth industrial revolution. Here the importance of artificial intelligence, the Internet of Things, robotics, nanotechnology, information, and communication technology will increase. To make India the center of Industrial Revolution 4.0, there is a need to strengthen skill development and technology infrastructure.

Challenges before Skill Development in India:

- **Industry and Skill Learning gap:** Supply-driven vocational skill development policies lack a balance between the skills/training agencies that are supplied versus what is required by the firm. Even on the demand side, MSME workers are generally required to be multi-skilled.
- **Rural-urban divide:** The high rural-urban divide creates a disparity in opportunities and outcomes between rural and urban India.
- **Lack of industrial connectivity:** Industry-relevant courses are although offered, training programs are generally absent.
- **Huge financial investment:** To keep pace with the structural changes, India needs to invest in technological upgradation to skill the youth as per the market demand.
- **Overloaded responsibility:** The proportion of the working-age population (15-59 years) was expected to reach more than 64 percent by 2021, according to OECD data. This would be a heavy burden on the limited administrative capacity. If it is not converted into a demographic dividend, it will turn into a demographic curse.
- **Nature of education:** Till now the level of education in India had not been up to the mark. The present form of education motivates children to rote the syllabus instead of increasing their skills. However, there is a possibility of change in

this with the new education policy.

- **Limited role of industries in training:** At present, most of the training institutes are funded by the government, and some training institutes of the private sector are not according to the standards. Along with this, due to the limited role of industries in the training sector, the quality of training and the level of employment and salary after training remains very low, which is a matter of concern.
- **Reluctance of students towards skill training:** Reluctance of students towards skill training institutes like ITIs and Polytechnics is also a problem. Enrollment of students in these institutions decreased in proportion to their capacity.
- **Problem in the implementation of skill development schemes:** There is also a problem in the implementation of skill development schemes in India. For example, the Skill India program had a target of providing skills and training to 300 million people by the year 2022, but only 25 million people were trained under it till 2018-19. Although the number of people getting trained under the Skill India program has increased, the rate of attainment of employment has come down sharply. Only 15 to 20% of the people trained under Pradhan Mantri Kaushal Vikas Yojana have got employment.

Efforts made for skill development for the empowerment of India:

Provision for skill development in the budget- 2023: The following provisions have been made for skill development in Budget-2023:

- Provision to open a modern teachers training center by 2024 for the training of teachers
- Integrated Online Training Program for Civil Servants and Government Employees for skill upgradation.
- Pradhan Mantri Kaushal Vikas Yojana 4.0 will be launched in the next 3 years. With this, industry-focused courses will be launched, including robotics, coding, 3D printing, etc.
- Establishment of Unified Digital India Platform and launch of National Apprenticeship Training Scheme to accelerate skill development.
- 30 Skill India International Centers to be set up in different states to skill the youth for international opportunities.
- Direct Benefit Transfer will be launched under an all-India National Apprenticeship Scheme, which will benefit 47 lakh people.
- By linking skill development with the new National Education Policy (NEP), the 'Amrit Peedhi' (youth) will be made skilled.
- To fulfill the objective of 'Make AI in India and Make AI work for India', Centers of Excellence

for Artificial Intelligence will be set up in top educational institutions.

Other Previous Efforts:

- **Skill India Program:** This scheme aimed to provide skills to 30 crore people by 2022.
- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):-** This scheme was introduced as a part of Skill India. Its objective was to provide short-term training to the people.
- **Ministry of Skill Development and Entrepreneurship:** In the year 2014, considering skill development as essential, the government established a separate Ministry of Skill Development and Entrepreneurship. It is responsible for establishing better coordination in the core training process, evaluation, and certification of outcomes and Skill India.
- **Deendayal Kaushal Vikas Yojana:** It is a scheme run by the Ministry of Rural Development, Government of India which aims to enable poor rural youth to get regular jobs providing monthly wages equal to or above minimum wages. Presently this scheme is being implemented in 27 states and 3 union territories. There are 2198 training centers and 1822 projects under this scheme.

Provisions of skill development in the latest education policy:

- The education policy has set a target of providing vocational education to at least 50 percent of students in the school and higher education system by 2025, which is a very important step for skill development.
- As per the new policy, various postgraduate programs will be exempted such as the 2-year program for 3-year undergraduate degree students, a 4-year research graduate program for a one-year postgraduate program, and 5 years integrated graduate program. Apart from this, the framework for the quality of open and distance learning and online education will be prepared and updated. This will give time for skill development.
- Along with this, the new education policy will promote skill development in artificial intelligence and other technical dimensions.

Conclusion:

Skill development is very important for making the country a 5 trillion economy and for economic empowerment. In the post-Covid world, the world has understood the real importance of skills. This is the reason that today every country has become conscious of the skill development in the youth. In this situation, skill development is essential for employment growth, technological upgradation, and taking advantage of the fourth industrial revolution.

Success Of SSLV: Beginning Of A New Era In Indian Space Sector

Reference:

Recently, the Indian Space Research Organization (ISRO) successfully launched SSLV-D2 and placed three satellites in space orbit. This marks the beginning of a new era in India's space sector.

Introduction:

- Small Satellite Launch Vehicle (SSLV-D2) has been successfully launched from Satish Dhawan Space Center Sriharikota, Andhra Pradesh launch pad. The vehicle will place ISRO's Earth observation satellite EOS-07 and two co-passenger satellites (Janus-1 and AzaadiSat2,) into an orbit which is 450 km around the Earth. It is worth noting that Janus-1 and AzaadiSat2 are satellites developed by start-ups.

About SSLV launch vehicle:

- The launch vehicle uses three solid stages followed by a liquid-fuel-based Velocity Trimming Module (VTM) to put the satellites into orbit.
- The length of SSLV is 34 meters.
- The new vehicle has been declared operable by the space agency after completing two successful development flights.
- The last vehicle to be declared operational was the GSLV Mk III (now called LVM 3) that carried Chandrayaan-2 in 2019.
- The launch aims to give the new vehicle access to the emerging small and microsatellite commercial market.
- The rocket can be built by a small team in just a few days, compared to large launch vehicles like ISRO's PSLV which takes around six months and almost 600 people.

Flight of SSLV as a new age enabler:

- Notably, its first development flight which took place last August failed to place the satellites in an accurate orbit. However, after the success of this flight, India has further strengthened its competitive ability in the space market.
- **Cost Effective:** This rocket is prepared at a very low cost. The cost of SSLV (three rockets each) is very less (56 crore approximately), when compared to the Polar Satellite Launch Vehicle (PSLV) and its variants (cost around Rs 200 crore), Geosynchronous Satellite Launch Vehicle (GSLV-MK2 cost around Rs 272 crore, and LVM-III, Rs 434 crore). This will make India's commercial space sector more profitable.
- **Skill development in the space sector:** With the help of this rocket, satellites built by researchers and students can be sent into space at a low cost,

which will prove useful for skill development in the space sector.

- **Soft Power Diplomacy:** With this launch vehicle, India will be able to send satellites of low-resource countries like Nepal, Bhutan, etc. at a low cost, which will prove to be extremely beneficial for India's soft power diplomacy.



- **Competition:** Recently the first private rocket Vikram-S was launched by India. The private sector is known to bring down the cost, thus this launch vehicle of ISRO will make the space sector more competitive.
- **Market-oriented plan:** India has launched a USA-based satellite from SSLV. Even before this, India has launched several satellites of many countries in space. Now through SSLV, the cost of the project will come down, due to which India will get more projects and it will be able to emerge as a global leader.
- At present, the space industry is flourishing very fast. Today it has become very cheap to send satellites to Low Earth Orbit (LEO). Private companies like Space-X set a price of around \$2770 per kilogram for sending satellites to LEO. India's SSLV will be more effective in this context.
- As per Bank of America, currently, the outer

space market is about \$350 billion which is expected to reach \$2-7 trillion by 2050. To gain this advantage, India needs to have rocket diversity which is further advanced by SSLV.



Other Facts

The satellites launched by SSLV D2

Janus-1

- Janus-1 is a technology demonstration satellite.
- It is built by the United States-based Antaris and its Indian partners include XDLINKS and Ananth Technologies.
- The satellite bus is the main structure on which the payload rests.
- The payload can be used for many applications such as earth observation, signal monitoring, or ship tracking.
- The company aims to manufacture satellite buses of various sizes for satellites weighing around 100 kg.
- Janus-1 weighs only 10.2 kg.
- It is a six-unit cube satellite with five payloads on board – two from Singapore, and one each from Kenya, Australia, and Indonesia.
- The entire satellite was built in 10 months, which is less than half the time it normally takes to build satellites of this size.

Azadisat 2

- This payload has been created by 750 girl students across India.
- The payload includes – LoRa amateur radio, a sensor to measure radiation levels in space, and sensors to measure the health of the satellite.
- A similar satellite was launched by SpaceKidzIndia on SSLV-D1 in August last year.
- SpaceKidzIndia aims to promote space awareness among children.

- India is known for its low-cost flights while ISRO is established as a net beneficiary and net foreign exchange earner.

Challenges in front of India's space sector:

- Extremely Low Participation:- India's participation is very low at 3.6% as compared to 56.4% of America. Even though India makes low-cost projects, the low market share suggests that a lot more needs to be done.
- Lack of funding:- India's space sector had been funded exclusively by the central government till now. Its annual budget is around Rs 15,000 crore and most of it is used in the manufacture of rockets and satellites. As a result of which there is a shortage of finance for other sectors.
- Other priorities:- There are many other priorities before the Government of India. India sends communication, navigation, etc. satellites for the needs of its people, which undoubtedly affects the export potential.

Other efforts made by India to increase participation in the Space Market:

- NSIL (the commercial arm of the space sector) has signed 19 technology transfer agreements and successfully transferred 8 technologies developed by ISRO to the Indian industry. It is increasing the market potential of ISRO
- Indian Space Policy - 2022, this policy was approved by the Space Commission. The policy has been extensively discussed with industry groups, and inter-ministerial consultations, reviewed by the Empowered Technology Group, and is under further approval process.
- India has decided to open up the space sector to private players. Recently, satellites have been sent into space by a private launch vehicle named Vikram-S.
- IN-SPACE was launched to provide a level playing field and access to Indian space infrastructure by private companies.
- On November 2022 the first private Launchpad and mission control center were set up by M/s Agnikul Cosmos Pvt. Ltd, Chennai at the ISRO campus at SDSC, SHAR.

Conclusion:

Certainly, India is making progress in the field of space. The introduction of SSLV has diversified India's launch vehicles and made India more competitive in the global space market. This will not only help in earning foreign exchange for ISRO but also fulfill the objectives of a self-reliant India by setting up low-cost satellites related to education, research, communication, meteorology, etc.

India's position in the Global Space Market:

- According to Spacetechnics Analytics, by the year 2021, India will be the sixth largest country in the space industry internationally. India currently represents 3.6% of the overall space market. Apart from India, other countries that represent a large share of the space market include the US (56.4%), the UK (6.5%), Canada (5.3%), China (4.7%), and Germany (4.1%).
- The Indian space industry is expected to grow in value to \$50 billion by 2024 from \$7 billion in 2019.
- India has the distinction of being the first country to reach Mars orbit in its first attempt.

Lithium Opening The Doors Of Development For India

Why in News:

Recently, the Geological Survey of India (GSI) has discovered 5.9 million tonnes of Lithium resources in the mountainous Salal-Haimana area of the Reasi district in the Union Territory of Jammu & Kashmir. In February 2021, the GSI announced the presence of Lithium resources of 1,600 tons in the Marlagalla-Allapatna area, Mandya district, Karnataka.

However, the Jammu & Kashmir reserve is larger and has created greater enthusiasm. This figure is about 5.5% of the world's identified total Lithium reserves placed at 98 million tonnes by the US Geological Survey.

Lithium: Characteristics and its importance:

- Lithium is a silvery-white alkali metal. It is soft enough to be cut with a knife. It can float on hydrocarbon oils and is one of only three metals that can float on water, the other two being Sodium and Potassium.
- Lithium constitutes about 0.002 percent of Earth's crust. It forms a minor part of igneous rocks with the largest concentrations in granites. Granitic pegmatite provides the greatest abundance of lithium-containing minerals, with spodumene and petalite being the most commercially viable sources.
- It is highly reactive and flammable, and hence must be stored in a vacuum or inert liquid like purified kerosene. It never occurs freely in nature, but only in compounds. Due to its solubility, it is present in ocean water and is commonly obtained from brines.
- As a critical mineral deployed in Electrical Vehicles and Battery Storage. Lithium-ion batteries are used in wind turbines, solar panels, and electric vehicles, which are crucial for the green economy.
- According to World Economic Forum, demand for Lithium-Ion batteries to power electric vehicles and energy storage has seen exponential growth, increasing from just 0.5 gigawatt-hours in 2010 to around 526 gigawatt hours a decade later. Demand is projected to increase 17-fold by 2030.
- A World Bank study suggests that demand for critical metals such as Lithium is expected to rise by nearly 500% by 2050.

Global status:

- Argentina, Bolivia, and Chile make up the "lithium triangle". The three countries, along with Peru, contain about 67% of proven lithium

reserves and produce about half of the global supply, according to the U.S. Geological Survey. Chile is estimated to have the largest reserves (9.2 million tonnes), while Australia is the largest producer (40,000 tonnes annually).

- Globally, lithium is extracted from two key sources: brines and minerals. Lithium-bearing minerals, such as spodumene and petalite are mainly extracted from Australia, Zimbabwe, and Brazil. Extraction of lithium from brines predominantly occurs from continental brine deposits, such as those found in Chile, Argentina, and Bolivia.

Relevance for India:

- To reach India's pledge to reach net-zero carbon emissions by 2070 made at the 2021 UNFCCC (COP26), India need to significantly boost EV adoption and build solar and wind energy capacity. India is also trying to become an alternative to China as a producer of lithium-ion batteries, both for domestic consumption and export.
- Lithium could prove to be a potential game changer in India's transition to a green economy. India's electric vehicle market is projected to grow with a compound annual growth rate of 23.76% by 2028. For this, India needs to secure its critical mineral supplies and build self-sufficiency in this sector. Currently, India imports all of its Lithium from Australia and Argentina; and 70% of its Lithium cell requirement comes from China and Hong Kong.
- The Lithium reserves in J&K could boost the domestic battery manufacturing industry. Further, it will help in achieving India's ambitious plan of increasing EV penetration in private cars, commercial vehicles, and Two wheelers by 2030. This will also strengthen India's National Mission on Transformative Mobility and Battery Storage.
- The discovery could enhance India's aspirations of becoming a green industrial power. Again, it would place India sixth in terms of lithium resources, just behind leading producer Australia and ahead of China, the largest raw lithium importer and producer of lithium-ion batteries.

What are the geostrategic concerns?

- The growing geopolitical rivalry with China makes India's security considerations more immediate. To reduce dependence on China, India is pushing for a "Rare Earth Mission" to

exploit the country's critical mineral reserves which account for 6% of the world's rare earth reserves.

- Dependence on China for Lithium and its derivatives is considered major energy security risk. China currently controls 77% of the global Lithium Ion Battery manufacturing capacity and is home to six of the world's 10 manufacturing companies. As a result, major economies of the world like EU, US, Canada and India are trying to leverage alternative supplies that can challenge China's geopolitical dominance in this area.

Challenges:

- To reap the most of the benefits, India must address the challenges of tapping this Lithium resource which includes the insufficient mining capacity.
- Developing an exploration and production policy that allows the extraction and sale of these minerals in a commercially-viable manner is going to be a major challenge. Besides, India also needs to develop its own lithium refining capacity.
- However, it generally requires 10 years or more from the time of establishing inferred resources to start actual mineral extraction. This means the new development does not offer India any relief in the short run, even though it may come handy in around 10-15 years when EV demands will be expected to record a significant increase. Till then, India has to depend on importing the ore.
- Again, developing these lithium resources will require herculean task of attracting investment and industrial development in a strategically volatile region which is situated near LOC with Pakistan.
- The area where Lithium reserves were found is seismically active area. Placed in seismic zone IV, it lies in a high-damage risk zone. Multiple low-intensity earthquakes hit the district in recent past.
- Furthermore, lithium mining requires open pit mining which may pose environmental challenges in ecologically fragile area. The manufacturing processes of lithium, including the solvent and mining waste presents significant environmental and health hazards. Lithium extraction can be fatal to aquatic life due to water pollution. It is known to cause surface water contamination, drinking water contamination, respiratory problems, ecosystem degradation and landscape damage. Due to mining in Himalayan topography, incidents of

land sinking may also happen.

- Further, there must be fair and thorough assessments of its effects on agricultural production, especially since the sector is already susceptible to climate change. It is equally crucial to ensure we extract these materials as responsibly as possible, otherwise it mitigates the very reason for building these green technologies. Effective Environment Impact Assessment of the mining project will help in mitigating the environmental impact on the area.

Way Forward:

- The lithium reserves in Jammu and Kashmir are classified as being in the 'inferred category', i.e., Geological Survey of India requires more conclusive evidence to actually establish the existence and viability of the reserve.
- Successful extraction of this reserve would give a big push toward the implementation of India's electric vehicle expansion plans and can lead India to a very strong position by becoming atmanirbhar (Self-Reliant) in Electric Vehicle manufacturing sector.
- A February 2022 Report by the India, chapter of the World Resources Institute (WRI), said that the supply of minerals required for commercially available battery technologies being dominated by a handful of countries was a bump in the road for India's expansion of the Electric Vehicle sector. Energy experts believe that the lithium reserves will provide a major boost to India's energy transition and may provide push to India's EV sector.
- However, India would still have to rely on global markets for other key inputs like nickel, graphite, and manganese, but domestic sourcing of lithium would be a positive start to building some self-sufficiency in energy production and storage, partially shielding Indian EV makers and battery producers from high import prices.
- Again, establishment of industries and subsequent investment for the infrastructure development of the region could bring significant benefits to the people of the region in the form of employment opportunities and expanded road and rail infrastructure while providing larger economic benefits for the Indian economy.
- Prime Minister Narendra Modi has established an ambitious target of energy self-sufficiency for India by 2047, a goal no doubt informed by the depth of India's energy-import dependence. Finding of Lithium reserves could help in achieving this goal.

National Issue

1 Need of Amendment in Mental Healthcare Act, 2017

Why in News:

Recently, National Human Rights Commission (NHRC) has expressed concern over the inhuman and deplorable condition of all 46 government mental health institutions. The NHRC made the comments after visiting all operational government facilities to assess the implementation of the Mental Healthcare Act (MHA), 2017.

Key issues highlighted in the report:

- People are kept illegally in hospitals, which is a violation of the human rights of mentally ill patients.
- Currently India spends 0.06% of its health budget on mental healthcare which is less than even Bangladesh (0.44%).
- There is a need for 13500 psychiatrists in India but only 3827 are available. There is a requirement of 20250 Clinical Psychologists, while only 898 are available.
- Most developed nations spend more than 4% of their budget on mental health research, infrastructure, framework, and talent pool.

Mental Healthcare Act, 1987:

- The Mental Healthcare Act, of 1987 prioritized the institutionalization of the mentally ill, which means many individuals stay in mental health institutions against their will.
- It embodied the ethos of the colonial-era Indian Lunacy Act of 1912, which linked criminality and madness.

About Mental Healthcare Act, 2017:

- Under Section-103 of the Mental Healthcare Act, 2017, it is the duty of the State Governments to provide mental health facilities to the prisoners, therefore the State authorities are expected to register and regulate all mental health facilities.
- The Mental Healthcare Act, 2017 discourages long-term institutionalization of patients and strengthens the rights of individuals to live independently within their communities.
- Long-term institutionalization violates Article-21 of the Constitution.
- India has ratified the United Nations Convention on the Rights of Persons with Disabilities.
- Establishment of Central Mental Health Authority and State Mental Health Authority.

Power vested under MHA:

- Right to access mental health care.
- It emphasizes rights to sanitation, food, entertainment, privacy, and basic infrastructure.

- Right to get free medicines.
- Right to be protected from cruel, inhuman, and degrading treatment.
- Right to live in a safe and clean environment with basic facilities.
- Right to legal aid.

Challenges before MHA:

- Absence of community-based services.
- Improper budgetary allocation.
- Social stigma that sees a person with a mental illness as a “criminal” deserving of incarceration.
- No establishment or inaction of these bodies by most of the states which makes redressal difficult in case of violation of rights.

Way Forward:

Various steps are being taken by the Government of India for mental health, such as announcement of National Suicide Prevention Strategy, National Mental Health Program 1982, District Mental Health Program 1996, Kiran Helpline, Manodarpan Initiative, Manas Mobile App etc. These patients also have to face gender discrimination which is against the nature. Therefore, common people have to raise their voices.

2 Section 69(A) of IT Act, 2002

Why in News:

The Ministry of Electronics and Information Technology (MeitY) recently blocked 200 online platforms under section 69(A) of the Information Technology Act, 2000. The orders regarding blocking these apps have been issued by the MeitY on an ‘urgent’ and ‘emergency’ basis after the Ministry of Home Affairs(MHA) recommended for the same. The recommendations made by MHA are based on the inputs from central investigating agencies for alleged links of these apps/websites to China.

Section 69A of IT Act 2000:

- This section allows the central government to issue orders regarding content-blocking against online intermediaries. The online intermediaries include: Internet Service Providers(ISPs), telecom service providers, web hosting services, search engines, online marketplaces, etc.

The Grounds for blocking a content:

Any content or information can be blocked, which deems to be a threat to

- National Security of India,
- Sovereignty and integrity of India,
- Defense and security of State
- Friendly relations with State,
- Public Order and if incites any cognizable

offense

- The MeITy and the Ministry of Information and Technology both share the powers to block sensitive and deleterious content and information. These powers are delegated via the Information Technology (Procedure and Safeguards for Blocking for access of Information by Public) Rules-2009 under IT Act 2000.

The safeguards mentioned in Section 69A, are as follows:

- The provisions for review committee, opportunity for fair hearing, strict confidentiality, and maintenance of records in writings by designated officers.

Why the MeitY has banned these apps and websites?

- The 138 online betting platforms and 94 money lending apps have been blocked due to their alleged links to China. These platforms and apps supposedly contained content with matters prejudicial to the sovereignty and integrity of India.
- Further, there is an increase in the number of police complaints regarding extortions and harassment from people who borrowed small amount loans through these money-lending apps.
- Since these websites and apps are third party based, they bear the risk of cyber frauds.

History of Section 69A contention:

- On various instances, the MeitY banned several apps and websites. Following cross border tensions with China, 59 apps were banned and another ban on 49 apps in 2020.
- In the landmark judgement of 2015, the Supreme Court in "Shreya Singhal vs Union of India" struck down Section 66A of IT Act of 2000. This section entailed punishment for sending offensive messages through communication services.
- This section has been made constitutionally invalid by this judgment as it violates the Article 19(1) of Constitution of India. Nevertheless, various e-platforms have challenged this section. As it contains various safeguarding provisions that can affect these agencies. No such instance has been recorded as of now, like review committee formation or fair pre-decisional hearing and breaking the due course of procedure.
- for creation of an effective environment of cyber security for Indian users, the central government needs to take action against forge e-platforms while simultaneously considering the abovementioned concerns.

3

EC Recognises Shinde Faction as Real Shiv Sena

Why in News:

Recently, the Election Commission of India has given a decision in favour of the Shinde faction, putting an end to the ongoing dispute regarding the Shiv Sena party in Maharashtra. The commission allotted the election symbol of bow and arrow and the real name of Shiv Sena to the Shinde faction. The Election Symbols (Reservation and Allotment) Order, of 1968 empowers the Election Commission to recognize political parties and allot election symbols.

The Election Symbols (Reservation and Allotment) Order, 1968:

- The election symbol allotted to a political party is a standardized symbol used by the parties during the election campaign. This is fed into the Electronic Voting Machine (EVM), so that the voter could choose to vote for the concerned party.
- The Election Commission said in its decision that Shiv Sena's majority MPs (13), MLAs (40) and office bearers are with the Shinde faction, due to which the right of real Shiv Sena goes to the Shinde faction.
- Under para-15 of the rule, the Election Commission may decide disputes between rival groups or sections claiming the name and symbol of a recognized political party.
- The Supreme Court ruled in Sadiq Ali and others vs ECI in 1971 that the Election Commission is the sole authority to decide issues in a party dispute or merger. This applies to disputes in recognized national and state parties such as the Shiv Sena.
- In case of a split in registered but unrecognized parties, the ECI advises all parties to resolve their differences internally or approach the court. The first matter that was decided under the 1968 order was the first split in the Indian National Congress in 1969 during the presidential election.
- Shiv Sena was founded by Balasaheb Thackeray in the year of 1966 and is a registered state-level party in Maharashtra.

About Election Commission:

- The Election Commission of India was established on January 25, 1950. From its establishment and till the year of 1989 it was a single-member commission but at present, it is a three-member commission consisting of one Chief Election Commissioner and two Election Commissioners. Articles 324-329 of Part-15 of the Indian Constitution are talked about the Election Commission of India. The Election Commission

has the power to conduct free and fair elections for President, Vice President, Parliament, and State Legislatures.

Way forward:

Now the time has come when the Election Commission should consider the differences or division in any political party other than the majority of MLAs and MPs so that people's faith remains in democracy and political parties. Otherwise this type of activity is more likely to lead to anarchy within the political parties.

4 'BIMARU' in the News Again

Why in News:

Recently, Prime Minister Narendra Modi used the tag 'BIMARU' at the inauguration of a two-day Investors' Summit in Uttar Pradesh. He used this word again in Rajasthan at the inauguration of the first phase of the New Delhi-Mumbai Expressway.

What is the meaning of the tag 'BIMARU'?

- BIMARU meaning 'sick' in Hindi, was first used in the 1980s by late demographer Ashish Bose in a letter submitted to the then Prime Minister Rajiv Gandhi.
- The term BIMARU was used to refer to the states of Bihar (BI), Madhya Pradesh (MA), Rajasthan(R), and Uttar Pradesh (U).
- This usually meant that these states were lagging in economic development, health care, education, etc., and needed additional assistance. At that time the states of Jharkhand, Chhattisgarh, and Uttarakhand were not separate states.
- In an Economic and Political Weekly article in 2007, Mr. Bose explained that he had coined the term to describe India's demographic disease, but it is unfortunate that BIMARU states continue to be BIMARU and according to the registrar general's estimates, The state will remain BIMARU even after 25 years.

Role of BIMARU states in population growth:

- In 2001, 41% of India's total population lived in these states, which will be 43.5% by 2026. This has tremendous political implications because these states have a total of Lok Sabha seats (174) and Rajya Sabha (68). The 2020 report of the National Commission on Population of the Union Ministry of Health and Family Welfare, titled 'Report of the Technical Group on Population Projection', stated that the BIMARU states in India will contribute 49.1% of the total population growth between 2011 and 2036.

Way Forward:

At present, these states have shown good progress in every parameter of development, be it in population,

growth, health, education, and economic sector. The Government of India may work for further enhancement of these states by collaborating with these state governments, providing special financial assistance in skill development programmes, and establishing industries. India can become a developed country by the year 2047 only when there is equal progress in all states.

5 Need of Uniform Law on Divorce

Why in News:

The court was hearing a plea filed by petitioner-advocate Ashwini Upadhyay, seeking framing of guidelines for uniform grounds of divorce for all citizens of different religions i.e. seeking guideline for uniform civil code application on divorce and maintenance.

The Supreme Court said it would examine to what extent it can judicially intervene in making divorce proceedings gender and religion neutral, while adding that it prima facie felt that the government and the legislature should ultimately should take decision in this regard. The court re-listed the case after four weeks.

Petitioner claim:

- The petition claims that the divorce laws in India are complex and neither they are gender-neutral nor religion-neutral. Grounds for divorce under the Hindu Marriage Act, 1955 are different from personal laws for Muslims, Parsis and Christians. For instance, adultery can be grounds for divorce for Hindus but not Muslims. With respect to maintenance and alimony, it constitutes the 'only source of livelihood' for many.
- In this context, the inconsistent personal laws governing the issues of divorce, maintenance, and alimony are discriminatory and reinforce 'patriarchal and stereotypical notions about women' the petitioner notes. This goes against the right to life and dignity (Article 21), the right to equality (Article 14), right against discrimination based on sex and religion (Article 15).

Government response:

- The government has said that it has no objection to gender-neutral law. However, in the present petition, it was for the court to consider how far it could judicially intervene in the issue.

Response by the other party:

- Senior Advocate Kapil Sibal, appearing for one of the parties in the matter, opposed the omnibus suggestions made in the petition of Mr. Upadhyay. Mr. Sibal agreed with the court's prima facie view that the issue should be left to the legislature and the government to decide.

Whether UCC is desirable:

In Lily Thomas and Shah Bano cases, the Court had underlined the need for UCC. In 2018, a white paper by the Law Commission urged that “the legislature should first consider guaranteeing equality within communities between men and women, rather than equality between communities”. It concluded that UCC was “neither desirable nor possible”. It is said that UCC will violate the right to religious freedom under Article 25. Therefore, there are still differences about UCC implementation.

Uniform Civil Code

A Uniform Civil Code means that all sections of the society irrespective of their religion shall be treated equally according to a national civil code, which shall apply to all uniformly. They cover areas like- Marriage, divorce, maintenance, inheritance, adoption, and succession of the property. It is based on the premise that there is no connection between religion and law in modern civilization.

What is Article 44?

Article 44 corresponds with Directive Principles of State Policy stating that the State shall endeavor to provide for its citizens a uniform civil code (UCC) throughout the territory of India.

Conclusion:

Although the court has adjourned the matter for four weeks, however, the court will examine 3 main issues-

1. Whether the personal laws governing divorce, maintenance, and alimony is discriminatory on the basis of religion and gender?
2. Whether the personal laws governing divorce, maintenance, and alimony violate Articles 14, 15, and 21 of the Constitution of India, 1950?
3. Whether the Legislature should be directed to address the inconsistent divorce, maintenance, and alimony provisions?

6

New Organ Transplantation Guidelines

Why in News:

Recently, the Ministry of Health and Family Welfare has made major changes in the organ transplant regulations in the country under its ‘one nation, one policy’ rule by allowing those above 65 years of age to receive an organ for transplantation from deceased donors.

What do the new guidelines say:

No Age Cap:

1. The upper age limit has been removed as people are now living longer.
2. The new guidelines have done away with the 65-year age limit for registration of patients seeking organs from a deceased donor.

No domicile requirement:

1. A patient irrespective of domicile State can register in any other State for a transplant (previously a domicile certificate was necessary)
2. The patient will be allotted a unique ID by NOTTO on registering.

About National Organ and Tissue Transplant Organization (NOTTO):

- NOTTO is a national-level organization set up under the Directorate General of Health Services, Ministry of Health and Family Welfare.
- It functions as the apex center for all India activities of coordination and networking for:
 1. Procurement and distribution of organs and tissues; and
 2. Registry of Organs and Tissues Donation and Transplantation in the country.

Organ transplant: Scenario in INDIA:

- The most common organ transplant is for the kidney.
- India conducts the third highest number of transplants in the world.
- The majority of organs harvested were from living donors, specifically kidney and liver donations, while the organs from deceased donors accounted for nearly 17.8%.

Way Forward:

The decision of the government will make organ and tissue donation more accessible. The need is to increase the number of potential donors by increasing awareness, building trust, and increasing the number of medically qualified transplant coordinators to help increase deceased donations.

7

MHA Designates Two Outfits as Terror Organizations Under UAPA

Why in News:

The Ministry of Home Affairs on Friday designated the Khalistan Tiger Force and the Jammu and Kashmir Ghaznavi Force as terrorist organizations under the Unlawful Activities (Prevention) Act, 1967. A Punjab resident, Harwinder Singh Sandhu alias Rinda Sandhu, who is presently based in Pakistan's Lahore, was also designated as an “individual terrorist” under the anti-terror law.

What is Jammu and Kashmir Ghaznavi Force?

- Jammu and Kashmir Ghaznavi Force (JKGF) surfaced in the year 2020 as a terrorist outfit. It draws its cadre from various proscribed terrorist organizations, such as the Lashker-E-Taiba, Jaish-E-Mohammed, Tehreek-ul-Mujahideen, and Harkat-ul-Jehad-E-Islami.
- It is involved in infiltration bids, narcotics, and weapon smuggling, and carrying out terror

attacks in Jammu and Kashmir. The notification added that the outfit threatens security forces and incites people on social media platforms to join terrorist outfits fighting against India.

What is Khalistan Tiger Force?

- Khalistan Tiger Force (KTF) came into existence in 2011 as an offshoot of the banned terrorist outfit Babbar Khalsa International (BKI). The KTF is a militant outfit aimed at reviving terrorism in Punjab to achieve its agenda of the formation of a separate state of Khalistan and thus it challenges India's territorial integrity, unity, national security, and sovereignty.
- The KTF is involved in various terror cases, including targeted killings, and its members are receiving financial and logistical support, including sophisticated weapons, from its foreign handlers.

Babbar Khalsa International Terrorist Organisation in Punjab:

- Harvinder Singh Sandhu, a resident of Sarhali

village in Punjab's Tarn Taran district, is associated with the BKI and is currently living in Lahore, Pakistan under the protection of cross-border agencies.

- Sandhu has direct links with Pakistan-based terror groups and is also involved in cross-border smuggling of arms, ammunition, and terror hardware besides large-scale drug trafficking. He has been involved in various criminal offences like murder, attempts to murder, contract killings, loot, and extortion in the states of Punjab, Maharashtra, Haryana, West Bengal, Himachal Pradesh, and Madhya Pradesh. Interpol also issued a red notice against Sandhu in 2022.

Way Forward:

- The Government of India should keep an eye on the organizations affecting the sovereignty, unity, integrity, and national security of India and work towards curbing their activities.

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International Issue

1 Canada's Indo-Pacific Strategy

Why in News:

Recently, Canada released its new Indo-Pacific strategy, in which harsh language was used against China and focused on strengthening multi-faceted relations with India.

About Canada's Indo-Pacific Strategy:

- Canada released a new Indo-Pacific strategy focusing on the four regions that include China, India, the North Pacific (Japan and Korea), and ASEAN.
- The region is home to the largest diaspora in Canada with 1 in 5 Canadians having a family connection and 60% of Canada's foreign students.
- Expressing a positive attitude toward India's shared tradition of vibrant democracy and pluralism, the strategy emphasizes the international rules-based order.
- Although Canada also acknowledges its dependence on China as its main export destination, it calls for increased transparency on issues such as human rights violations, climate change, and health.
- Canada's strategy includes a \$1.7 billion funding commitment over five years, including infrastructure projects, increased military presence, and expanded participation in regional military exercises.

Objectives:

- Promoting peace, resilience, and security.
- Expanding the flexibility of trade, investment, and supply chains.
- To connect more people, by increasing investment.
- Building a sustainable and green future.
- To be an active and cooperative partner for the Indo-Pacific.

About Indo-Pacific:

- It is an alternative to the long-dominant Asia-Pacific, reflecting the eastward movement of global development from the Euro-Atlantic dimension. Geographically, it connects the Pacific Ocean, the Indian Ocean, and the surrounding areas.

India's Policy for the Indo-Pacific:

- A free, open, inclusive sector.
- A common rule-based order for the region.
- Equal access to common spaces in the sea and air, as a right under international law.
- Bypassing power rivalry through partnership.

- India aims to be a net security provider, provide humanitarian assistance and develop a sound and comprehensive strategic awareness of developments in the IOR.

Way Forward:

During the 21st century, Increasing power politics in the indo-pacific region attracts many countries because it contains 65% of the global population, 44% of the total area, and 46% of the global GDP. Therefore, global powers should try to increase development and prosperity rather than disputes.

2 Recognising the Islamic Emirate of Afghanistan

Why in News:

Taliban has called on the international community to recognise the Islamic Emirate of Afghanistan, claiming that if recognised, the concerns and complaints of the world community will be addressed in a better way. Taliban-led Ministry of Economy said that the lack of recognition of the Islamic Emirate by the international community since last August has caused challenges in the country. If the Islamic Emirate is recognized, the engagement of Afghanistan with the international community will increase and this will bring stabilization in the region.

International laws relating to the recognition of a state:

- In order to be considered an international person, a State should have the following qualifications-
 1. Permanent Population
 2. Definite Territory
 3. Government
 4. Capacity to enter into relations with other States
- If the abovementioned conditions are fulfilled, then the State can be recognized. Although, Afghanistan is already recognised by the international community as a state, the problem arose when Afghanistan was occupied by Islamic state. The international community must recognise Islamic state as a legal government in Afghanistan, or the Afghanistan may lose its state ship in a legal sense as the government is an essential condition for a state.

Recognition of the government:

- Recognition of a government is analogous to the recognition of the State as it is the sole representative of the given State in international intercourse. When the regime of a State is changed, it is required to be recognized by other

States. Change in the government of a State may take place either in the normal course of political life or when it is affected through a revolt or revolution, by unconstitutional means.

- In the latter case, a new government usually receives recognition only when the other States are satisfied that it commands the support of the majority of the people and it will be stable. Willingness and capacity to carry out its international obligations are also considered relevant. Since the non-recognition of a new government has nothing to do with the recognition of a State, official intercourse and treaties are not terminated but only suspended; they revive when the old government comes in the power again or when the new regime is recognized.

Conclusion:

According to analysts, forming an inclusive government, countering terrorism, not allowing the use of Afghan soil against other countries, and ensuring human rights, especially the rights of women and girls, will pave the ground for recognition of the Islamic Emirate. To earn recognition, the Taliban should refer to the people first. They should observe law, politics, and governance. They should recognize the rights of the people.

3 New START Treaty

Why in News:

Russian President Vladimir Putin announced that Moscow was suspending its participation in new start treaty with the United States. The recent suspension of the treaty is done against the backdrop of the Ukraine war.

About New START Treaty:

- New START (Strategic Arms Reduction Treaty) was the last remaining arms reduction agreement between the U.S. and Russia.
- It caps the number of strategic nuclear warheads that the United States and Russia can deploy, and limits the use of missiles that can carry atomic weapons.
- Under the accord, the US and Russia committed to reducing deployed nuclear warheads (capped at 1,550 each) and limiting the number of delivery platforms, such as intercontinental ballistic missiles, to 700 or fewer.
- The agreement also allows each country to conduct on-site inspections of each other's weaponry and requires the exchange of data and notification concerning covered arms and

facilities.

- The US and Russia signed New START — formally the New Strategic Arms Reduction Treaty — in 2010, to replace the 1991 START treaty.
- It took effect on Feb 5, 2011, and received its most recent five-year extension in 2021.
- It addresses only strategic nuclear weapons — long-range ones that can be used to threaten each other's territory and not shorter-range, so-called tactical weapons.

What are the different treaties signed between USA and Russia?

Strategic Arms Limitation Talks-1 (SALT):

- It began in 1969, under an interim agreement, with both sides pledging not to build new intercontinental ballistic missile (ICBM) silos.
- They also agreed not to significantly increase the size of existing ICBM silos and capped the number of Submarine-Launched Ballistic Missile (SLBM) launch tubes and SLBM-carrying submarines.

Strategic Arms Reduction Treaty-1 (START):

- START I was a bilateral treaty between the United States and the Soviet Union on the reduction and limitation of strategic offensive arms. The treaty was signed on 31 July 1991 and entered into force on 5 December 1994.

Strategic Arms Reduction Treaty-II:

- The START II treaty is a bilateral treaty negotiated by the United States and Russia and signed by Presidents Bush and Yeltsin on January 3, 1993. It will reduce the number of strategic delivery vehicles (ballistic missiles and heavy bombers) and the number of warheads deployed on them.

Strategic Offensive Reduction Treaty (SORT):

- Bush and Russian President Vladimir Putin signed the Strategic Offensive Reductions Treaty (SORT), also known as the Moscow Treaty, on May 24, 2002. The treaty committed the United States and Russia to reduce their deployed strategic nuclear forces to 1,700-2,200 warheads

Conclusion:

The major differences began after Trump withdrew the US from the Intermediate-Range Nuclear Forces (INF) Treaty, signed by US President Ronald Reagan and Soviet leader Mikhail Gorbachev in 1987, and the Open Skies Treaty. Since then, there have been constant differences, although the Russian President has said that Russia is ready to come back if the US wants to actually work on these treaties.

4 26th Meeting of the WMCC

Why in News:

For the first time since the India-China border standoff began in 2020, a top official of the Ministry of External Affairs traveled to Beijing for the 26th meeting of the Working Mechanism for Consultation and Coordination (WMCC) on India-China Border Affairs.

Key points of the meeting:

- The two sides reviewed the situation along the Line of Actual Control (LAC) in the Western Sector of India-China border areas and discussed proposals for disengagement in the remaining areas in an open and constructive manner, which would help in the restoration of peace and tranquility along the LAC in the Western Sector and create conditions for the restoration of normalcy in bilateral relations.
- To achieve this objective in accordance with the existing bilateral agreements and protocols, they agreed to hold the next (18th) round of the Senior Commanders meeting at an early date. The two sides agreed to continue discussions through military and diplomatic channels.

About WMCC:

- The Working Mechanism for Consultation and Coordination on India-China Border Affairs (WMCC) was set up through an India-China agreement in January 2012 for improved institutionalized information exchange on border-related issues. The mechanism was first suggested by Wen Jiabao in 2010.

Where China and India are fighting:

- China and India are fighting since June 15, 2020, when Indian and Chinese troops clashed during disengagement in Galwan Valley near Patrol Point 14, resulting in the death of 20 Indian soldiers and an undisclosed number of Chinese troops.
- In September 2022, Indian and Chinese troops disengaged at Patrolling Pillar (15) in the Gogra-Hotspring region of Eastern Ladakh. With disengagement at PP-15, forces of the two countries have disengaged at all friction points in the region including the North and South banks of the Pangong Tso, PP-14, PP-15 and PP-17A.
- However, Chinese forces have still blocked access to traditional patrolling areas of Indian forces on the LAC in the Depsang Plains and Charding Nala regions. Indian and Chinese troops had a face-off in the Tawang sector in

Arunachal Pradesh in December 2022, their first face-off reported in the eastern sector since the border standoff began.

- India has maintained that the border stand-off has impacted bilateral ties, and there cannot be business as usual until there is disengagement and wider de-escalation. More than 1 lakh troops are stationed on either side of the India-China border.

Conclusion:

- The bilateral conversations between China and India have been stalled for almost three years now. Although, leaders including Foreign ministers, Defense ministers, and officials from both sides have engaged with each other at multilateral events, including G-20, SCO, and BRICS.
- With India holding the Presidency of both G-20 and the Shanghai Cooperation Organization (SCO), Chinese President Xi has at least two opportunities to come to India. Both countries have the option of engaging and resolving the border issues.

6 Discussion on India - European Free Trade Association (EFTA)

Why in News:

Recently, Switzerland has offered some concessions to speed up the negotiations on the Indo-European Free Trade Association (EFTA) trade agreement. The agreement is likely to be finalized by the end of this year. It is noteworthy, that India and Switzerland are celebrating 75 years of their bilateral relations.

About India-European Free Trade Association (EFTA):

- EFTA was established by the Stockholm Convention on 3rd May 1960 with Austria, Denmark, Great Britain, Norway, Portugal, Sweden, and Switzerland as the founding members. The current membership of EFTA is limited to four countries Switzerland, Norway, Iceland, and Liechtenstein.
- Since the early 1990s, EFTA has actively pursued trade relations with other countries within and outside of Europe. Maintaining and developing the EFTA Convention regulates economic relations between these states.
- It aims to promote free trade and economic integration for the benefit of the four member countries and their trading partners around the world.
- EFTA is the world's ninth-largest trader in

goods and fifth-largest in services. EFTA is the third most important trading partner for the European Union in goods, while the second in services.

- The EFTA budget is prepared in two currencies, the Swiss franc (CHF) and the euro (EUR). EFTA's budget is prepared according to the framework budget principle used by the public administrations of the member countries.
- The elimination of tariffs on industrial goods makes it easier and cheaper for EFTA businesses to export products. EFTA also supports the mutual protection of intellectual property rights and paves the way for investors.
- EFTA recognizes all dimensions of sustainable development such as the protection of the environment, labour, and gender rights while aiming to provide open competition for trade. Currently, there are 29 FTAs under EFTA, covering 40 countries and territories outside the EU.

Way Forward:

With this agreement between India and EFTA countries, there will be a rapid increase in trade; the benefits of this will get to all partners. India will get access to Europe through this agreement more conveniently, which is likely to boost exports.

7 Fresh Negotiations on UN High Seas Treaty

Why in News:

Fresh negotiations for the United Nations' High Seas treaty, aimed at conserving and promoting the sustainable use of Marine Biological Diversity of areas beyond National Jurisdiction (BBNJ), again began on February 20, 2023, in New York. The conference has resumed after the previous year's International Conference on the BBNJ's fifth session, where consensus could not be reached.

What is this New Treaty about?

- The BBNJ treaty aims to conserve and address the sustainable use of marine biodiversity in areas of the ocean which are beyond the limits of national maritime zones.
- The negotiations are aligned on the lines of United Nations on the Law of Sea (UNCLOS) 1982. The proposed treaty concerns oceans existing beyond the Exclusive Economic Zones that lie from the coast of a country to about 200 nautical miles of 370km into sea, till where it has special rights for exploration.

The proposed five major fronts of the treaty are as follows:

- **Marine Protected Areas (MPAs)**– The critical high seas ecosystem should be protected by the well managed networks of MPAs. High seas are home to around 27000 species and over 1550 marine animal and plants face a risk of extinction.
- **Environmental Impact Assessments (EIAs)**– Any kind of proposed activity on high seas is to be prematurely evaluated by relevant stakeholders.
- **Access and Benefit Sharing of Marine Genetic Resources**– The developing countries can have access to and can benefit from biological genetic materials like microbes, marine flora and fauna discovered on the high seas.
- **Capacity**– Building and Marine Technology Transfer– For deep-sea science explorations.
- **Cross- Cutting Issues**

Issues in reaching the Consensus:

Similar to the 'Paris Agreement for the Ocean', the proposed treaty has been under discussions for several years. The major contentious obstacles in reaching the consensus are:

- Difference over benefit sharing under the conservatory and sustainable means. Many countries suggested that optimization should go beyond this.
- The lack of fair, equitable and implementable agreement on benefit sharing.
- The concern for inclusion of financial and other resources also needed to be considered.
- The delay in finalization of BBNJ treaty is leveling the threats against realization of SDG 14 and 30X30 goal adopted in 15th COP to United Nations Convention on Biological Diversity. The High seas are matter of greater importance as according to IUCN, these areas account for almost of the Earth's surface. Only 1% of these areas are under protection.

Way Forward:

The impact of global warming and ocean warming, threats of coral bleaching, excessive uncontrolled commercial fishing and mining of minerals creating the BBNJ treaty as a dire need of time.

Therefore the finalization of treaties after reaching consensus will achieve a more holistic management of high seas activities, which should better balance the conservation and sustainable use of marine resources.



Environmental Issue



1

The Adverse Effect Of Early Heat Waves On Wheat Production

Why in News:

Recently, scientists from the Indian Agricultural Research Institute (IARI) have estimated that wheat farmers in Punjab and Haryana will suffer 6-10% and 4-5% yield loss respectively, due to early heat waves and adverse effects of hot weather this year. Punjab Agriculture Department Gurminder Singh said that the crop yield in the state may fall by 14% due to the heat wave continuing till April.

Key points of the report:

- Currently, there is no such system in the country to predict crop losses due to heat waves or other extreme weather conditions. The Mahalanobis National Crop Forecasting Centre under the Union Ministry of Agriculture and Farmers Welfare carries out forecasting for eight major crops at the national, state, and district levels.
- 'Info Crop' is more suitable for India as it has data available for all local varieties of 11 crops like paddy, wheat, maize, sorghum, pearl millet, pigeon pea, chickpea, soybean, groundnut, potato, and cotton.
- Government and insurance companies should use at least three models for climate impact projections and pre or in-season crop yield forecasting to improve accuracy and 'Info Crop' can be one of them.

Smart and Intuitive Method:

- Indian researchers will have to feed daily temperature, rainfall as well as soil conditions, plant varieties and their characteristics into the foreign model. Next, they need to test whether the model can reproduce the observed performance of that crop variety.
- In 'Info Crop', the parameters are already calibrated for Indian crop varieties and are updated by the institute at regular intervals.

Effects of low production:

- The global food chain has been hit badly by the COVID-19 pandemic and the Russia-Ukraine war, which was replenished by Indian stocks. Now if production is affected by early heat waves, it will not only affect India but will affect other countries, especially developing and least-developed countries.

Way Forward:

India currently relies on field trials, which are costly and resource-intensive. Simulation models for heat wave-induced crop loss estimation are not as

accurate as those used for drought. Testing is going on by IARI to improve this model which needs to be scaled up further.

2

Discovery of New Indian Beetle Omorgus Khandesh

Why in News:

According to an article recently published in the New Zealand-based journal Zootaxa, a new species of beetle has been discovered in India. The beetle is important to forensic science because it helps determine the time of death of an animal or human.

Important facts about Omorgus Khandesh:

- The bug was discovered by scientist Aparna Sureshchandra Kalavate associated with the Zoological Survey of India, Western Regional Centre (WRC) Pune. According to a press note shared by the authors, the beetle found in the WRC collection belongs to the family Trogidae. After the discovery of this new species, there are now 14 extant species of this family in India.
- Morgus khandesh is necrophagous, therefore, it is also called keratin beetle. The blowflies are the first to decompose the body, while the keratins appear last in the process of decomposition. This is the reason why the discovery of Omorgus Khandesh becomes important for forensic science.
- Beetle in this group is sometimes called hide beetles because they hide by covering their bodies under the soil. They are not photogenic. They are usually black or brown in colour surrounded by dirt. They can be identified by their rugged appearance, the appearance of short thick hairs all over the body.
- The new species is morphologically very similar to Omorgus rimulosus. Omorgus khandesh is primarily associated with bird and mammal nests whose details of life history are poorly known. They feign death and become motionless when disturbed. The article states that the keratin beetles are less studied in the Oriental region generally and India particularly as compared to the other parts of the world.

Way Forward:

This type of discovery attracts the attention of people toward scientific activities so that they become conscious of the promotion and protection of nature. This gives an opportunity to know the secrets of the physical world.

3 Warm Water Melts Weak Spots on Antarctica's 'Doomsday Glacier'

Why in News:

Scientists studying Antarctica's vast Thwaites Glacier - nicknamed the Doomsday Glacier - say warm water is seeping into its weak spots and rising temperatures are further aiding melting, two papers published in Nature journal showed.

Thwaites Glacier:

- Thwaites Glacier, nicknamed the Doomsday Glacier, is an unusually broad and vast Antarctic glacier flowing into Pine Island Bay, part of the Amundsen Sea, east of Mount Murphy, on the Walgreen Coast of Marie Byrd Land.
- Its surface speeds exceed 2 kilometres (1.2 miles) per year near its grounding line. Its fastest-flowing grounded ice is centered between 50 and 100 kilometres (31 and 62 mi) east of Mount Murphy.
- In 1967, the Advisory Committee on Antarctic Names named the glacier after Fredrik T. Thwaites (1883–1961), a glacial geologist, geomorphologist, and professor emeritus at the University of Wisconsin–Madison.
- Thwaites, which is roughly the size of Florida, represent more than half a meter (1.6 feet) of global sea level rise potential and could destabilize neighboring glaciers that have the potential to cause a further three-meter (9.8-foot) rise.

Research:

- As part of the International Thwaites Glacier collaboration - the biggest field campaign ever attempted in Antarctica - a team of 13 U.S. and British scientists spent about six weeks on the glacier in late 2019 and early 2020.
- Using an underwater robot vehicle known as Icefin, mooring data, and sensors, they monitored the glacier's grounding line, where ice slides off the glacier and meets the ocean for the first time.

Other research on this topic and scientists view:

- In one of the papers, led by Cornell University-based scientist Britney Schmidt, researchers found that warmer water was making its way into crevasses and other openings known as terraces, causing sideways melt of 30 meters (98 feet) or more per year.
- The research explained that, "Warm water is getting into the weakest parts of the glacier and making it worse."
- The other paper's findings showed about five meters (16 feet) per year of melt near the glacier's grounding line - less than what the most aggressive thinning models previously predicted.

- Scientists have previously depended on satellite images to show the behaviour of the ice, however, it was difficult to get granular details. The papers represent, for the first time a team research regarding the grounding line of a major glacier, providing a look right where "the action begins,".
- The findings will help in the development of climate change models, said Paul Cutler, program director of Antarctic Sciences at the National Science Foundation.
- "These things can now be taken on board in the models that will predict the future behaviour, and that was exactly the goal of this work,".

Way Forward:

Climate change is something we should all be very concerned about," this research underlines that climate change is reaching isolated Antarctica and calls for collective efforts at national and international levels or it will be too late

4 More than 1,200 Pangolins Trafficked in the Last 5 Years

Why in News:

According to a recently published report, around 1,203 pangolins (the most trafficked wild mammal in the world) were poached for illegal wildlife trade in India from 2018-2022. According to analysts, half of the seizures involved live pangolins, and 40% involved scales of the animal, also known as the 'scaly anteater'.

Key points of the report:

- This report was collected by TRAFFIC (global wildlife conservation non-profit) and the World Wide Fund for Nature-India on 342 seizure incidents of pangolins, their scales, and derivatives across 24 states and one union territory of India.
- Maximum 154 pangolins were trafficked in Odisha. They are mainly trafficked to the international markets in China and South-East Asia for traditional medicines and delicious meat.
- In a previous report which was published in 2018, about 6,000 cases of illegal pangolin trade in India were reported by TRAFFIC between 2009 and 2017.
- The report said that online trafficking is making it difficult to trace those involved in this act, which is a matter of concern.

About Pangolin:

- Pangolin is a nocturnal and toothless mammal that eats ants and termites and lives by digging burrows which is used as a shelter by more

than 30 species including mammals, reptiles, and birds for different purposes.

- Pangolins are one of the most trafficked wild mammals globally.
- India is the home of two pangolin species, the Indian pangolin (endangered) and the Chinese pangolin (critically endangered).
- Indian Pangolin is a large ant-eater that is covered with 11-13 rows of scales on its back. The Indian pangolin also has a terminal scale on the underside of its tail, which is absent in the Chinese pangolin.
- In addition to controlling insect populations, the pangolin is an 'ecosystem engineer' that helps spread soil organic matter.
- It increases soil moisture and aeration and affects plant community succession.
- Both these species are listed under Part-I of Schedule-I of the Wildlife (Protection) Act, 1972.
- Both these species are listed under Appendix-I of CITES, which means they are the most threatened.

Way Forward:

Pangolins have an important role in our environmental balance. The government of India, ornithologists, and related organizations should work together so that the illegal trafficking of pangolins could be stopped.

5 Calotropis Procera

Why in News:

According to researchers from the Indian Institute of Technology, Madras, the sap of the common plant *Calotropis procera* acts as a natural emulsifier.

About the news:

- The latex sap from the plant (also known as the 'apple of Sodom') is inexpensive, biodegradable, eco-friendly, and readily available.
- The sap was tried with single, double, and multiple emulsions, and found to be an effective stabiliser.
- This is because the latex of the plant has colloidal-scale particles which help in the inter-facial adsorption of solid particles

What are emulsifier?

- Emulsions are substances containing two or more immiscible (non-mixing) liquids.
- In order to stabilise such mixtures, substances known as emulsifiers are used. These include surfactants, polymers, colloidal particles, or a combination of these.
- They are used in the preparation of cosmetics, lotions, and certain pharmaceuticals, where they serve much the same purpose as in foods—i.e., they prevent separation of ingredients and

extend storage life.

- The synthesis of these emulsifiers requires high production costs and complex synthesis routes. These processes also generate a substantial amount of chemical waste.
- While more work is required to translate this natural emulsifier to an industrial application, this finding is an important first step in identifying naturally derived green alternatives for emulsifiers

Calotropis procera:

- Wild *Calotropis procera* (Asclepiadaceae) shrubs can reach heights of 1-3 m and are sometimes popularly known as "Akra,"
- It is widespread throughout the tropics of Asia and Africa and is employed in many traditional systems of medicine.
- A possible energy source called *Calotropis procera* contains latex, an emulsion of oil and water. This plant also has the potential to act as a biodiesel or biofuel.
- The bio-diesel supposedly derived from *Calotropis procera* is said to be free from NO_x gases, SO₂ and Suspended Particulate Matter (SPM) and has a high cetane value.

6

Rhododendron: Indicator Species

Why in News:

Recently the latest publication of Botanical Survey of India (BSI) recognized the Himalayan regions of Darjeeling and Sikkim as home to one third of all types of *Rhododendrons* found in India.

The Rhododendron:

- *Rhododendron* is a Greek word for rose tree. It is considered as indicator species for climate change. The flowering season of *rhododendron* starts in March and continues till May.
- They are diverse genus of about 1000 species of woody flowering plants in the healthy family (Ericaceae), notable for their attractive flowers and handsome foliage. There are 132 taxa (80 species, 25 subspecies and 27 varieties) of *rhododendrons* found in India.
- The conducive environment for growth of this flower requires the slightly acid soil to grow.

Distribution:

- They are native to temperate regions of Asia, North America and Europe, as well as to the tropical regions of southeast Asia and northern Australia. Their habitat is very diversified as they occur in alpine regions, coniferous and broadleaved and woodlands, temperate rainforests, and even tropical jungle.
- In India they found mainly in Eastern Himalayas, Western Himalayas and Nilgiris.

Significance of this flower:

- Rhododendrons are popular ornamental plants and has been designated as State tree of Uttarakhand. The blooming of this flower in Garhwal Himalayas is celebrated as 'Phool Sankrati', a festival of flowers. They have been also used in traditional medicine for their medicinal properties. In some regions, the bark, leaves and flowers of these plants are used to treat a range of ailments, including fever, headache, and inflammation.
- Besides this rhododendrons are the indicator species as far as climate change is concerned and have a prominent place in the botanical history of the country.

Threats to Rhododendrons:

- They are facing a high threat due to anthropological pressure and climate change, according to BSI. The Rhododendron edgeworthii, with white campanulate flowers recorded huge decline in habitat in both Darjeeling and Sikkim. Rhododendron niveum, with big purple flowers, found in the Lachung area of north Sikkim is facing threats due to rampant constructions.

Way Forward:

This ecological significant species also known as locally "Lali Grass" are receiving threat signals due to rising anthropogenic and climate change impacts in their habitat region. Therefore sustainable way of development, i.e. Green Growth have to be adopted for the ecological and biological conservation.

7 Oder River Ecological Disaster was Human-Made: Report

- Last summer, the banks of the River Oder in Poland were a picture of doomsday — hundreds of dead fish washed up every day, making headlines in the regional media.
- From mid-July through mid-September, over 360 tonnes of fish have died, along with many other aquatic creatures – a clear sign that the ecosystem of the river has been pushed beyond its tipping point. The rot spread over 500 kilometers along the river.
- A new report by the European Union (EU) investigating the incident has confirmed initial concerns — the destruction was caused by a toxic algal bloom that was caused possibly by anthropogenic factors.

The report noted:

- It is almost certain that a substantial toxic algal bloom caused their deaths. The causal species: *Prymnesium parvum*, is adapted to brackish salinities. A key factor enabling the proliferation of this species was the high salinity of the river during that time, probably in part resulting

from discharges of saline industrial wastewater e.g. from mining.

- Other contributing factors included drought and resulting low water levels reducing dilution and flow and also hydro morphological modifications to the river. High nutrient concentrations, especially phosphorus, and nitrogen, were also key factors that contributed to promoting such blooms.
- About River Oder
- The river is one of Europe's 20 largest rivers and is valuable to the livelihoods and recreation of the 16 million people residing in its catchment area and beyond. The authors of the report noted, "It also serves as a focus for nature preservation with numerous natural 2000 sites located along its length."
- It originates in the Czech Republic, flows through western Poland, forms the border between Poland and Germany, then drains north to the Szczecin Lagoon near Szczecin.
- The West Pomeranian region was among those that recorded the largest fish kills, mostly occurring over 12 days in mid-August. Apart from fish, aquatic organisms like freshwater bivalves and other mollusks alongside the mortality of birds, ducks, beavers, and other Wildlife were also impacted, the EU wrote in the latest report.
- The massive algal blooms of the toxic brackish-water algae *Prymnesium parvum* would not have been possible under natural conditions, the analysts noted.

Way Forward:

- Online monitoring of these river stretches should be improved and communication of pollution events across international river basin districts should be made mandatory to prevent such events in the future.
- It may also be necessary to review and implement dynamic control of all licensed discharges and review the role of hydro morphological modifications in slowing the flow and allowing time for blooms to develop. "A complete investigation of discharges in the catchment should be carried out to explain the increase in salt load that played a key role in bloom development."
- The presence and spread of this invasive and toxic algal species will most likely continue, according to the analysts. "Therefore, management strategies to prevent its proliferation must now be prioritized in this catchment and also in all other susceptible European river basin districts,".



1

CAR-T Cell Therapy

Why in News:

- The recent statement made by an oncologist provides a new silver lining for the treatment of cancer. It is CAR-t Cell therapy, which is expected to become a breakthrough in the treatment of people with leukaemia and lymphomas.
- Cancer is a disease in which some of the body's cells grow at an uncontrolled pace and spread to other parts of the body. The major types of cancer are carcinoma, sarcoma, leukaemia, and lymphoma.
- The main cancer treatments including surgery and radiotherapy have improved over time, but advances in systemic therapy have been particularly impressive with chimeric antigen receptor (CAR) T-cell therapy being a recent breakthrough attracting global attention.

What is CAR-T cells Therapy?

- CAR-T cell therapies use a patient's cells. They are modified in the laboratory to activate T-cells (a component of immune cells) to attack tumors. These modified cells are then infused back into the patient's bloodstream after conditioning them to multiply more effectively. This modification in the cellular structure allows CAR T-cells to effectively bind to the tumour and destroy it.

The Significance of CAR-T cell therapy:

- CAR- T cell therapies are even more specific than targeted agents(used in chemotherapy) and directly stimulate the patient's immune system to fight cancer leading to greater clinical efficacy. Therefore, they are referred to as "living drugs".

The Conventional Methods and advanced technologies related to cancer treatment:

- Surgery(removing cancer)
- Radiotherapy(delivering ionizing radiation to the tumor)
- Systemic therapy(administering medicines that act on the tumor)

The advanced technologies-

- » CAR-T cell therapy
- » Use of genomic profiling
- » Evolution of gene editing technologies
- » Next generation of immunotherapies
- The major benefits associated with this cell therapy range from evading unregulated cells via strengthening the immune system, acting as accomplishment in conventional methods and

the efficacy is high as 90%.

- However, the new therapy faces twin challenges of high cost and value. It would be unaffordable for a major section of India and at the worldwide level. The potential side effects are also significant concerning cytokine releases syndrome and neurological imbalances symptoms.
- As per the Globocan estimates, the cancer burden worldwide is expected to be 28.4 million cases in 2040, a 47% rise from 2020. According to an ICMR study, one in nine Indians will develop cancer during their lifetime. Cancer remains one of the leading causes of adult illness and death in India.

Way Forward:

Breakthroughs made by CAR-T cell therapy are expected to tackle this global concern at a wide level with efficacy. But for its successful implementation, the side effects and cost-effectivity of therapy need to be considered. The technological inventions in healthcare must be connected to the India Public Healthcare system with appropriate extension services.

2

The Extra Shot of Polio Vaccine

Why in News:

The West Bengal Government has introduced an additional dose of injectable polio vaccine as part of the Universal Immunization Program (UIP) for children. As per the announcement, additional dose of Inactivated poliovirus (IPV) will be given at nine months, in addition to the existing doses in the current UIP.

What is Polio?

- Poliomyelitis is a severe and sometimes fatal viral infection that affects the neurological system. The virus is spread from person to person primarily by the fecal-oral route or, less commonly, through a shared vehicle (for example, through contaminated water or food).
- Children under the age of 5 are disproportionately affected. West Bengal is considered among the high-risk areas for polio.
- According to a noted virologist, an additional dose of IPV at nine months is expected to protect against any Vaccine-associated Paralytic Polio or Vaccine Derived Polioviruses.
- This is a contagious disease. There are three individual and immunologically distinct wild poliovirus strains:
 - » Wild Poliovirus type 1(WPV1)
 - » Wild Poliovirus type 2(WPV2)

» Wild Poliovirus type 3(WPV3)

- Symptomatically, all three strains are identical, in that they cause irreversible paralysis or even death. But there are genetic and virological differences among them.

Vaccines available for Polio:

- Oral Polio Vaccine(OPV)-It is given as a birth dose, then followed by the primary three doses.
- Injectable Polio Vaccine (IPV)-introduced as an additional dose under the Universal Immunization Program.
- The Threat of Polio and Polio Eradication Drive in India:
- WPV2 and WPV3 have been eradicated globally but WPV1 remains in circulation in Afghanistan and Pakistan.
- There is no cure available for it which makes immunization more significant. India received the polio-free certificate from the WHO in 2014, after three years of Zero cases. This became possible due to constant efforts made by governments both at the central and state levels. These efforts include initiatives like:
 - » Pulse Polio Program
 - » Intensified Mission Indradhanush 2.0
 - » Universal Immunization Program.
- Recently, Vaccine- derived poliovirus(VDPV) was detected in the environmental surveillance of sewage samples from Kolkata, West Bengal. In 2019, polio outbreaks were recorded in the Philippines, Malaysia, Ghana, Myanmar, China, Cameroon, Indonesia, and Iran, which were mostly vaccine-derived where a rare strain of the virus genetically mutated from the strain in the vaccine.

Way Forward:

The last case of poliovirus type 1 was recorded in 2011 in West Bengal. But the threat of polio resurfaced due to the emergence of VDPV(vaccine-derived poliovirus). So, to prevent the re-establishment of disease transmission continued measures are required. To do so, GoI since March 2014 has made Oral Polio Vaccination(OPV) mandatory for those travelling between India and polio affected countries.

3

Google Bard

Why in News:

Google recently lost billions as its latest work of Artificial intelligence Bard, shared inaccurate information regarding exoplanets. Google's parent company Alphabet saw a rapid fall in its share due to this incident, which was one of its biggest falls in

the last three months.

About Google Bard:

- Bard is a new AI-powered chatbot by google that is meant to rival OpenAI's chatGPT
- It is based on Google's LaMDA technology, which is the company's Language Model for Dialogue applications.
- The model, which is a lightweight variation of LaMDA, needs substantially less computational power, enabling it to scale to additional users

What is Chatbot?

- An artificial intelligence (AI) chatbot, sometimes known as a "conversational chatbot," is an intent-based computer programme that employs conversational aspects of customer care services.
- It is an artificial intelligence-based software that comes under the cluster of Natural Language Processing that allows users to make and solve queries using text or voice interface.
- Some of the commercially available chatbots include Google assistant, Samsung Bixby, and Amazon Alexa.

Features:

- It is based on the same Transformer technology that powers ChatGPT and other AI bots. In 2017, Google made its pioneering transformer technology open source.
- Transformer technology is a Neural Network Architecture that is largely used in computer vision and natural language processing. It is capable of creating predictions depending on inputs.
- Bard is designed to eventually augment Google's search tools as well as provide automated support and human-like interaction for businesses.
- It will provide In-depth, conversational, and essay-style responses, exactly like ChatGPT does at the moment.
- While ChatGPT is entirely based on data that was mostly collected up until 2021, Google Bard has the potential to use up-to-date information for its responses

Conclusion:

Although fascinating, this software from Google and OpenAI can be limited and very inaccurate. For instance, the chatGPT dataset for now only includes data until 2021 and Bard's wrong response regarding the James Webb telescope and exoplanets. This technology, still in a nascent stage, will be of great significance to the human race as we enter the era of web 4.0 and 5.0. It will be optimised as per the need of the time however, simultaneously the proper regulations must be devised so that one

can keep up with these developments and ensure benefit for all.

4 Vaccines to Reduce Vermin Populations

Why in News:

The Wildlife Institute of India (WII) is working to create immuno-contraceptive measures for managing the population of species that have become problematic to people in several regions of the country.

About the news:

- The Union Ministry of Environment, Forests and Climate Change (MoEF&CC) approved the 10-year research project for developing immuno-contraception in 2016.
- Nilgai antelope and wild boar have become a menace in many areas of India, destroying crops and causing human-animal conflict.
- After it was discovered that the two animals had become a danger to locals and were causing loss of life and property, the forest department of Kerala granted permission for the culling of wild boar in May 2022, while the forest department of Bihar carried out the same procedure for Nilgai and wild boar in August.

The immuno-contraception project:

- The project deals with the population management of species involved in human-wildlife conflict. It includes a study on immune-contraceptive measures for population management of four species namely elephant, wild pig, Rhesus macaque, and Nilgai,
- Hormone porcine zona pellucida (PZP) is extracted from the ovary lining of pigs and then made into a PZP vaccine which is then injected into the body of the female, causing the immune system to create antibodies.
- The vaccine prevents fertilisation and pregnancy via an immune response in the body against its ova,
- The PZP has been successfully used in the United States to control the population of mustangs (wild horses) and in Africa for many mammalian species, including elephants
- WII is awaiting funding from the government to further the project.

What are vermins?

- Vermins are problematic animals or nuisance creatures as they threaten humans, crops, livestock, or property. Some common vermins are rats, mice, fruit bats, common crows, etc.
- The Wildlife (Protection) Act, 1972, states that the central government can “declare any wild

animal other than those specified in Schedule I and Part II of Schedule II to be vermin for any area and for such period as may be specified therein and so long as such notification is in force, such wild animal shall be deemed to have been included in Schedule V.”

- Thus, the species which have been classified as Vermin are placed in schedule V of the Wildlife Protection Act, of 1972.

5 Importance of Environmental Surveillance for Avian Influenza

Why in News:

Avian influenza (H5N1) or bird flu has caused unprecedented loss of tens of thousands of birds at Bass Rock, an island off the coast of North Berwick, Scotland.

About Avian Influenza:

- Avian influenza, or bird flu, is a highly contagious viral infection that primarily affects birds. The virus can infect mammals from birds with a phenomenon called spillover however, it rarely can spread between mammals.
- There are several different subtypes of avian influenza viruses, ranging from low pathogenic to highly pathogenic types that can cause severe illness and death in birds. H5N1 is a highly pathogenic subtype of avian influenza that causes severe disease and death in birds.
- Recent reports of H5N1 transmission between mammals, therefore, raise concerns about its potential to cause a human pandemic. Domestic ducks are recognized as an important reservoir for H5N1.
- More recently in February 2023, Peru reported cases of H5N1 avian influenza in sea lions and a dolphin, and the death of a lion from H5N1 in a zoo. This raises concerns about the potential for H5N1 to cause a pandemic in humans if it were to spill over and become transmissible among humans.

Need for environmental surveillance:

- Environmental surveillance is providing near real-time information on health and community exposure to pathogens. Thus the surveillance needs to target the locations where spill over is most likely.
- A virus surveillance network in place across multiple sites is crucial for improving our understanding of the diversity, and seasonal and geographical distributions of the virus in environments associated with poultry and wild birds.
- Environmental surveillance is an important

area that can enhance the information on the prevalence diversity of avian influenza viruses in birds where faeces or other effluent are deposited into the environment.

Conclusion:

Although the risk of H5N1 infecting and spreading among humans has been evaluated as low. Disease and genomic surveillance as an integrated approach for controlling avian influenza are needed to keep a close watch on the outbreak. Environmental surveillance would be a great non-invasive tool that can be conducted without disturbing the birds and can be used to obtain both host and viral genetic material as well as the data regarding them.

6 Announcement of Opportunity

Why in News:

The Indian Space Research Organisation (ISRO) has released an Announcement of Opportunity (AO) to enable scientists and academics to examine data from AstroSat, the country's first mission specifically designed for astronomy.

About the News:

- The space agency has made the AO soliciting proposals for 13th AO cycle observations from AstroSat.
- This announcement is open to Indian scientists, and researchers residing and working at institutes, universities and colleges in India for 55% of time and to non-Indian scientists, researchers, Non-Resident Indians (NRIs), working at space agencies, institutes, universities and colleges around the globe for 20% time.
- AO is available to the scientists and researchers who are involved in research in the area of astronomy and who are equipped to submit proposals as Principal Investigators (PIs) for specific target observations with necessary scientific and technical justification and those who can analyse the data, if the target is observed based on approvals
- Further, ISRO added that the percentage of observing time for executing AO proposals from October 2023 to September 2024 is 87 %. The last date for submission is March 31.

About Astrosat:

- AstroSat is the first dedicated Indian astronomy mission aimed at studying celestial sources in X-ray and UV spectral bands simultaneously, providing a space astronomy observatory operated by ISRO.
- It was launched in 2015 and completed seven

years in orbit at the end of September 2022.

Private players in the space sector:

- In June 2020, the government approved far-reaching reforms in the Space sector aimed at boosting private sector participation in the entire range of space activities.
- The decision was taken in line with the long-term vision of the Prime Minister of transforming India and making the country self-reliant and technologically advanced
- These reforms allow ISRO to focus more on research and development activities, new technologies, exploration missions, and human spaceflight programmes.
- The 'Announcement of opportunity' mechanism is one of the mechanisms through which planetary exploration missions are opened up to the private sector.
- Indian National Space Promotion and Authorization Centre (IN-SPACe) provides a level playing field for private companies to use Indian space infrastructure

7 New Technology Developed to Protect Military Equipment from Enemy Radar

Why in News:

To strengthen the country's military power researchers at the Indian Institute of Technology (IIT) Mandi, have recently invented a technology that makes water and land-based deadly military vehicles and intelligence bases, invisible to enemy radars. The researchers have created a material technology that can be used to coat vehicles or intelligence bases, that can dodge even state-of-the-art radars.

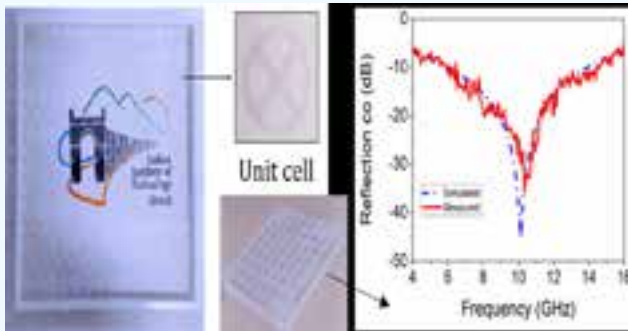
Radar:

- Radar (Radio Detection and Ranging) is used for surveillance, detection, navigation, and tracking of aircraft, ships, vehicles, and covert installations. It also has an important role in military equipment. It is helpful in capturing enemy military equipment. At the same time, it is also important from the point of view of the security strategy of the equipment. The more a military device can remain hidden from radar view, the less likely it is to be targeted by enemy weapons.

Use of new technology to avoid radar:

- Researchers at IIT Mandi have created an artificial structure, with the help of which stealth vehicles and covert installations can be kept invisible from the eyes of radars. This

structure can absorb radar signals from any direction.



- The materials can be used to cover windows or glass panels of stealth vehicles and critical installations. These are places that need to remain invisible to the radar.

- The technology can also be used in the commercial sector to reduce radiation leakage from buildings, making them more secure.
- This stealth technology would also be useful in sensitive private or covert installations.

Major challenge

- Minimizing the radar cross section (RCS) is a major challenge in stealth technology. The techniques used for this involve the proper shaping of the object and the use of radar-absorbing materials.
- RCS is also reduced by giving objects a specific shape that makes it difficult for radar to detect.

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Economic Issues



1 Global Ranking of Accreditation systems for Quality

Why in News:

India's national accreditation system under the Quality Council of India (QCI) has been ranked 5th in the world in the recent Global Quality Infrastructure Index (GQII) 2021.

Global Quality Infrastructure Index (GQII):

- Global Quality Infrastructure Index (GQII) ranks 184 economies in the world on the basis of quality infrastructure (QI).
- QI is the technical backbone for international trade, with metrology, standardization, accreditation, and conformity assessment services providing reliability and trust between trading partners
- In GQII, a formula calculates a score for each country based on its position in the sub-rankings for metrology, standards, and accreditation.
- The index is supported by Physikalisch-Technische Bundesanstalt (PTB) and the Federal Ministry for Economic Cooperation and Development (BMZ), Germany.
- India's overall ranking is still 10th in the GQII index.
- In terms of metrology and standardization, India was ranked 21st and 9th respectively, in the world.
- Globally, Germany ranks 1st and China 2nd.

What is Accreditation?

- Accreditation helps establish the competence and credibility of conformity assessment bodies (CABs) which perform testing, certification, inspection, etc.

Accreditation in India:

- The National Accreditation System as per international standards in India is established by the Quality Council of India (QCI), a body established in 1997 jointly by the Department for Promotion of Industry & Internal Trade (DPIIT), Ministry of Commerce & Industry, and the Indian industry.
- Quality Council of India (QCI) is the national body for accreditation.
- The accreditation is carried out through the constituent Boards of QCI, primarily including:
 - » National Accreditation Board for Certification Bodies (NABCB) which provides accreditation to the certification, inspection, and validation/verification bodies.
 - » National Accreditation Board for Testing & Calibration Laboratories (NABL) provides

accreditation to testing, calibration, and medical laboratories.

- Along with this, the Bureau of Indian Standards (BIS) is the main body for the formulation of standards and the Council Of Scientific and Industrial Research – National Physical Laboratory (CSIR-NPL) for the metrology system.

Way forward:

According to Commerce & Industry Minister Piyush Goyal, the jump in ranking is a sign of a New India in the Amrit Kaal where there is a quality-first approach.

It will help in making 'Made in India' a globally trusted brand on the foundations of quality and credibility.

2 Doctrine of Necessity

Why in News:

Recently, the Competition Commission of India invoked the Doctrine of Necessity to clear 6 draft merger, acquisition, and investment proposals.

About Doctrine of Necessity:

- It allows legal authorities to perform certain activities which are not permitted in the normal course of action.
- The term is used to describe a principle where, in an emergency or urgent situation, a state can legally act which is considered illegal under other circumstances.
- The 'doctrine of necessity' was changed to the 'doctrine of absolute necessity' in the case of the Election Commission of India vs. Dr. Subramanian Swamy.

Validity of action taken by CCI:

- It lacked the required three-member quorum after the Speaker retired, though at least three members are required to clear drafts. However, the CCI allowed the Ministry of Corporate Affairs from the Law Ministry to have a two-member quorum.
- The proceedings of the CCI cannot be said to be in violation of law, as Section 15 of the Competition Act provides that no proceedings of the Commission shall be invalid by reason of any vacancy or any defect in the constitution of the Commission.
- As per Section-15, any irregularity in the procedure of the Commission not affecting the merits of the case shall not invalidate the proceedings.

About the Competition Commission of India:

- The Competition Commission of India (CCI) was

established in March 2009 by the Government of India under the Competition Act, 2002 to administer, implement, and enforce the Act. The purpose of its establishment was:

- Eliminate practices having an adverse effect on competition
- Promote and sustain competition
- Protect the interests of consumers
- Ensure freedom of trade in the markets of India

Way Forward:

Government should not delay appointments in sensitive matters as such issues directly question the policy-making process. In today's globalized world, the role of the Competition Commission of India increases, so all decisions should be legal, free, and fair.

3 Violation of 'Transfer Pricing' Rules

Why in News:

The Income-Tax Department surveys were conducted at the premises of the British Broadcasting Corporation (BBC) in Delhi and Mumbai, in view of BBC's "deliberate non-compliance with the transfer pricing rules" and its "vast diversion of profits". The surveys looked into "manipulation of prices for unauthorized benefits, including tax advantages".

What is Transfer Pricing?

- It generally refers to prices of transactions between associated enterprises that may take place under conditions differing from those taking place between independent enterprises.
- It involves value attached to transfers of goods, services, and technology between related entities, and between unrelated parties that are controlled by a common entity.

Effects of transfer pricing:

- The effect of transfer pricing is that the parent company - or a specific subsidiary - tends to produce insufficient taxable income or excessive loss on a transaction.
- It impacts the wealth of shareholders as it has an impact on the company's taxable income.
- The result is revenue loss and also a drain on foreign exchange reserves.
- Transfer pricing is used to reduce the overall tax burden.
- It can also be used as a tax avoidance method.
- Transfer pricing rules are used to determine the "arm's length price"

Arm's length Arrangement:

- Section 92F(ii) of the Income Tax Act, 1961 defines it as "a price which is applied or proposed to be applied in a transaction between

persons other than associated enterprises, in uncontrolled conditions".

- Arm's length could be determined by the 'most appropriate' among the following methods-
 1. Comparable uncontrolled price method,
 2. Resale price method,
 3. Cost plus method,
 4. Profit split method,
 5. Transactional net margin method,
 6. Such other method as may be prescribed by the Board.

Way Forward:

There is a need for increased attention to Transfer pricing and an integrated and coordinated approach to deal with it. MNCs face increased responsibilities to comply with rules of transfer pricing.

4 Vivad se Vishwas-II: Government aims to settle 500 cases

Why in News:

Recently, the Ministry of Finance put in the public domain draft scheme Vivad se Vishwas-II for stakeholder consultation and public comments. The scheme was announced by Finance Minister Nirmala Sitharaman in the 2023-24 Budget speech.

What is Vivad se Vishwas Scheme:

- Vivad se Vishwas-II is a new voluntary one-time settlement scheme to effectively settle pending commercial and contractual disputes.
- It is a one-stop solution to settle long-pending litigation in cases where an arbitration order has been challenged in any Indian court.
- Further, it involves contractual disputes between the government and government undertakings with private parties. The scheme would apply to disputes where one of the parties is either the Centre, its autonomous bodies, public sector banks, or financial institutions and enterprises, Union Territories, and organisations where the Centre has a stake of 50 per cent, like metro rail corporations.
- The scheme will be implemented through Government e-Marketplace (GeM), which shall provide an online functionality for the same.

Objective:

- In an effort to clear the backlog of old disputes and litigation, this scheme aims to resolve about 500 cases, involving an estimated Rs. 1 trillion.
- Disputes having only financial claims against the procuring entities will be settled through this scheme
- This scheme provides for the settlement of disputed tax, disputed interests, disputed penalties, or disputed fees in relation to an

assessment or reassessment order on payment of 100% of the disputed tax and 25% of the disputed penalty or interest, or fee.

Way Forward:

- This scheme will provide a settlement mechanism for reconciliation by which the government entity and the private one can settle the matter by signing standardised terms. It will lead to effective Public and Private Sector Participation for efficient Governance.
- Further, this will help in freeing up financial resources locked in disputes, which can be utilised for Human Resources and Infrastructure development
- Again this initiative will boost developer and investor confidence, which will further promote Ease of Doing Business and attract private investments.

5 Tech Start-ups

Why in News:

- According to the report, by the National Association of Software and Services Companies (Nasscom) in collaboration with Zinnov, India added over 1,300 active tech start-ups last year, taking the total tally of active tech start-ups in India to 25,000-27,000.
- India continues to be the third largest tech start-up ecosystem globally, after the US and China.

Report on funding of Start-ups:

- The total funding, in Calendar Year (CY) 2022, dropped by 24 per cent over 2021, and the annual investments at \$18.2 billion was higher than the pre-pandemic levels of \$13.1 billion in 2019.
- In CY2022, there was a significant investment focus on non-unicorns and unique start-ups.
- Almost 1,400 unique start-ups received funding in 2022, 18 per cent higher than in 2021. Among these, 47 per cent of start-ups raised their first round in 2022.
- According to the report, the decline is due to global headwinds and considerable correction in the global public markets.

Report on Unicorn Start-ups:

- Any start-up that reaches the valuation of a billion dollars is considered a unicorn start-up.
- In CY2022, the country also added the second-highest number of unicorns in the world, with over 23.
- The potential pipeline of unicorns expanded to

over 170, growing at a pace equivalent to 2021.

Government initiatives to boost tech start-ups:

- The potential launch of the Digital India Innovation Fund to support deep tech start-ups.
- Support for International Patent Protection in Electronics and Information Technology (SIP-EIT)-
 - » It was launched by the Department of Electronics and Information Technology ("DeiTY") with the aim of providing government funding to technology start-ups and MSME in India for filing international patents.
- **Software Technology Park Scheme-** It is a 100 percent Export Oriented Scheme for the development and export of computer software, including the export of professional services using communication links or physical media
- **Hardware Technology Park Scheme-** To promote exports of electronic hardware.
- **Export Promotion Capital Goods (EPCG) scheme-** It allows the import of capital goods for pre-production, production, and post-production at zero % customs duty.
- **Technology Development Programme-** For the development of pre-competitive/commercial technologies/ techniques/ processes.
- **NewGen Innovation and Entrepreneurship Development Centre-** NewGen IEDC is being promoted in educational institutions to develop institutional mechanisms to create a techno-entrepreneurship culture in S&T academic institutions.
- **High Risk -High Reward Research-** It is a scheme supporting and inviting new proposals and ideas expected to have a paradigm-shifting influence on Science and Technology.

Way Forward:

Tech start-ups are said to new backbone of a country and they are expected to increase innovation and deep-tech adoption, particularly in areas related to SDGs that require complex solutions.

6 Services Trade Restrictiveness Index (STRI)

Why in News:

- India's rank in the services trade restrictiveness index (STRI) released by the Organization for Economic Co-operation and Development (OECD) is 47th among the 50 countries surveyed in 2022.
- Though India's rank improved by 1 i.e. from 48th to 47th, however, it still ranks fourth from

the bottom.

About Services Trade Restrictiveness Index (STRI):

- It is a composite index developed by the OECD to measure the level of trade restrictiveness in service sectors of different countries.
- Launched in 2014 and updated annually, it is based on a detailed analysis of policies and regulations that affect trade in 22 service sectors, including professional services, transportation, retail and distribution, and telecommunications.
- The index ranges from 0 (completely open) to 1 (completely closed), with higher values indicating greater trade restrictiveness.
- It covers 38 OECD members, as well as Brazil, China, India, Indonesia, Kazakhstan, Malaysia, Peru, Russia, Singapore, South Africa, Thailand, and Vietnam.



STRI on India:

- The 2022 STRI of India is above the OECD average and is comparatively high as compared to all countries in the STRI sample.
- Market access to certain key services sectors remains prohibited for foreigners or is subjected to stringent conditions.
- The report said that engineering services, computer services, road freight transport, and sound recording are the sectors with the lowest score (least restricted). Accounting services, legal services, architecture services, and rail freight transport are the sectors with the highest score (most-restrictive).
- The report highlighted that India had been progressively introducing reforms over the past years, contributing to a slight liberalization of services trade in some sectors, most notably between 2018 and 2021.
- It also highlighted limitations on foreign ownership which exists in other relevant sectors

as well, such as distribution, commercial banking, and insurance.

About OECD:

- The OECD is an intergovernmental organization with 38 member countries.
- It was founded in 1961 to stimulate economic progress and world trade.
- The OECD is an official United Nations observer.
- Headquarters: Paris, France.
- India is not a member.
- Services Trade Restrictiveness Index (STRI) Country
 1. Japan
 2. UK
 3. Netherland
 4. Czech Republic
 5. Chile
 46. Israel
 47. India
 48. Russia
 49. Thailand
 50. Indonesia

Way Forward:

According to OECD, open and well-regulated services markets are essential to facilitate economic recovery, strengthen resilience to future shocks, and promote a more sustainable trading system in India. Therefore Indian policymakers should focus on minimising barriers that increase trade costs for service providers, weaken the gains from digital transformation and undermine competitiveness.

7 UPI Goes Global

Why in News:

- India on February 21st, 2023 kicked off its first cross-border real-time payment system connectivity by linking India's Unified Payments Interface (UPI) and Singapore's PayNow.
- It was virtually launched in presence of Prime Minister Narendra Modi and his Singaporean counterpart Lee Hsien Loong.
- With this, Singapore has become the first country with which cross-border Person-to-Person (P2P) payment facilities have been launched.

UPI-PayNow partnership:

- PayNow is a fast payment system in Singapore that enables peer-to-peer funds transfer service by using the customer's mobile number, Singapore National Registration Identity Card (NRIC)/Foreign Identification Number (FIN), or VPA.
- With linkage, funds held in bank accounts or

e-wallets can be transferred to /from India using just the UPI ID, mobile number, or VPA.

- Currently, Indian users of participating banks will be able to remit up to Rs. 60,000 in a day using the mobile app.
- The RBI clarified that in the UPI- PayNow interlinkage, transactions only for person-to-person (P2P) remittance towards the purpose of "Maintenance of Relatives abroad" and "Gift" under the Liberalized remittance scheme (LRS) are allowed and the prescribed LRS limits would be applicable.



- The customers can send money through their respective internet banking facilities, through the bank's UPI apps and BHIM UPI Pay app. Currently, the cross-border transaction under the linkage is not possible on popular UPI platforms like PhonePe, Google Pay, and Paytm.

Significance of the move:

- As per the ministry of external affairs (MEA), there are approximately 6.5 lakh Indians, including non-resident Indians and persons of Indian origin, currently residing in Singapore.
- The cross-border remittances between India and Singapore amount to over USD 1 billion annually and Singapore's share in total inward remittances in India stood at 5.7% in 2020-21.
- UPI payments through QR codes are already taking place in Singapore, though at a limited number of outlets.

The benefit of the move:

- The project is expected to greatly benefit the Indian diaspora, especially migrant workers and students, in Singapore as it allows faster and cost-efficient funds transfer across both countries.
- According to a report, Integration of the system will bring down the cost of sending remittances by as much as 10%.

Way Forward:

The move is a significant milestone in the development of infrastructure for cross-border payments and efforts to deepen collaboration in FinTech and innovation between India and Singapore. It also closely aligns with the G20 financial inclusion priorities of driving faster, cheaper, and more transparent cross-border payments.




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Miscellaneous Issues

1 Operation Tarkash

Why in News:

Recently, Operation Tarkash, a counter-terror exercise was jointly conducted by Indo-US special operation forces in Chennai.

What is Operation Tarkash?

- Operation TARKASH is a joint exercise by the National Security Guard (NSG) and US Special Operations Forces. The objective of the joint exercise is to rapidly neutralise the terrorists, rescue the hostages safely and deactivate the chemical weapons being carried by the terrorists. This is the 6th edition of the exercise and for the first time, it included Chemical, Biological, Radiological, and Nuclear (CBRN) terror response. During the exercise, a drill was conducted for tackling chemical and biological attacks by terrorists.

Strategic Relevance?

- CBRN terror response drill has been made part of the exercise for the first time in the backdrop of the Russia-Ukraine war. Last year, Russia accused Ukraine of orchestrating a chemical attack in Kharkiv to blame Russia and receiving aid from the western countries. Further, USA and India have to be prepared to counter CBRN attacks from China and Pakistan respectively.
- Chemical weapons include mustard gas and nerve agents. Biological agents like anthrax, botulinum toxin, and plague are some examples of biochemical weapons. Radiological weapons include weaponised radioactive waste and dirty bombs as well as nuclear weapons.
- Over the years, they have been used by several countries and terrorist organisations. Most recently, the use of CBRN weapons came in the form of a sarin gas attack carried out by the Syrian army in 2013 against civilians during the Syrian Civil War.

Way Forward:

- CBRN weapons have the capability of creating mass casualties as well as mass disruption and therefore, are classified as Weapons of Mass Destruction. According to a 2005 study, the range of these weapons is quite extensive.
- With chemical and biological warfare being recognised as a looming threat to the world, it becomes more pertinent for security forces to be prepared for such challenges.
- Such kind of exercises provides an opportunity for the forces to gain proficiency and enhance skill sets for an effective CBRN terror response.

- National Security Guard, being the specialised counter-terrorism force of the country, must keep abreast of futuristic threats to national security.

2 National Tribal Festival

Why in News:

Recently, Prime Minister Narendra Modi inaugurated 'Aadi Mahotsav' at Major Dhyan Chand National Stadium in New Delhi to showcase the tribal culture on the national stage. PM Modi said that the country is moving towards new heights under the Amrit Mahotsav of Independence as the government is giving priority to the development of the underprivileged.

About Aadi Mahotsav 2023:

- The spirit of tribal culture, crafts, cuisine, commerce, and traditional arts are celebrated during Aadi Mahotsav. It is organized by the Tribal Cooperative Marketing Development Federation Limited (TRIFED) which comes under the Ministry of Tribal Affairs.
- Theme: "A Celebration of Crafts, Culture, Cuisine and Commerce".
- 1,000 tribal artisans and artists from 28 states and union territories participated in the festival.
- A special pavilion for sale and display of Van Dhan products from around 39 Van Dhan Vikas Kendras was set up during the Mahotsav.
- A gallery of tribal freedom fighters was shown at the event, which was arranged by the National Commission for Scheduled Tribes; there was also a cultural song and folk dance performance by over 500 tribal artistes.
- Tribal chiefs from different states and union territories displayed their best at 20 food stalls, with special focus on millets grown by tribals.
- As 2023 is being observed as the International Year of Millets by the United Nations due to India's efforts, special focus was on showcasing "Shree Anna" along with common attractions like handicrafts, handlooms, pottery, and jewellery. The millet grown by the tribals has been named in this year's budget.

About TRIFED:

- Registered under the erstwhile Multi-State Co-operative Societies Act 1984, TRIFED came into existence in 1987 as the national nodal agency under the Ministry of Tribal Affairs, working towards the socio-economic development of the tribal people of all the states. TRIFED started its operations in 1988.
- TRIFED started procurement and marketing of tribal art and craft items in 1999 through its first

retail outlet called 'Tribes India' in New Delhi.

Way Forward:

Aadi Mahotsav is giving a new height to the power of unity in diversity so that tribal tradition can be made more vibrant by connecting tribal brothers and sisters from development to heritage.

3 Transcription of Supreme Court Proceedings by AI

Why in News:

- The Supreme Court on February 21 started a first-of-its-kind project to transcribe (live writing of the court hearing) its live proceedings using Artificial Intelligence (AI). AI-based transcription works by using advanced machine learning algorithms to automatically transcribe audio or video content into written text. The software uses natural language processing (NLP) and speech recognition technology to identify and transcribe spoken words, which are then formatted into a text document.
- The suggestion to transcribe hearings was made by senior advocate Indira Jaising in the plea which she had filed seeking a live telecast of court proceedings.

Benefits of this move:

- Improved access to justice: For the hearing impaired and those with limited understanding of English.
- Enhanced transparency and accountability: The transcripts can be reviewed and analyzed.
- Reduced errors and inaccuracies: AI-based technology is more efficient and reliable than human transcriptionists.
- Time-saving and cost-saving: For the court system and litigants, live transcription eliminates the need for manual transcription and subsequent editing making justice dispensation faster than ever.
- Legal awareness in the public domain: Availability of real-time transcripts can help journalists and researchers report on court proceedings more accurately and quickly.

Challenges for the AI breakthrough:

- Cost and Resources: The implementation of live transcription would require significant financial and technological resources.
- Accuracy of Transcription: The accuracy of the live transcription is an important issue as any errors in the transcription could have significant implications, particularly in legal proceedings.
- Privacy and Security: The live transcription of court proceedings could raise concerns about privacy and security as sensitive information could be disclosed or key judicial interpretations

could be tampered with.

Transcripts available for courts in other countries:

- In the US, court transcripts are available to litigants and the public. The US Supreme Court provides audio and text transcripts of the proceedings. Many local courts in the US also make a stenographic record of most court proceedings. In the UK, a litigant can ask for a transcript of the court proceedings for free if the hearing is recorded.

About Natural Language Processing:

- Natural Language Processing (NLP) is a subfield of computer science, artificial intelligence, and computational linguistics concerned with the interactions between computers and human (natural) languages.
- It involves developing algorithms and computational models that can understand, interpret, and generate human language.
- NLP is used in a variety of applications, including language translation, sentiment analysis, text summarization, speech recognition, and more.

Conclusion:

The transcribing is the second major decision towards making the court more transparent after the SC's decision to live stream its proceedings before Constitution Benches. The court is taking a major step towards becoming truly a court of record for posterity to watch and learn court craft.

4 World Hindi Conference

Why in News:

Union External Affairs Minister S Jaishankar inaugurated the 12th World Hindi Conference in Nadi, Fiji. The Vishwa Hindi Sammelan was held after a gap of five years. The last edition was held in Port Louis, Mauritius in 2018. President Ratu Wiliame Maivalili Katonivere and Prime Minister of Fiji Sitiveni Rabuka were present at the inauguration. Over 270 academics, experts, and Hindi writers from India participated in the conference.

Importance of the conference:

- At World Hindi Conference, there is a focus on various aspects of the Hindi language, its global use, and its dissemination. In the conference issues like the status of Hindi in Fiji, the Pacific region, and indentured countries were discussed. The era of copying western languages and traditions can also be challenged by Hindi and speaking of Indian language in world also will increase.

Why is Fiji hosting this event?

- The 12th Vishwa Hindi Sammelan was jointly

hosted by the Ministry of External Affairs of India and the Fiji government. Fiji hosted the event as it has one of the largest populations of native Hindi speakers in the world. Fiji, which is located nearly 2,000 km north of New Zealand, has a large Hindi-speaking population.

- 140 years ago indentured servants from India's Hindi-speaking belt were sent to work on sugarcane plantations on the islands. These indentured servants, called Girmitiyas or Jahajis, spoke different dialects of Hindi but still found Hindi as a common lingual and cultural anchor. Nearly 61,000 Girmitiyas were sent to Fiji and while many of them returned home in 1920 at the end of their indentured period, a large number still stayed back. It is the descendants of these workers that helped spread Hindi in not just to Fiji but also to Mauritius, South Africa, and the Caribbean nations of Trinidad and Tobago, Guyana, and Suriname. Fiji Hindi, also known as Fijian Baat or Fijian Hindustani, is estimated to be spoken by around 40 percent of the island's population. Fiji is also the only country outside India that recognizes Hindi as an official language.

Conclusion:

Vishwa Hindi Sammelan is a global event that aims to promote and spread Hindi language. As a result, the event is often held in countries that have a sizeable number of Hindi speakers. The conference provides a platform for scholars, academics, writers, and other experts to exchange ideas and discuss issues related to the Hindi language. It also aims to encourage the learning and teaching of Hindi as well as improve its official standing in different countries.

5

Conflict of Interest Behind India's Fortified Food Programme: Report

Why in News:

A report published by the Alliance for Sustainable and Holistic Agriculture (ASHA) alleges that members of the Food Fortification Resource Centre (FFRC) are financially benefiting from the fortification program, citing an alleged conflict of interest.

Key issues highlighted in the report:

- FFRC is an industry-based organization under the Food Safety and Standards Authority of India (FSSAI) with the objective of maximizing profits, while FSSAI (established in the year 2008) is a statutory regulatory body with the objective of protecting citizen health.
- The report noted that the scale of these food

schemes is huge, yet no independent risk analysis has been done within the country, while a three-year pilot project on fortified rice in the PDS (which began in 2019 in collaboration with the nutraceutical industry) is still not publicly available.

- Even though FSSAI cautions patients with thalassemia and sickle cell anaemia against consuming iron-fortified food, it is being given to all indiscriminately, without any screening process, choice, or medical intervention.

What is food fortification?

- The process of adding vitamins and minerals during processing to enhance the nutrition of the foods consumed is called food fortification. It is used by food manufacturers or by governments as a form of public health policy.
- Food fortification has been identified as one of the most cost-effective development priorities in the Copenhagen Consensus. The World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) have identified it as a global strategy to reduce nutritional deficiencies globally.

The scenario of India:

- The Global Hunger Index (GHI) 2022 ranked India at 107 out of 121 countries, the large number of undernourished population being one of the primary reasons for the country's poor performance.
- FSSAI established standards for the fortification of rice, wheat flour, edible oil, double-fortified salt, and milk in 2016, thereby accelerating the pace of food fortification.
- Fortified food items are now being included in public food schemes such as PDS, ICDS, Pradhan Mantri Garib Kalyan Anna Yojana, and Mid-Day Meal Scheme, helping in the fight against malnutrition.

Way Forward:

The government of India should seriously investigate various aspects related to this issue as food fortification is impacting millions of people. If any such illegal activity is going on within the system, then immediate action should be taken on it so that the schemes of government do not get negatively impacted.

6

Dawoodi Bohras and the Excommunication Petition Before SC

Why in News:

5- Judge bench led by Justice Sanjay Kishan Kaul

of the Supreme Court referred plea against practice of excommunication in Dawoodi Bohra community to a larger 9-Judge Bench. The same bench is also hearing the Sabarimala case along with three other cases involving Women's rights with regard to religious practice.

Who are Dawoodi Bohra's

The Dawoodi Bohras are Shia Muslims. For over 400 years, the supreme leader of the community has been based in India, including the current and the 53rd leader, Dr Syedna Mufaddal Saifuddin.

What is Excommunication practice?

Excommunication literally means exclusion from the exercise of religious rights. Supreme leader of the Dawoodi Bohra community is empowered to excommunicate or expel recalcitrant members. In practical terms, excommunication means not being allowed to access a mosque belonging to the community or a burial dedicated to the community.

Constitutional Aspect:

This issue requires the balancing of rights under Article 26(b) – right of religious denominations to manage their own affairs in matters of religion; and Article 21 — Protection of life and personal liberty. Constitutional bench has to decide whether the practice can be protected under Article 26(b) when tested on the touchstone of constitutional morality.

Legal Issues:

In 1962, the Supreme Court had upheld the practice of excommunication in the Sardar Syedna Saifuddin v State of Bombay case and struck down the Bombay Prevention of Excommunication Act, 1949 saying it violated the fundamental right of a religious denomination to manage its own affairs. New constitution bench shall review the 1962 judgment.

Way Forward:

- Maharashtra's Protection of People from Social Boycott (Prevention, Prohibition and Redressal) Act, 2016 describes social boycotts as 'inhuman'.
- Further, the concepts of equality, liberty and fraternity are part of our Constitutional morality. Constitution cannot tolerate anything which takes away individual dignity.
- The practice of ex-communication will affect the fundamental right to live with dignity and the right to lead a meaningful life guaranteed by Article 21.
- Therefore, the question is whether the said right of the community to ex-communicate its members can be balanced with the other fundamental rights under Part III of the Constitution.

7 Losar Festival, Dharamsala

Why in News:

Recently, hundreds of people from the Buddhist community gathered at various temples in the state of Himachal Pradesh to celebrate the Losar festival. In Dharamsala, on the first day of the lunisolar as per the Tibetan calendar, people celebrated the Losar festival and prayers were offered at the Dorje Drak Monastery in Shimla. Cultural programs were organized in different parts of the state. Buddhists in Nepal celebrate the same festival called Losar eight weeks before Tibetan Losar.

Why is the Losar festival celebrated?

- The Tibetan New Year is called Losar. Tibetan Buddhists follow the lunisolar calendar. The first day of the lunisolar calendar is celebrated as Losar.
- Tibetan Buddhists in the state of Himachal Pradesh celebrate Losar in November. They celebrate it to mark the arrival of winter.
- The Monpa tribe celebrates Losar in February. During Losar, they clean their house and make special offerings to the local deities.
- Tibetan Buddhists in the Ladakh region celebrate the Losar Festival in January. They follow the Tibetan lunar calendar.

Losar festival:

- Losar was celebrated in Tibet mainly as a winter festival. Buddhists celebrate it as a way of giving thanks to the gods after the harvest.
- It marks the arrival of the new year. The word Losar breaks down into two words 'lo' (new) and 'saar' (old).

Important points related to the Losar festival:

- Holds a religious significance for the local Tibetans living in the towns of Himachal Pradesh.
- This festival is a celebration of the harvest of crops in the new year.
- In earlier days people used to celebrate the Losar festival to ward off evil. It was a day to please the local deities.
- Losar Festival is celebrated for three days in Himachal Pradesh.
- Tibetan Losar is also called Lama Losar. The day begins with Tibetan cuisine and people put branches of thorns on their doors to ward off negative energy.
- A special dance called 'Chham' is performed, for which the dancers wear masks, intricate headgear, and colourful costumes.
- 'Methi' procession also takes place on this day. People carry burning torches.

News Of National and International Importance

1. Mukaab

The Mukaab' is a new development project announced by the Crown Prince and Prime Minister of Saudi Arabia, Mohammed bin Salman. The ambitious plan aims to build the world's largest inner-city building called 'The Mukaab' in the country's capital, Riyadh. It aims to develop the world's largest modern city in Riyadh in line with Saudi Vision 2030.

2. ULTRASAT

ULTRASAT is Israel's first telescope mission. It will be launched into geostationary orbit in 2026 through a partnership between NASA and the Israel Space Agency. This ultra-violet observatory will focus on observing short-period space events such as supernovae and neutron star mergers, using a wide field of view to quickly capture ultraviolet light from such sources.



3. Vayulink

The Indian Air Force (IAF) has developed an indigenous data link communication called 'Vayulink'. It uses the Indian Regional Navigation Satellite System (IRNSS) also known as NAVIC to send radio communication to the base station when the signal is low.

4. Country's First Semiconductor Plant

Indian conglomerate Vedanta and electronics maker Foxconn will set up a joint venture 'semiconductor and display manufacturing unit' in Dholera, Ahmedabad (Gujarat). In September 2022, Vedanta and Foxconn have signed an agreement worth Rs 1,54,000 crore for this plant. Under this, semiconductors will be manufactured for the first time in India. This will benefit the companies manufacturing electronic gadgets in India. This country's first semiconductor plant will provide employment opportunity to about one lakh people. Under the Gujarat Semiconductor Policy 2022-27, this project has every possibility of getting huge subsidy and incentives. This includes incentives such as zero stamp duty on land purchase and subsidized water and electricity. The plant will be given Rs 12 per cubic meter of water for the first 5 years.



5. International Mother Language Day

Recently International Mother Language Day was celebrated on 21 February. The purpose of this day celebrated by UNESCO is to promote cultural diversity and multilingualism. The theme of this year's International Mother Language Day is 'Multilingual Education- A necessity to transform education'.

History of The Day:

Rafiqul Islam suggested February 21 for International Mother Language Day to commemorate the brutal killings in Dhaka during the Bangla language movement in 1952. Accepting this, on November 17, 1999, UNESCO announced to celebrate this day on February 21. In this way, International Mother Language Day was celebrated for the first time in the year 2000.



6. North India's First Nuclear Plant

North India's first nuclear plant will be built in Gorakhpur, Haryana. This nuclear plant will be built on 560 hectares of land, which will generate 2800 MW of electricity. The foundation stone of this nuclear plant was laid in 2014, which is currently under construction. The first phase of this plant will be completed by the year 2025 and the second phase by 2028. After the completion of both the phases, production of 2800 MW electricity may be started in this plant. All the nuclear power plants in India come under the National Power Corporation of India Limited.



7. Dustlik Exercise

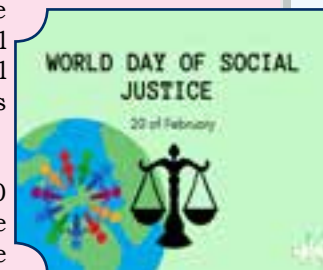
The fourth joint military exercise 'Dustlik' was organized between India and Uzbekistan. This exercise was conducted by the armies of both the countries in Pithoragarh from 20 February to 5 March. The Indian contingent was represented by the 14th Battalion the Garhwal Rifles of the Western command and the Uzbekistan Army was represented by troops from the North Western Military District of the Uzbekistan Army in the biennial training exercise.

8. World Social Justice Day

'World Social Justice Day' was celebrated every year on 20 February all over the world. The purpose of celebrating this day is to give equal rights to the individual without any discrimination and inequality and to make people aware of social justice and equality. The theme of this year's World Day of Social Justice is 'Overcoming Barriers and Unleashing Opportunities for Social Justice'.

History of The Day:

The United Nations passed a resolution in the year 2007 to mark February 20 as the 'World Social Justice Day' and the day was celebrated for the first time in 2009. To make it successful, many countries together try to unite people divided in the name of unemployment, poverty, caste discrimination, gender and religion.



9. Soil Health Card Day

The 8th Soil Health Card Day was celebrated on 19th February. The day is observed to remember the launch of the India Soil Health Card (SHC) scheme and to spread awareness about the benefits of the scheme. The Soil Health Card (SHC) scheme was launched by Prime Minister Narendra Modi on 19 February 2015 in Suratgarh, Rajasthan.

10. Revised Guidelines for MPLADS

Ministry of Statistics and Program Implementation (MoSPI) released Revised Guidelines on Members of Parliament Local Area Development Scheme (MPLADS)-2023

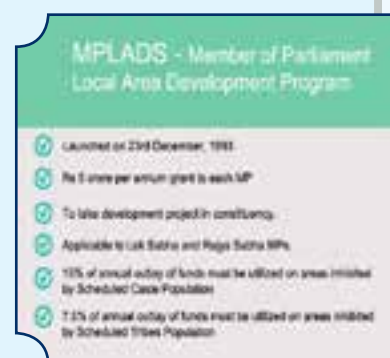
Revised Guidelines:

The new guidelines have widened the scope of the scheme to enable the MP to recommend actions according to the changing needs of the community.

New web portal:

Under the revised guidelines, the entire process of fund flow will be conducted through a web portal

This will facilitate real-time monitoring, greater transparency and accountability in the system, and better efficiency and effectiveness of the MPLAD scheme.



11. Foundational Literacy and Numeracy Report

The second edition of Foundational Literacy and Numeracy (FLN) Report was released by Dr. Bibek Debroy, Chairman, EAC-PM.

FLN:

- This report tests children's (between the ages of 3 and 8) ability to read basic text and perform basic mathematical problems such as addition and subtraction.
- It is one of the main elements of the National Education Policy (NEP) 2020.

About FLN Report:

- It is a benchmark for states and union territories to track their performance in achieving universal basic education by 2026-27.
- Its findings include the role of nutrition, access to digital technology, and language-centered instructional approaches.



12. Kavach

Kavach-2023 is a national level hackathon that was launched to find innovative ideas and technological solutions to tackle cyber security challenges. It is organized by the Innovation Cell of the Union Ministry of Education, All India Council for Technical Education (AICTE), Bureau of Police Research and Development (BPR&D, MHA) and Indian Cyber Crime Coordination Center (I4C, MHA).

13. Ajay Banga

US President Joe Biden recently nominated Ajay Banga for the post of President of the World Bank. Ajaypal Singh Banga is an Indian-American, born in Pune, Maharashtra to a Saini-Sikh family. Banga is currently the Vice Chairman of General Atlantic, one of the world's largest private equity firms. The current President of the World Bank, David Malpass has announced his resignation by June 2023.

14. Agriculture Innovation Mission for Climate

India has joined the Agricultural Innovation Mission for Climate (AIM4C) initiative. The United States and the United Arab Emirates jointly launched this global initiative in November 2021. The Agriculture Innovation Mission for Climate encourages investment and innovation in climate-smart agriculture and food systems. India joins over 275 partners, including 42 governments, who are collectively driving the Agriculture Innovation Mission for Climate.



15. Sagar Parikrama

Union Cabinet Minister for Fisheries, Animal Husbandry and Dairying Shri Purushottam Rupala launched the third phase of Sagar Parikrama. It commenced on 19 February at Surat, Hazira Port, Gujarat. The program was launched with an aim to understand the experiences of fishermen and address their issues. This platform will promote direct communication with all stakeholders of fisheries including fishers.

16. Aadhaar Mitra

Aadhaar issuing body UIDAI (Unique Identification Authority of India) has launched 'Aadhaar Mitra' which is a new AI/ML-based chatbot. With the help of this AI-powered chatbot, one can check Aadhaar enrollment status, track Aadhaar PVC card status and get information about enrollment centres. Aadhaar Mitra will provide quick and automated response. Currently this service is available in Hindi and English languages.

17. Healthy Mind, Healthy Home Initiative

Healthy Mind, Healthy Home is a one year campaign which was launched in November 2022 and will continue till October 2023. It was launched by the Ministry of Health and Family Welfare. This is in line with the new National Health Policy, 2017 as well as the Fit India Movement, 2019. Under this campaign Ayushman Bharat-Health and Wellness Centers will organize health fairs on 14th of every month.

18. United Nations Commission for Social Development

India has been elected as the President of the 62nd session of the United Nations Social Development Commission. This decision was taken in the 61st session of the Social Development Commission. India's Permanent Representative to the United Nations Ambassador Ruchira Kamboj expressed gratitude on behalf of India. The 61st session of the Commission was chaired by Alia Ahmed bin Saif Al-Thani, Ambassador and Permanent Representative of Qatar. The United Nations Economic and Social Council (ECOSOC) is one of the six principal organs of the United Nations.

19. BVR Subrahmanyam

Former IAS officer BVR Subrahmanyam has been appointed as the new CEO of NITI Aayog. He will succeed Parameswaran Iyer, who is set to take up the position of Executive Director (ED) at the World Bank for three years. NITI Aayog was formed in January 2015 and replaced the Planning Commission. The Prime Minister heads the NITI Aayog. The Vice-Chairman of NITI Aayog is appointed by the Prime Minister.

20. Sansad Ratna Award

The Sansad Ratna Awards 2023 have been conferred on thirteen Members of Parliament. The award was instituted in 2010, inspired by the teachings of former President APJ Abdul Kalam, who launched the first edition of the award ceremony in Chennai. Its jury committee comprises eminent parliamentarians and members of civil society and was chaired by MoS, Parliamentary Affairs and co-chaired by T S Krishnamurthy (former Chief Election Commissioner of India). The awards are not given by the Government of India. It is the Prime Point Foundation that gives the award.



21. Amritpex-2023

National Philatelic Exhibition 'Amritpex 2023' was organized in New Delhi. The exhibition was inaugurated by Minister of Communications, Electronics & Information Technology and Railways Ashwini Vaishnav. This Exhibition of postage stamps was organized as a part of the Amrit Mahotsav celebrations of Independence. Over the years, there has been a lot of change in the Department of Posts under the vision of K. A digital network has been created in the Department of Posts for banking, service delivery and social security payments. Apart from this, the role of postage stamps has been emphasized in educating the youth about the culture, heritage and history of the country.

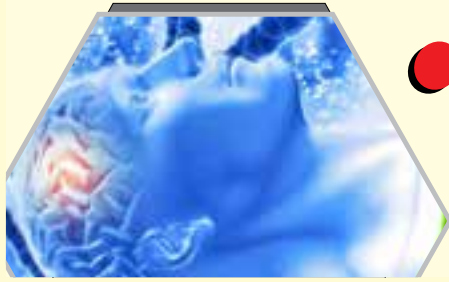
22. Khanan Prahari Application

Recently the Government of India has launched an application called Khanan Prahari. This app will help the government to eliminate the increasing illegal mining in the country. This mobile application and monitoring system of the Government of India will curb illegal mining. The name of this surveillance system is CMSMS – Coal Mine Surveillance and Management System. Illegal mining of minerals is common in states like Andhra Pradesh, Telangana and Tamil Nadu, and in northeastern states like Assam and Meghalaya, illegal mining of major minerals like coal is common.



Current Affairs at a Glance

1. Railways will start Guru Kripa Yatra with Bharat Gaurav Tourist Train that will visit 5 Important Sikha Pilgrimage Sites.
2. Bangladesh Prime Minister Sheikh Hasina honored Dr. Mahendra Mishra with the International Mother Language Award in Dhaka.
3. India's Unified Payments Interface (UPI) and Singapore's PayNow have been integrated to enable faster remittances.
4. Russia has decided to suspend its participation in the New START treaty for nuclear arms control with the USA.
5. India's 14-year-old Tilotama Sen won the bronze medal in the women's 10m air rifle at the ISSF World Cup.
6. India's unemployment rate fell to a five-year low of 4.1 per cent in July-June 2021-22, according to the latest Annual Periodic Labor Force Survey (PLFS) released by the National Statistical Office (NSO).
7. The Unying Festival was celebrated in Boleng, Arunachal Pradesh. Unying is a spring festival that marks the beginning of the spring season and the new year of the Adi community.
8. The World Sustainable Development Summit 2023 was held from February 22 to February 24, 2023 at the Indian Habitat Center in Delhi.
9. Odisha Governor Prof. Ganeshi Lal launches India's first AI Chatbot for Agriculture Sector 'Ama Krishai' at the concluding session of 'Krishi Odisha 2023'
10. India's lunar mission, Chandrayaan-3 has successfully undergone EMI-EMC (Electro-Magnetic Interference / Electro-Magnetic Compatibility) test.
11. In India, Ayushmann Khurrana will represent UNICEF (United Nations International Children's Emergency Fund). The actor's designation as a national ambassador was announced by UNICEF
12. Rajiv Singh Raghuvanshi has been appointed as the new Drug Controller General of India (DCGI), Central Drugs Standard Control Organization (CDSCO).
13. The International Labor Organization (ILO), Geneva has selected the Comptroller and Auditor General (CAG) of India to serve as its external auditor for a period of four years from 2024 to 2027.
14. UAE hosted the first sub-ministerial meeting of I2U2 in Abu Dhabi which was attended by senior officials from the four countries, along with representatives of the private sector.
15. The World Health Organization will set up an mRNA (Messenger Ribonucleic Acid) vaccine hub in Telangana. mRNA is becoming a promising technology to address a growing number of infectious diseases.
16. Central Excise Day is observed every year on 24 February to recognize and honor the contribution made by the Central Board of Indirect Taxes and Customs.
17. A former judge and freedom fighter, Mohammad Shahabuddin Chuppu was elected unopposed as the 22nd President of Bangladesh.
18. The fifth edition of Khelo India Youth Games concluded on 11 February. Maharashtra was the overall champion in the Khelo India Youth Games-2022 by securing a total of 161 medals including 56 gold, 55 silver and 50 bronze medals.
19. The 3rd ASEAN Digital Ministers (ADGMIN) meeting with India was held on a virtual platform. India and Philippines co-chaired the meeting and adopted India-ASEAN Digital Work Plan 2023.
20. PM Narendra Modi addressed the 'Jal-Jan Abhiyan' in Rajasthan. It is jointly implemented by the Ministry of Jal Shakti and Brahma Kumaris Organization. Water conservation will be promoted under Jal Jan Abhiyan.



Union Minister for Finance & Corporate Affairs Smt. Nirmala Sitharaman, while presenting the Union Budget 2023-24 in Parliament emphasized that Indian economy is on the right track, and despite a time of challenges, heading towards a bright future.

Smt. Sitharaman said that this Budget hopes to build on the foundation laid in the previous Budget, and the blueprint drawn for India@100, which envisions a prosperous and inclusive India where the fruits of development reach all regions and citizens, especially our youth, women, farmers, OBCs, Scheduled Castes and Scheduled Tribes.

UNION BUDGET 2023-24 Part 1

Budget Highlights

Expenditure: The government proposes to spend Rs 45,03,097 crore in 2023-24,

- Which is an increase of 7.5% over the revised estimate of 2022-23.
- In 2022-23, total expenditure is estimated to be 6.1% higher than the budget estimate.

Receipts: The receipts (other than borrowings) in 2023-24 are expected to be to Rs 27,16,281 crore.

- Which an increase of 11.7% over revised estimate of 2022-23.
- In 2022-23, total receipts (other than borrowings) are estimated to be 6.5% higher than the budget estimates.

GDP: The government has estimated a nominal GDP growth rate of 10.5% in 2023-24 (i.e., real growth plus inflation).

Ministry Allocations:

- ◆ Among the top 13 ministries with the highest allocations, in 2023-24, the highest percentage increase in allocation is observed in the Ministry of Railways (49%).
- ◆ It was followed by the Ministry of Jal Shakti (31%),
- ◆ Then stands the Ministry of Road Transport and Highways (25%).

Deficits: Revenue deficit in 2023-24 is targeted at 2.9% of GDP,

- ◆ Which is lower than the revised estimate of 4.1% in 2022-23.
- ◆ Fiscal deficit in 2023-24 is targeted at 5.9% of GDP, lower than the revised estimate of 6.4% of GDP in 2022-23.
- ◆ The revised estimate as a percentage of GDP was the same as the budget estimate, in nominal terms, fiscal deficit was higher by Rs 94,123 crore (increase of 5.7%) in 2022-23.
- ◆ Interest expenditure at Rs 10,79,971 crore is estimated to be 41% of revenue receipts.



Resilience amidst multiple crises

- ◆ India's rising global profile is due to several accomplishments like
 - Unique World Class Digital Public Infrastructure namely, Aadhaar, Co-Win and UPI;
 - COVID-19 vaccination drive in unparalleled scale and speed;
 - Proactive role in frontier areas such as achieving the climate related goals,
 - Mission LiFE,
 - National Hydrogen Mission.
- ◆ During the Covid-19 pandemic, Government ensured that no one goes to bed hungry, with a scheme to supply free food grains to over 80 Crore persons for 28 months.
- ◆ Continuing with Centre's commitment to ensure food and nutritional security, Government is implementing, from 1st January 2023, a scheme to supply free food grain to all Antyodaya and priority households for the next one year, under PM Garib Kalyan Anna Yojana (PMGKAY). The entire expenditure of about Rs 2 lakh crore will be borne by the Central Government.

UNION BUDGET 2023-24 Part 2

Achievements since 2014: Leaving no one behind

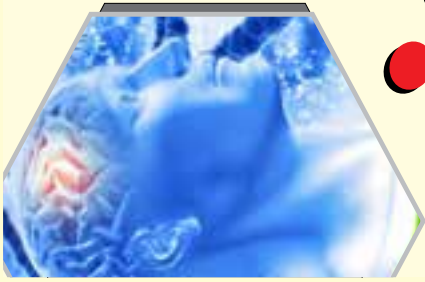
- ◆ Smt. Sitharaman said that the government's efforts since 2014 have ensured for all citizens a better quality of living and a life of dignity and the per capita income has more than doubled to Rs 1.97 lakh.
- ◆ She said that in these 9 years, the Indian economy has increased in size from being 10th to 5th largest in the world.
- ◆ The economy has become a lot more formalized as reflected in the EPFO membership, more than doubling to 27 crore, and 7,400 crore digital payments of Rs 126 lakh crore through UPI in 2022.
- ◆ The Finance Minister pointed out that the efficient implementation of many schemes, with universalisation of targeted benefits, has resulted in inclusive development.

G20 Presidency: Steering the global agenda through challenges

- ◆ The Finance Minister pointed out that in these times of global challenges, the G20 Presidency gives India a unique opportunity to strengthen its role in the world economic order.
- ◆ With the theme of 'Vasudhaiva Kutumbakam', India is steering an ambitious, people-centric agenda to address global challenges, and to facilitate sustainable economic development.

◆ Inclusive development includes:

- 11.7 crore household toilets under Swachh Bharat Mission,
- 9.6 crore LPG connections under Ujjawala,
- 220 crore Covid vaccinations of 102 crore persons,
- 47.8 crore PM Jan Dhan Bank Accounts,
- Insurance cover for 44.6 crore persons under PM Suraksha Bima and PM Jeevan Jyoti Yojana,
- Cash transfer of Rs 2.2 lakh crore to over 11.4 crore farmers under PM Kisan Samman Nidhi.



**Vision for
Amrit Kaal-
an empowered
and inclusive
economy**

The FM said that our vision for the Amrit Kaal includes

- ◆ Technology-driven and knowledge-based economy with strong public finances,
- ◆ A robust financial sector and to achieve this, Jan Bhagidari through Sabka Saath Sabka Prayas is essential.

She added that to service the focus areas in our journey to India@100, the following four opportunities can be transformative during Amrit Kaal-

1. Economic Empowerment of Women:

- ◆ Deendayal Antyodaya Yojana National Rural Livelihood Mission has achieved remarkable success by mobilizing rural women into 81 lakh Self Help Groups.
- ◆ We will enable these groups to reach the next stage of economic empowerment through formation of large producer enterprises or collectives with each having several thousand members and managed professionally.

**UNION
BUDGET
2023-24
Part 3**

2. PM Vishwakarma KAushal Samman (PM VIKAS):

- ◆ For centuries, traditional artisans and craftspeople, who work with their hands using tools, have brought renown for India and they are generally referred to as Vishwakarma.
- ◆ The art and handicraft created by them represents the true spirit of Atmanirbhar Bharat.
- ◆ The components of the scheme will include not only financial support but also access to :
 - Advanced skill training,
 - Knowledge of modern digital techniques and efficient green technologies,
 - Brand promotion,
 - Linkage with local and global markets,
 - Digital payments,
 - Social security.
- ◆ This will greatly benefit the Scheduled Castes, Scheduled Tribes, OBCs, women and people belonging to the weaker sections.

3. Tourism:

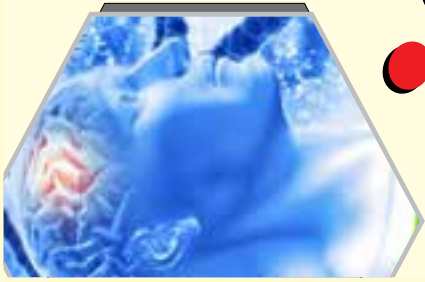
- ◆ The Finance Minister said that the country offers immense attraction for domestic as well as foreign tourists, as there is a large potential to be tapped in tourism.
- ◆ She added that the sector holds huge opportunities for jobs and entrepreneurship for youth in particular and emphasized that promotion of tourism will be taken up on mission mode, with active participation of states, convergence of government programmes and public-private partnerships.

4. Green Growth: Dwelling on the subject of Green Growth, the FM said that India is implementing many programmes for

- ◆ Green fuel,
- ◆ Green energy,
- ◆ Green farming,
- ◆ Green mobility,
- ◆ Green buildings,
- ◆ Green equipment,

Policies for efficient use of energy across various economic sectors.

These green growth efforts help in reducing carbon intensity of the economy and provides for large scale green job opportunities.



Smt. Nirmala Sitharaman listed seven priorities of the Union Budget and said that they complement each other and act as the 'Saptarishi' guiding us through the Amrit Kaal. They are as follows:

- 1) Inclusive Development
- 2) Reaching the Last Mile
- 3) Infrastructure and Investment
- 4) Unleashing the Potential
- 5) Green Growth
- 6) Youth Power
- 7) Financial Sector

Priorities of this Budget

UNION BUDGET 2023-24 Part 4

Priority 1: Inclusive Development

Agriculture and Cooperation

- Digital Public Infrastructure for Agriculture
- ◆ The Digital Public Infrastructure for agriculture will be built as an open source, open standard and interoperable public good. This will enable inclusive, farmer-centric solutions through relevant information services for crop planning and health,
 - ◆ Improved access to farm inputs, credit, and insurance,
 - ◆ Help for crop estimation,
 - ◆ Market intelligence, and
 - ◆ Support for growth of agri-tech industry and start-ups.

Agriculture Accelerator Fund: The FM announces that an Agriculture Accelerator Fund will be set-up to encourage agri-startups by young entrepreneurs in rural areas.

- ◆ **Aim:** To bringing innovative and affordable solutions for challenges faced by farmers.
- ◆ It will also bring in modern technologies to transform agricultural practices, increase productivity and profitability.

Enhancing productivity of cotton crop: To enhance the productivity of extra-long staple cotton, Government will adopt a cluster-based and value chain approach through Public Private Partnerships (PPP). This will mean collaboration between farmers, state and industry for input supplies, extension services, and market linkages.

Atmanirbhar Horticulture Clean Plant Programme: The Government will launch an Atmanirbhar Clean Plant Programme to boost availability of disease-free, quality planting material for high value horticultural crops at an outlay of Rs 2,200 crore.

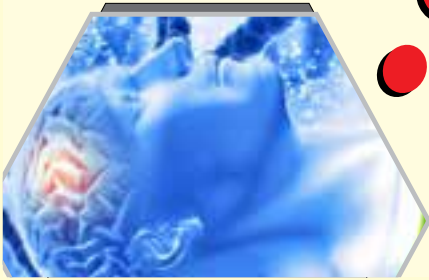
Global Hub for Millets: 'Shree Anna':

- ◆ "India is at the forefront of popularizing Millets, whose consumption furthers nutrition, food security and welfare of farmers".
- ◆ India is the largest producer and second largest exporter of 'Shree Anna' in the world as it grows several types of 'Shree Anna' such as jowar, ragi, bajra, kuttu, ramdana, kangni, kutki, kodo, cheena, and sama.

Agriculture Credit: Dwelling on welfare measures for farmers, the Finance Minister announced that the agriculture credit target will be increased to Rs 20 lakh crore with focus on animal husbandry, dairy and fisheries.

Cooperation:

- ◆ A new Ministry of Cooperation was formed with a mandate to realize the vision of 'Sahakar Se Samridhhi'.
- ◆ To realise this vision, the government has already initiated computerization of 63,000 Primary Agricultural Credit Societies (PACS) with an investment of Rs 2,516 crore.



Health, Education and Skilling: Medical & Nursing Colleges

- ◆ One hundred and fifty-seven new nursing colleges will be established in co-location with the existing 157 medical colleges established since 2014.
- ◆ A Mission to eliminate Sickle Cell Anaemia by 2047 will be launched, which will entail awareness creation, universal screening of 7 crore people in affected tribal areas, and counseling through collaborative efforts of central ministries and state governments.
- ◆ On Medical Research, facilities in select ICMR Labs will be made available for research by public and private medical college faculty and private sector R&D teams for encouraging collaborative research and innovation.

Teachers' Training

- ◆ Teachers' training will be re-envisioned through innovative pedagogy, curriculum transaction, continuous professional development, dipstick surveys, and ICT implementation.
- ◆ District Institutes of Education and Training will be developed as vibrant institutes of excellence for this purpose.
- ◆ National Digital Library for Children and Adolescents will be set-up for facilitating availability of quality books across geographies, languages, genres and levels, and device agnostic accessibility.

Priority 1: Inclusive Development Continued...

PM Awas Yojana:

- ◆ The outlay for PM Awas Yojana is being enhanced by 66 per cent to over Rs 79,000 crore.
- ◆ 'Bharat Shared Repository of Inscriptions' will be set up in a digital epigraphy museum, with digitization of one lakh ancient inscriptions in the first stage.

UNION BUDGET 2023-24 Part 5

Priority 2: Reaching the Last Mile

Aspirational Districts and Blocks Programme:

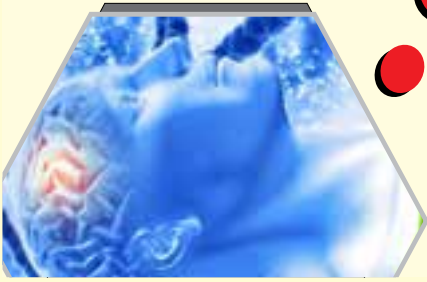
- ◆ Building on the success of the Aspirational Districts Programme, the Government has recently launched the Aspirational Blocks Programme covering 500 blocks for saturation of essential government services across multiple domains such as health, nutrition, education, agriculture, water resources, financial inclusion, skill development, and basic infrastructure.

Pradhan Mantri PVTG Development Mission

- ◆ To improve socio-economic conditions of the particularly vulnerable tribal groups (PVTGs), Pradhan Mantri PVTG Development Mission will be launched.
- ◆ This will saturate PVTG families and habitations with basic facilities such as safe housing, clean drinking water and sanitation, improved access to education, health and nutrition, road and telecom connectivity, and sustainable livelihood opportunities.
- ◆ In the next three years, centre will recruit 38,800 teachers and support staff for the 740 Eklavya Model Residential Schools, serving 3.5 lakh tribal students.

Water for Drought Prone Region:

- ◆ In the drought prone central region of Karnataka, central assistance of Rs 5,300 crore will be given to Upper Bhadra Project to provide sustainable micro irrigation and filling up of surface tanks for drinking water.



- ◆ FM said investments in Infrastructure and productive capacity have been increased steeply for the third year in a row by 33 per cent to Rs 10 lakh crore, which would be 3.3 per cent of GDP.
- ◆ She said that this will be almost three times the outlay in 2019-20.
- ◆ The 'Effective Capital Expenditure' of the Centre is budgeted at Rs 13.7 lakh crore, which will be 4.5 per cent of GDP.

Support to State Governments for Capital Investment

- ◆ Government has decided to continue the 50-year interest free loan to state governments for one more year, with a significantly enhanced outlay of Rs 1.3 lakh crore.

Railways

- ◆ The Finance Minister announced that a capital outlay of Rs 2.40 lakh crore has been provided for the Railways, which is the highest ever outlay and about 9 times the outlay made in 2013-14.
- ◆ Fifty additional airports, heliports, water aerodromes and advance landing grounds will be revived for improving regional air connectivity.
- ◆ The Finance Minister announced that an Urban Infrastructure Development Fund (UIDF) will be established and will be used by public agencies to create urban infrastructure in Tier 2 and Tier 3 cities.

Priority 3: Infrastructure & Investment

UNION BUDGET 2023-24 Part 6

Priority 4: Unleashing the Potential

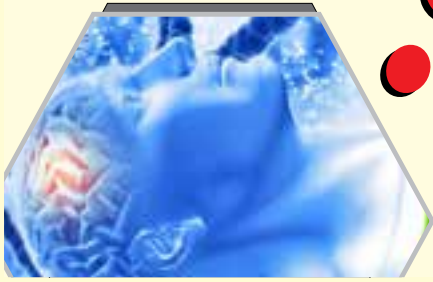
- ◆ For enhancing Ease of Doing Business, more than 39,000 compliances have been reduced. More than 3,400 legal provisions have been decriminalized.
- ◆ For furthering the trust-based governance, Government has introduced the Jan Vishwas Bill to amend 42 Central Acts.

National Data Governance Policy

- ◆ The FM said that to unleash innovation and research by start-ups and academia, a National Data Governance Policy will be brought out, which will enable access to anonymized data.
- ◆ On 5G Services, one hundred labs for developing applications using 5G services will be set up in engineering institutions to realize a new range of opportunities, business models, and employment potential.
- ◆ The labs will cover, among others, applications such as smart classrooms, precision farming, intelligent transport systems, and health care applications.

Centres of Excellence for Artificial Intelligence

- ◆ For realizing the vision of "Make A-I in India and Make A-I work for India", three centers of excellence for Artificial Intelligence will be set-up in top educational institutions. These will provide sustainable micro irrigation and filling up of surface tanks for drinking water.



- ◆ India has given a vision for “LiFE”, or Lifestyle for Environment, to spur a movement of environmentally conscious lifestyle.
- ◆ India is moving forward firmly for the 'panchamrit' and net-zero carbon emission by 2070 to usher in green industrial and economic transition.
- ◆ National Green Hydrogen Mission, with an outlay of Rs 19,700 crores, will facilitate transition of the economy to low carbon intensity, reduce dependence on fossil fuel imports, and make the country assume technology and market leadership in this sunrise sector.

GOBARdhan scheme:

- ◆ 500 new 'waste to wealth' plants under GOBARdhan (Galvanizing Organic Bio-Agro Resources Dhan) scheme will be established for promoting circular economy.
- ◆ In due course, a 5% CBG mandate will be introduced for all organizations marketing natural and bio gas and for collection of bio-mass and distribution of bio-manure, appropriate fiscal support will be provided.

Bhartiya Prakritik Kheti Bio-Input Resource Centres

- ◆ Over the next 3 years, the Centre will facilitate one crore farmers to adopt natural farming. For this, 10,000 Bio-Input Resource Centres will be set-up, creating a national-level distributed micro-fertilizer and pesticide manufacturing network.

- ◆ To empower the youth and help the 'Amrit Peedhi' realize their dreams, Government has formulated the National Education Policy, focused on skilling, adopted economic policies that facilitate job creation at scale, and have supported business opportunities.
- ◆ She also announced that Pradhan Mantri Kaushal Vikas Yojana 4.0 will be launched to skill lakhs of youth within the next three years.

National Apprenticeship Promotion Scheme

- ◆ Smt. Nirmala Sitharaman said that to provide stipend support to 47 lakh youth in three years, Direct Benefit Transfer under a pan-India National Apprenticeship Promotion Scheme will be rolled out.

Unity Mall

- ◆ States will be encouraged to set up a Unity Mall in their state capital or most prominent tourism centre or the financial capital for promotion and sale of their own ODOPs (one district, one product), GI products and other handicraft products, and for providing space for such products of all other States.

Senior Citizens

- ◆ The Finance Minister announced that the maximum deposit limit for Senior Citizen Savings Scheme will be enhanced from Rs 15 lakh to Rs 30 lakh.
- ◆ The maximum deposit limit for Monthly Income Account Scheme will be enhanced from Rs 4.5 lakh to Rs 9 lakh for single account and from Rs 9 lakh to Rs 15 lakh for joint account.

Priority 7: Financial Sector

UNION BUDGET 2023-24 Part 7

Priority 5: Green Growth

Priority 6: Youth Power

Prelims Special 2023: Science-Tech

Biotechnology

World's First Cloned wild arctic wolf

A Jean firm in Beijing, Sinogene Biotechnology, has announced the first worldwide success of a Cloned wild female Arctic wolf. It uses the reproductive cloning method. This clone wolf was built in a lab in Beijing and is named Maya.

Cloning Technology:

- Cloning is a technique scientists use to make exact genetic copies of living things.
- This method makes copies of living organisms including cells, tissues, etc. and all the organisms prepared by this method are completely genetic and physically similar to their parents.
- The first was a successful cloned mammal, Dolly Sheep. It was successfully cloned on 5 July 1996 at the Roslin Institute Scotland.
- Cloning is an important way to protect gene diversity and increase the population of species.

Three different types of artificial cloning

- **Gene/DNA cloning:** Under this, transgenic microorganisms or transgenic bacteria are manufactured using the first gene engineering, then clones of GM (Genetically modified) bacteria are obtained by creating a proper environment.
- **Breeding cloning:** This includes transfer of nuclear content that is included from a somatic cell to egg cell. This ovulation is then stimulated to divide, which creates a foetus
- **Medical cloning:** It is similar to breeding cloning for the production of foetus

CRISPR - CAS 9

- CRISPR is a special type of genetic code or sequence found in bacteria. These sequences are produced by bacteriophages infecting bacteria.
- Bacteria use the CRISPR sequence to remember each virus attack; For this, the bacteria incorporate the DNA of the virus into their Gene.
- Memorizing the CRISPR sequence has the advantage that the bacterium gains immunity in the event of a repeat attack by the same virus.
- Cas 9 enzymes act as molecular scissors that aid in cutting off portions of DNA. These in themselves are a type of gene located near the crisper sequence. When these genes are activated, they produce special enzymes.

Mechanism of CRISPR - cas9:

- First, the guide RNA is made in the laboratory, which helps mark the target gene. After this, the unwanted part is cut off using CRISPR cas9. The desired portion of DNA is attached to the truncated site.

Scientific achievements:

- This technology of gene editing therapy has been used in the United States for the treatment of Parkinson's disease.
- China is working on the treatment of cancer through CRISPR.
- In 2015, this technique was used by China where it created a genetically modified super muscular dog by inactivating the myosin gene.
- This technology has been used in Japan to prevent the virus from spreading in the cells of HIV-infected humans.
- India's progress in the crisper cas9 sector:
- National Institute of Agricultural Food Technology is using it to make desirable changes in the DNA of bananas.
- Institute of Genomics and Integrative Biology is testing this technology to prevent sickle cell anemia disease.

Biological Data

- The Indian Organic Data Centre (IBDC) was inaugurated in Faridabad, Haryana.
- Biological data means all information related to living organisms, including their nucleic acid, protein sequence, metabolites and other molecular and functional characteristics. Examples include DNA sequence data, genotype data, Epigenomic data, duration of data etc.

Space Science

Hybrid Motor Testing by ISRO

Indian Space Research Organization (ISRO) has successfully tested a 30 kN hybrid motor at ISRO Propulsion Complex (IPRC), Mahendragiri, Tamil Nadu on September 20, 2022. The purpose of this test was to discover a new propulsion system for the upcoming launch vehicles.

About 30KN Hybrid Motor:

- It is a scalable and stackable type of hybrid motor that uses solid fuel and liquid oxidizer on contrary to solid-solid or liquid-liquid combinations.
- During testing, this motor used liquid oxygen (LOX) as the oxidizer and hydroxyl-terminated polybutadiene (HTPB) as the fuel.
- The 30 kN hybrid motor has successfully demonstrated ignition and continuous combustion for the desired duration of 15 seconds during the test.

SSA Observatory:

- The observatory will be the first-of-its-kind in the region, set up to augment Digantara's SSA capabilities and strategically positioned to serve global space traffic management operations. It is India's first commercial space situational

awareness'(SSA) observatory, to track objects as small as 10 cm in size.

- The Diganantara is a Bengaluru based start-up which has signed an agreement with the government of Uttarakhand for SSA.

About Space Situational Awareness (SSA) observatory:

It deals with the comprehensive knowledge of the space environment, assessment of any threats to space activities and the implementation of necessary mitigation measures to safeguard the space assets. It is covering mainly three areas:

- Space Surveillance and Tracking (SST) of man-made objects.
- Space Weather (SWE) monitoring and forecast.
- Near-Earth Objects (NEO) monitoring (only natural space objects).

Space Debris:

- Space Debris consists of rocket bodies that are used to launch satellites, defunct satellites, materials released during mission operations, fragments from on-orbit breakups of space objects, and fragments from Anti-Satellite (ASAT) tests.

India's First High-Throoput Satellite (HTS) Broadband Service

- Hughes Communications India (HCI) and ISRO have jointly launched India's first high-throughput satellite (HTS) broadband service through which high-speed broadband services will be made available in remote areas. HCI - is a joint venture company of US-based Hughes Network Systems and Indian telecom operator Bharti Airtel.
- The service will provide satellite internet to remote parts of India using ISRO's GSAT-11 and GSAT-29 satellites. ISRO launched GSAT-11 and GSAT-29 in the year 2018 to provide high bandwidth satellite connectivity to Indian customers. The main objective of the newly launched HTS broadband service is to provide high-speed broadband in inaccessible areas.
- It also provides Wi-Fi hotspots, SD-WAN solutions, mobile networks for community Internet access and satellite Internet services for small businesses.
- Reliance Jio and State Bank of India are already connected to Hughes' HTS service.

About High - Throughput Satellite Broadband:

- HTS is a communication satellite which provides higher data processing and data transfer capability than conventional communication satellites.

Features of HTS:

- **Bandwidth:** It provides a lot of bandwidth at a low cost.

- **Spot-beam:** Spot-beam is used in HTS operation. In comparison, conventional satellites use a single beam.
- **Connectivity:** Their connectivity is much better than a normal communication satellite. The data is transferred between the sender and the receiver in a very short time.

The Search for Dark Matter

- A new dark matter detector experiment named LUX-ZEPLIN (LZ) has started in South Dakota, USA. It is the most sensitive dark matter detector in the world.
- Many physicists strongly believe that the entire visible part of the universe forms only 5% of all matter in it. They believe the rest is made up of dark matter and dark energy.

About dark matter and its elusiveness:

- All interactions in the universe are a result of four fundamental forces acting on particles i.e. strong nuclear force, weak nuclear force, electromagnetic force and gravitation.
- Dark matter is made up of particles that do not have a charge, so they do not interact through electromagnetic interactions.
- These are particles that are "dark", namely because they do not emit light, which is an electromagnetic phenomenon and "matter" because they possess mass like normal matter and hence interact through gravity.
- Gravitational force, is extremely weak. A particle that interacts so weakly becomes rather elusive to detect. This is because interactions from other known particles could drown out signals of dark matter particles.

Small Satellite Launch Vehicle (SSLV)

- SSLV is the smallest launch vehicle in India, weighing 110 tonnes.
- The newly developed rocket is formed with three solid stages 87T, 7.7 T and 4.5T respectively.
- SSLV is designed to take items up to 500 kg to 500 km planner orbit.
- According to ISRO, the diameter of SSLV is 2.1 meters and the launch mass of the launch vehicle is about 120 tonnes.

Need to develop SSLV:

- With the growing market of global launch services for small satellites, ISRO's SSLV will serve as an attractive option due to its low cost, ability to launch on demand and ability to bear several loads.
- The operation of SSLV on small and more commercial missions will free the Polar Satellite Launch Vehicle (PSLV) used for large missions in space.

- Such powerful horses are not required to install the satellite orbiting the Earth in the lower orbit of the Earth. SSLV can easily carry small to medium loads ranging from 10 kg to 500 kg. It is less expensive.
- There is another advantage of three stages operated by solid fuel. Solid fuel is easy to handle, while the liquid propellers used in PSLV and GSLV are more complex.
- SSLV is a low-cost vehicle due to its low turnaround time, minimum launch infrastructure requirements and increased production rates from industries.

Types of Earth Orbits

Geostationary Earth Orbit (GEO):

- It is also called Geosynchronous Equatorial Orbit (35,785 km).
- Satellites placed in GEO appear 'Stationary' because they have same orbital period as the earth's rotation period.
- Hence, the satellite/spacecraft returns to the same point in the sky at the same time each day.
- Communication satellites are often placed in GEO.
- The GEO satellites are directly overhead at the Earth's equator.
- ISRO's Indian National Satellite System (INSAT) is placed in GEO.

Low Earth Orbit (LEO):

- It is relatively closer to the Earth's surface than other orbits.
- The altitude from the earth's surface could be between 160 Km to 1000 Km.
- The satellites placed in it have more available routes as they don't have to follow a particular path around the Earth as the GEO
- It is used for satellite imaging because images are of high resolution as the orbit is closer to the surface of the earth.
- The International Space Station (ISS) uses LEO and makes travel of astronauts easier. It is also used for remote sensing satellites.

Medium Earth Orbit (MEO):

- The orbit, altitude of which is between LEO and GEO, is known as Medium Earth Orbit.
- Navigation satellites and a number of artificial satellites are placed in MEO.
- Global Positioning System (GPS) is placed in MEO (20200 Km)
- Communication satellites too can be placed here.

LVM3 rocket

The Indian Space Research Organisation (ISRO) has successfully launched the LVM3 M2/OneWeb India-1 mission. The LVM3 rocket carried almost 6

tonnes of payload into lower-earth orbit, the most that any ISRO mission has delivered into space till date.

About the LVM3-M2 :

- Launch Vehicle Mark 3 (LVM3) is the heaviest rocket of ISRO. It is a three-stage launch vehicle consisting of two solid propellant S200 strap-ons on its sides and core stage comprising L1 10 liquid stage and C25 cryogenic stage. It is capable of launching 4,000-kilogram class of satellites into GTO (Geosynchronous Transfer Orbit) and 8,000 kgs of payloads into LEO.

About the launch vehicles:

- Launch Vehicles are used to carry spacecraft to space. India has two operational launchers: Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV). GSLV with indigenous Cryogenic Upper Stage has enabled the launching up to 2 tonne class of communication satellites. The next variant of GSLV is GSLV Mk III, with indigenous high thrust cryogenic engine and stage, having the capability of launching 4 tonne class of communication satellites.

Launchers under usage:

- Polar Satellite Launch Vehicle (PSLV)
- Geosynchronous Satellite Launch Vehicle (GSLV)
- Geosynchronous Satellite Launch Vehicle Mark III (LVM3)
- Sounding Rockets

Launchers under development:

- Reusable Launch Vehicle - Technology Demonstrator (RLV-TD)
- Scramjet Engine - TD

Retired Launchers:

- SLV-3
- ASLV

India's first Indigenous Developed OVH Magnetometer

The Indian Institute of Geomagnetism (IIG), an autonomous research institute under DST, Government of India, has developed the magnetometer as part of its technology development programme. The Overhauser Magnetometer developed by Indian scientists is one of the best magnetometers widely used by all the magnetic observatories across the world.

About OVH magnetometer:

- A magnetometer is a scientific instrument used to measure the strength and direction of a magnetic field. OVH magnetometers are known for their high accuracy, high sensitivity and efficient power consumption.
- OVH is an important tool for the detection

and calibration of magnetic anomalies due to ferromagnetic objects in the environment, to conduct magnetic field surveys and obtain continuous geomagnetic field measurements.

Mars orbiter mission

- India's Mars Orbiter Mission (MOM) spacecraft has lost contact with ground stations, which ends its life after eight years.
- The Mars Orbiter Mission was launched on 5 November 2013 at PSLV-C25.
- The MOM spacecraft was successfully established in the orbit of Mars on 24 September 2014 in its first attempt.
- Mangalyaan was India's first interplanetary mission. Mission made India the first Asian country, and became the fourth country in the world after Roscosmos (Russia), NASA (US) and European Space Agency (EU).

Various Mars missions:

- Exo marsh Rover (2021) (European Space Agency)
- Tianwan-1: Mangal Mission of China (2021)
- UAE's Hope Mars Mission (UAE's first Interplanetary Mission) (2021)
- Perseverance Rover Mission (NASA-America)
- MMX Mission- (Japan)

Chandrayaan-2

- ISRO scientists have mapped global distribution of sodium on the surface of the moon. He used the Class Instrument (Chandrayaan-2 large area soft X-ray spectrometer) brought by Chandrayaan-2 for the study.
- The study suggests that there is a thin layer of sodium atoms that are weakly tied to the lunar surface in addition to the small amounts found in the lunar rocks.
- Chandrayaan-2, launched in 2019, is the second lunar exploration mission developed by ISRO. It included a lunar orbiter, Vikram Lander and Pragyan Lunar Rover.

Major missions so far for the moon:

- USSR - Luna 1, Luna 2, Luna 3
- Luna 2 was the first spacecraft to land the surface of the moon.
- USA - Lunar Orbiter 1, Apollo 11: Mission as the first person to land on the moon, Lunar Recognition Orbiter (LRO)
- Japan - Hiten
- China - Chang'e 1: First Chinese Moon Mission.
- India - Chandrayaan -1, Chandrayaan -2

Gamma Ray Explosion (GRB)

- Astronomers' Gama Kiran explosion at a distance of 2.4 billion light years from the Earth. It was a

gamma ray explosion called GRB221009a.

- It is believed that this type of GRB occurs when a huge star explodes in a supernova and leaves a black hole behind. GRB is the most powerful explosion seen by the universe since Big Bang. It is a brief, but acute, glowing glow of gamma radiation. They produce as much energy as the sun will emit in its entire 10 billion years of existence.

James Web Space Telescope

- James Web Space Telescope has given astronomers a glimpse of the early universe in a new image. It includes a galaxy group that appeared 4.6 billion years ago.
- James Web Space Telescope is the result of an international cooperation between the European Space Agency (ESA) and the Canadian Space Agency that was launched in December 2021.
- It is currently at a point in space which is known as the Sun-Earth L2 Lagrange point, which is about 1.5 million km from the Earth's orbit around the Sun.
- It is the largest, most powerful infrared space telescope built so far. It is the successor of the Hubble Telescope.
- This will examine every phase of cosmic history: from the formation of galaxies, wires and planets to the development of our own solar system.

Others space investigation mission:

- **Pioneer- NASA:** It was the first spacecraft to travel to the solar system's most photogenic gas giants, Jupiter and Saturn.
- **Voyager - NASA:** Voyager 1 and Voyager 2 made many important discoveries about Jupiter and Saturn, including rings around Jupiter and the presence of a volcano on Jupiter's moon.
- Voyager 1 is currently the most farther man-made object from the Earth, which is more than a hundred times from the Earth's distance and double the distance from Pluto.
- **SPHEREx -NASA:** The spectro-photometer for the History of the Universe and Ice Explorer (Spherex) is a planned two-year mission that will survey the sky in optical as well as the near-end light. It will be launched in 2024.

Some Important Glossary

- **Kuiper belt:** The Kuiper Belt is a ring of icy bodies just outside of Neptune's orbit. Pluto is the most famous Kuiper Belt Object.
- **Asteroid belt:** An area of space between Mars and Jupiter's classrooms where most of the asteroids are found revolving in our solar system.
- **Exoplanet:** Any planet beyond our solar system. Most other stars revolve around, but free-floating

exoplanets, called evil planets, revolve around the Gangor Center and are not connected to any stars.

- **Lagrange Points:** On lagrange points, gravitational stretch of two large masses is equal to the required instruction for a small object to walk with them.
- **Black Hole:** This is a place in space where gravity draws so much that even the light cannot come out. The gravity is so strong because the substance is squeezed in a small space.
- **Gravity Lensing:** IT occurs when large amounts of substances, such as a group of galaxies, forms a gravitational area that distorts and uninterrupted light from distant galaxies (which are behind it but in the same line of vision). The effect is like viewing through a giant magnifying glass. This allows researchers to study the details of the early galaxies that appear far away with current technology and binoculars.

Health

India won the United Nations Award for Hypertension Control Initiative

India has been awarded the United Nations Award for commendable efforts against high blood pressure. The award has been given by the United Nations General Assembly to IHCI (India Hypertension Control Initiative) in a special event organized by the United Nations General Assembly at New York, USA.

About high blood pressure:

- High blood pressure is also called silent disease.
- The blood pressure problem arises after crossing the level of 140/90.
- Hypertension is a major risk factor in cases of heart attack, stroke, kidney disease and premature deaths.
- Hypertension Day is observed every year on 17 May with the aim of creating awareness about hypertension and its symptoms.
- India is committed to the target of “25 to 25”, that is, to reduce the mortality by 25% due to non-communicable diseases by the year 2025.

IHCI:

- India is a joint initiative of Higher blood pressure control initiative of the Ministry of Health, Indian Council of Medical Research, State Governments and World Health Organization.
- High blood pressure control initiative under the National Health Mission has been appreciated globally to control and prevent high blood pressure.
- This initiative was initiated in 2017. Its purpose is to reduce the spread of relative blood pressure by 25%.

Virtual Autopsy

Late comedian Raju Srivastava post-mortem was performed through Virtual Autopsy. This was done to scrutinise into the factors that have led to his death.

What is virtual autopsy?

- It is a non-intrusive and highly specialised surgical procedure that thoroughly examines the corpse, evaluating the injuries, diseases, causes and the manner of death.
- It combines the methods of forensic science and radiology, using imaging methods like, high-tech digital X-Rays, Computed tomography (CT) Scan and Magnetic resonance imaging (MRI) etc. for detailed and systematic examination of the body.
- It can be substituted, in most of the circumstances, with the standard autopsies which usually require thorough examination of the dead body through dissection.

Virtual Autopsy around the globe:

- Virtual Autopsy mark its advent from Sweden, and now it is a common practice in the countries like, Japan, The United States, Australia and several European Nations.
- India is the only country in South and South-East Asia to conduct virtual autopsies.

First Indian Indigenous Vaccine for Cervical Cancer- ‘CERVAVAC’

Recently, the Union Minister Dr. Jitendra Singh announced India’s first indigenous vaccine for the prevention of cervical cancer- “CERVAVAC”.

About CERVAVAC Vaccine:

- It is the first indigenously developed vaccine for cervical cancer treatment in India and is a result of collaboration between Serum Institute of India, Bill & Melinda Gates Foundation, DBT (Department of Biotechnology) and BIRAC (Biotechnology Industry Research Assistance Council).

About Cervical Cancer:

- Cervical cancer is a type of cancer that occurs in the cells of the cervix. The cause of this cancer is a virus called human papilloma virus which enters the body through sexual relations and repeated infection of this virus causes cervical cancer.
- Cervical cancer is the uncontrolled growth of abnormal cells in the lining of the cervix. The cervix is the part of the female reproductive system located in the lower part of the womb, which opens from the womb to the vagina. This cancer is also known as Bachchedani Ka Cancer.
- Cervical cancer is the second most common cancer in India, which is about one-fourth part of cervical cancer deaths in the world.
- According to current statistics, about 1.25 lakh

women are diagnosed with cervical cancer every year and more than 75,000 people die from this disease in India.

Symptoms of Cervical Cancer:

- Bleeding between periods
- Bleeding after intercourse
- Bleeding that occurs even after menopause
- Vaginal discharge with strong odor
- Pain persisting in the pelvis

India's First Nasal COVID-19 Vaccine

Bharat Biotech has developed the country's first COVID vaccine which is to be taken through the nose.

About the Vaccine:

- This INCOVACC vaccine has been developed by Bharat Biotech in association with Precision Virology and Washington University School of Medicine.
- This is the first nasal vaccine developed without injection for the prevention of COVID-19.
- People above 18 years of age will be given one dose of this vaccine.
- This vaccine has been approved by the Drug Controller General of India for emergency use.
- The vaccine can be stored at a temperature of 2 to 8 °C.

New Names for Monkeypox Virus Variants

- A group of global experts convened by WHO has announced new names for Monkeypox virus variants.
- New names for monkeypox diseases, viruses, and variants—or clades—are based on Roman numerals.
- New names of Monkeypox variants "Clades I, Ila and IIb" have been announced.
- The former Congo Basin (Central African) clade is now named Clade One (I), while the former West African clade is named Clade Two (II). Clade II also includes two subclasses.
- It is currently the responsibility of the WHO to rename existing diseases according to the International Classification of Diseases and the International Classification of Health.
- Earlier, the classification of the names of diseases was determined on the basis of the prevalence and identification of diseases in different geographical areas.

About Monkeypox disease:

- Monkeypox virus is a double-stranded DNA virus and a rare zoonotic disease. Monkeypox belongs to the Orthopoxvirus family, which looks like smallpox. This also includes variola, cowpox and vaccinia viruses.
- It is a rapidly spreading infection with a high

probability of death of one in ten people if infected.

- The virus was first identified in 1958 in a crab-eating macaque monkey in Copenhagen, Denmark.
- The first case of this virus came in 1970, mainly in Central and West Africa (Congo).
- Monkeypox disease is a disease endemic to Nigeria.
- There is no cure for Monkeypox yet. To prevent this, Smallpox vaccine is being given. patient have to be in touch with the doctor.

Symptoms of Monkeypox:

- Fever, headache, muscle pain, back pain, shivering, fatigue, swollen lymph nodes, skin rash, body rash, sore throat, frequent cough, lethargy, and itching.

Smart Protein Summit

- The annual flagship event, the Smart Protein Summit, was launched by the Good Food Institute India (GFI India). The Smart Protein Summit was launched in collaboration with the Federation of Indian Chambers of Commerce & Industry (FICCI).
- Further it had support from the Ministry of Food Processing Industries (MoFPI), The Agricultural and Processed Food Products Export Development Authority (APEDA), and India's Food Safety and Standards Authority of India (FSSAI) Eat Right India initiative.

About Smart Protein:

- Smart proteins are alternative proteins that can reliably and predictably replace the proteins derived out from animal, diaries etc.
- They are extracted from the either plants, fermentation etc. providing replicated sensory experience to the consumers and several advantages over traditional animal protein sources.

One Health Joint Plan of Action

The five-year One Health Joint Action Plan was unveiled by the "Quadripartite," comprising the World Health Organization (WHO), the UN Environment Programme (UNEP), the Food and Agriculture Organization (FAO), and the World Organization for Animal Health. It focuses on supporting and expanding capacities in six areas:

- One Health capacities for health systems;
- Emerging and re-emerging zoonotic epidemics;
- Endemic zoonotic;
- Neglected tropical and vector-borne diseases;
- Food safety risks;

About One health:

- One Health is an integrated, unifying approach

with the goal of optimising the wellbeing of people, animals, and ecosystems in a sustainable manner.

- It acknowledges the interdependence and close connections between human health, and that of domestic and wild animals, plants, and the larger environment including ecosystems.

PRaGeD Mission

- Hyderabad-based Centre for DNA Fingerprinting and Diagnostics (CDFD) has launched an interdisciplinary approach to decode the genetic mutation that causes Paediatric Rare Genetic Disorder (PRaGeD).
- The PRaGeD mission is a pan-India initiative funded by the Department of Biotechnology (DBT).
- The PRaGeD mission is the first 'Mission on Paediatric Rare Genetic Disorders (PRaGeD), a nationwide screening program in collaboration with 20 other institutions, to decode unknown genetic mutations causing such diseases.
- CDFD will set up its own Diagnostic Centres of DBT under the Unique Methods of Management of Inherited Disorders (UMMID) program, in addition to the Paediatric Departments of Medical Colleges and will collaborate with others.
- Therefore, the vision of PRaGeD is to create awareness, obtain a genetic diagnosis, discover and characterize novel genes, provide counselling and develop novel therapies for paediatric rare genetic diseases in India.

Rare genetic diseases:

- Rare genetic diseases are a global public health concern, affecting 350 million people worldwide and nearly 70 million Indians.
- An estimated 70 million people in the country suffer from around 7,000 identified rare genetic disorders and this number could be higher, as rural areas are not properly covered. They are common in South Asia and tend to be underestimated.
- There is no single approved drug to treat about 95% of rare genetic diseases, about 30% of children suffer and many may not survive until the age of five.

Adenovirus

- Cases of adenovirus were found in West Bengal. Adenoviruses are a group of common viruses that infect your eyes, airways and the lining of the lungs, intestines, urinary tract, and nervous system. These are common causes of fever, cough, sore throat, diarrhea and pink eye. Infections occur more often in children than in adults, but they can happen to anyone.

Adenovirus genome is a single linear molecule of double-stranded DNA while retroviruses are single-stranded DNA. The common cold is caused by adenovirus. HIV is caused by retrovirus. HIV is classified as a retrovirus because it contains reverse transcriptase. It is a D-type virus of the lentivirus family.

Nipha Virus

- Nipah virus (NiV) is a zoonotic virus, meaning that it can spread between animals and people. Fruit bats, also called flying foxes, are the animal reservoir for NiV in nature. Nipah virus is also known to cause illness in pigs and people. Infection with NiV is associated with encephalitis (swelling of the brain) and can cause mild to severe illness and even death. Outbreaks occur almost annually in parts of Asia, primarily Bangladesh and India. Nipah virus infection can be prevented by avoiding exposure to sick pigs and bats in areas where the virus is present, and not drinking raw date palm sap which can be contaminated by an infected bat.

Cholera

- Cholera is an acute diarrheal infection characterized, in its severe form, by extreme watery diarrhea and potentially fatal dehydration. It is caused by the ingestion of food or water contaminated with the bacterium *Vibrio cholerae*. It has a short incubation period, ranging between two hours and five days.

Measles

- Measles is a highly contagious disease caused by the measles virus and occurs as a seasonal disease in endemic areas. Transmission is primarily person-to-person by airborne respiratory droplets that disperse within minutes when an infected person coughs or sneezes, and transmission can also occur through direct contact with infected secretions. The virus remains active and contagious in the air or on infected surfaces for up to 2 hours. There is no specific antiviral treatment for measles and most people recover within 2-3 weeks.

Middle East respiratory syndrome (MERS)

- Middle East respiratory syndrome (MERS) is a viral respiratory infection that is caused by a coronavirus called Middle East respiratory syndrome coronavirus (MERS-CoV). Humans are infected with MERS-CoV from direct or indirect contact with dromedary camels who are the natural host and zoonotic source of the MERS-CoV infection.
- The virus appears to cause more severe disease

in older people, persons with weakened immune systems and those with chronic diseases such as renal disease, cancer, chronic lung disease, and diabetes. No vaccine or specific treatment is currently available, although several MERS-CoV-specific vaccines and treatments are in development.

Meningitis

- Meningitis is a serious infection of the meninges, the membranes covering the brain and spinal cord. Several different bacteria can cause meningitis, however, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis* (*N. meningitis*) are the most frequent ones, and are transmitted from person to person through droplets of respiratory or throat secretions from infected people.

Leptospirosis

- Leptospirosis is a zoonotic disease caused by the *Leptospira* genus of bacteria, and a worldwide public health problem attributed to climatic and environmental conditions. Humans become infected through contact with urine (or other body fluids, except saliva) from infected animals, such as rodents, dogs, pigs, cattle, horses, racoons, and wild animals, or contact with water, soil, or food contaminated with the urine of infected animals. Human-to-human transmission occurs only very rarely. The incubation period is usually 7–10 days, with a range of 2–30 days.

Yellow Fever

- Yellow fever is an epidemic-prone, vaccine-preventable disease caused by an arbovirus transmitted to humans by the bites of infected *Aedes* and *Haemagogus* mosquitoes. The incubation period ranges from 3 to 6 days. These individuals can have more severe symptoms of high-grade fever, abdominal pain with vomiting, jaundice and dark urine caused by acute liver and kidney failure. Bleeding can occur from the mouth, nose, eyes, or stomach. Death can occur within 7 - 10 days in about half of cases with severe symptoms.
- Yellow fever is prevented by an effective vaccine, which is safe and affordable. A single dose of yellow fever vaccine is sufficient to grant sustained immunity and life-long protection against yellow fever disease.

Mosquito Borne Disease

- Dengue
- Malaria
- Chikungunya
- Yellow fever

- Zika virus
- Japanese encephalitis
- Lymphatic filariasis

Legionellosis

- Legionellosis is a generic term describing the pneumonic and non-pneumonic forms of infection with the *Legionella* species of bacteria. Legionellosis varies in severity from mild to serious and can sometimes be fatal. symptoms are fever, mild cough, loss of appetite, headache, malaise and lethargy, with some patients also experiencing muscle pain, diarrhoea and confusion. The severity of Legionnaires' disease ranges from a mild cough to rapidly fatal pneumonia.

Vaccine - Derived Poliovirus

- Vaccine-derived poliovirus is a well-documented strain of poliovirus mutated from the strain originally contained in oral polio vaccine (OPV). OPV contains a live, weakened form of poliovirus that replicates in the intestine for a limited period, thereby developing immunity by building up antibodies. On rare occasions, when replicating in the gastrointestinal tract, OPV strains genetically change and may spread in communities that are not fully vaccinated against polio, especially in areas where there is poor hygiene, poor sanitation, or overcrowding.

Marburg Virus Disease

- Marburg Virus Disease (MVD) is an epidemic-prone disease associated with high case fatality ratios. In the early course of the disease, the clinical diagnosis of MVD is difficult to distinguish from many other tropical febrile illnesses due to the similarities in the clinical symptoms. Human MVD infection can result from prolonged exposure to mines or caves inhabited by *Rousettus* bat colonies. Marburg virus spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with infected people's blood, secretions, organs or other bodily fluids, and surfaces and materials (e.g. bedding, clothing) contaminated with these fluids.
- Although no vaccines or antiviral treatments are approved to treat the virus, supportive care – rehydration with oral or intravenous fluids – and treatment of specific symptoms improve survival.

Rift Valley Fever

- RVF is a viral disease most commonly seen in domesticated animals in sub-Saharan Africa, such as cattle, sheep, goats and camels. RVF primarily affects animals but also has the

capacity to infect humans. While some human infections have resulted from the bite of infected mosquitoes, most human infections result from contact with the blood or organs of infected animals.

CAR-T Therapy

- It is a way to achieve an immune cells called T (a type of white blood cell that attacks external pathogens) that is made to fight cancer by editing in the laboratory so that they can detect cancer cells and they can find them. Can destroy
- T cells are taken from the patient's blood and converts into a lab by adding a gene called CAR. This helps the immune cells called T improve cancer cell antigens. After which these cells are transferred in the patient.

Technological Development

DGCA expresses concern over 5G rollout

As India's telecom operator prepare for 5G rollout services, the country's aviation safety regulator has written to the telecom department flagging concerns over the likely interference of 5G C- band spectrum with aircraft radio altimeter. The main concern of DGCA emerges from the fact that both radio altimeter and 5G use same C band spectrum. Thus it is more likely interference between 5G and aircraft radio altimeter.

C- Band

C-band falls in the middle of the radio spectrum used for 5G networks. It refers to the frequency bands of 3.7–3.98 GHz. This is on the low end of a wider C-band spectrum. Although the C band for radio altimeters falls between the frequency bands of 4-4.5 GHz

Radio Altimeter

- A radio altimeter is an instrument that provides direct height above terrain information to various aircraft system. The radio altimeter uses the radar principle. In a typical radio altimeter setup, there are two antennas. One sends a signal and the other receives it. The signal is sent by the transmitter antenna. This signal is then reflected from the ground or the surrounding area and is then received by the receiver antenna. Since signals travel at the speed of light, distance can be calculated simply by measuring the time it takes for the aircraft to receive the reflected signal.

5G

- 5G is the 5th generation mobile network. It is

a new global wireless standard after 1G, 2G, 3G and 4G networks. 5G enables a new type of network that is designed to connect almost everyone and everything together, including machines, objects, and equipment.

- 5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra-low latency, greater reliability, vast network capacity, increased availability and a more uniform user experience to more users. Higher performance and improved efficiency empower new user experiences and connect new industries.
- Ideally the 5G network speed should be 20 gigabytes per second for downloading and 10 gigabytes per second (Gb / s) for uploading.

Compare

Network	speed	latency
➤ 4G	1 GBPS	60-100 milliseconds
➤ 5G	20 GBPS	up to 5 milliseconds
➤ 6G	1,000 GBPS	up to 1 millisecond

Web 3.0 and 4.0

- Prime Minister Narendra Modi recently launched 5G services in India which will strengthen India's position in this new era of web 3.0 and the upcoming era of web 4.0.
- Web 3.0 and 4.0 is the third and forth iteration of the internet phase respectively.
- Web 3.0 uses block chain technology to make internet intellectually precise, autonomous, open and connected while web 4.0 strives to enhance this technology a notch further, adding higher level of intelligence and sophistication.
- Web 3.0 is a open and transparent network, which is open to community and can monitor the development process, at times may bring changes to it. It uses elements like artificial intelligence and natural language processing which enhances the interaction between the humans and machines, humans and humans while eliminating the need for middlemen.
- Web 4.0 takes a step further, in which the software agents of the user on the internet or on the computer itself can interact with other such agents and work collaboratively on user's behalf.

Web 3.0 for India:

- Web 3.0 and other upcoming era require cross functioning of several technology like high internet speed, smart devices, Artificial Intelligence/ Machine Learning capabilities, and massive computer power.
- India has been the supporter of web 3.0 from the very start, and is home to almost 230 web 3.0 start ups already.
- According to US-India Strategic Partnership Forum Report, Web 3.0 has the potential to

contribute almost USD 1.1 trillion to India's GDP.

- The nation has used this technology for its socio-economic development and greater inclusivity. It has used initiatives like Aadhaar, Jan Dhan, direct benefit transfer, UPI and applications like CoWin to establish a low cost, high impact technology for better life innovation.

Internet of Thing/M2M Technology

- Machine - to - machine communication, often referred to as IoT/M2M, is one of the fastest emerging technologies around the world. M2M communications refer to automated applications which involve machines or devices communicating through a network without human intervention. Sensors and communication modules are embedded within M2M devices, enabling data to be transmitted from one device to another device through wired and wireless communications networks. It is being used to create smart infrastructure using connected devices in various verticals like power, automotive, security and surveillance, remote health management, agriculture, smart home, industry 4.0, smart city etc.

Artificial Intelligence/Machine Learning

- Artificial intelligence generally refers to processes and algorithms that are capable of simulating human intelligence, including those that mimic cognitive functions such as perception, learning, and problem solving. Machine Learning and Deep Learning (DL) are subsets of AI.
- Machine learning is a subset of artificial intelligence that fall within limited memory category in which machine is able to learn and develop over the time.'

'Param Kamrupa' supercomputer in IIT Guwahati

- President of India Draupadi Murmu inaugurated the 'Param Kamrupa' supercomputer facility at the Indian Institute of Technology, Guwahati. Param Kamrup, a supercomputer of its kind in the North East region, is established under the National Supercomputing Mission.
- Supercomputer Param Kamrupa will provide advanced computing, health care technique with solutions to many problems of the region. Many components of this supercomputer have been developed indigenously.

About Supercomputer:

- The supercomputer is a computer with high speed and memory. Such computers can function faster than any other computer of your

generation. They are usually thousands of times faster than ordinary personal computers made at that time. Supercomputer arithmetic work can be done very fast, so they are used for weather prediction, code-breaking, genetic analysis, and other functions that require many calculations.

Application of supercomputer in India:

- To discover genomics and medicine
- For science -based decision support structure etc to address urban environmental issues (meteorological, hydrology, air quality).
- Flood for the river valleys of India for pre -warning and forecast system
- HPC Software Suite for Seismic Imaging to aid Oil and Gas Exploration.

National Supercomputing Mission:

- India has demonstrated its talent to make supercomputers at low cost with its Param series. To further enhance its capacity and meet the requirements, the Government of India launched the National Supercomputing Mission (NSM) in 2015. Under the NSM, there were plans to add R&D institutions and educational institutions in the country using a supercomputing grid with more than 70 high performance computing facilities.
- The Department of Science and Technology (DST) and the Department of Electronics and Information Technology (DEITY) jointly guide the mission. The Center for Development of Advanced Computing (C-DAC) has been tasked with the overall design, development, purpose and commissioning of computers built under this mission. Etos, a French based IT service firm won the contract to make supercomputer parts for C-DAC.

Quantum Technology

Quantum technology is based on the principles of quantum mechanics that describe the behavior of almost everything in particles - atoms, electrons, photons and molecular and sub -original fields. There are 2 basic principles of quantum mechanics:

- **Quantum entanglement:** This explains how two sub - particles may be intimately connected to each other.
- **Quantum Superposition:** This is a theory said that sub - particles are present in several stages simultaneously.

Defense Technology

Prachanda Light Combat Helicopter

- Indian army formally inducted the indigenously built light combat helicopter, Prachand, into its Jodhpur base on 29th September 2022. The

name Prachand denotes fierceness.

- Weighing almost 5800 kg, this combat helicopter is equipped with twin Shakti engines possessing air combat capability and potent ground attack.
- It has combat radius of 500 km, maximum speed of 288 km/h and it can go up to height of 21000 feet, making it ideal for high altitude areas like Siachen etc.
- It is adorned with various stealth features like, crashworthy land gear for better survivability, reduced radar and infra-red signatures, armoured protection systems and night attack capability.
- Further, it has a 20 mm nose gun planted in the front with firing capability of 800 rpm and firing range up to 2 km, a 70 mm rocket pod planted at stub wing, an anti tank guided missile 'Dhruvastra' and a air to air missile 'Mistral-2'

Indigenous weapon systems:

- Beyond visual range (BVR) missiles, Quick response surface-to-air missile (QRSAM), anti-tank missiles like Helina and Nag, India's first anti-radiation missile Rudram, Smart Anti-airfield Weapon (SAAW) etc

Indigenous Aircraft Carrier: INS Vikrant

- Prime Minister Shri Modi launched India's first indigenous aircraft carrier INS Vikrant (IAC-1) in Kochi.
- The name 'INS Vikrant' is originally from India's first aircraft carrier, the British -made aircraft carrier. It was in service from 1961 to 1997. INS Vikrant was a 19,500 tonne magical-class warship, acquired from the UK in 1961. It played an important role in the 1971 war with Pakistan.
- New Vikrant is the first aircraft carrier designed and manufactured for the Indian Navy.
- INS Vikrant is designed by the Navy Design Directorate and is manufactured by Cochin Shipyard Limited (CSL).
- INS Vikrant, with a displacement of 42,800 tonnes, is powered by four general electric engines. It can carry 30 helicopters, fighter aircraft and UAV air wing.
- The indigenous content of the project is about 76%.
- The maximum design speed of 262.5 m long and 61.6 meters wide 'Vikrant' is 28 knots (about 52 km/h) and tolerance is 7500 knots.
- The IAC is equipped with a ski-jump for launching aircraft, and a set of three 'arrestor wires' for their recovery on board.
- It works on Short Take-Off But Arrested Recovery (STOBAR) technology.

Agni Prime Missile

India has successfully test-fired an indigenous developed new generation medium-range ballistic missile, Agni Prime, from the Odisha coast. It is the latest and a sixth variant of the Agni series missiles (under IGMDP - Integrated Guided Missile Development Program).

Key features of Agni Prime Missile:

- It is a two-stage canisterised solid-propellant missile with dual redundant navigation and guidance system. It has an operational range between 1,000 km to 2,000 km. It is launched by DRDO.
- It weighs 50 per cent less than the Agni 3 missile and has new guidance and propulsion systems.
- In addition, since it is canisterised, it can be launched from rail or road, stored for longer periods, and can be transported as per operational requirements.
- It's the first 'declared' MIRV missile in India's missile arsenal.

About Agni Series of Missiles:

- They are the mainstay of India's nuclear launch capability.
- They are long-range, nuclear weapons capable of surface-to-surface ballistic missiles.
- The first missile of the series, Agni-I was developed under the Integrated Guided Missile Development Program and tested in 1989.
- After its success, the Agni series of missiles got separated from IGMDP seeing its strategic significance.

About Integrated Guided Missile Development Program:

- It was conceived by Dr. A.P.J. Abdul Kalam to enable India attain self-sufficiency in the field of missile technology. Initially, 5 missiles were developed under this program but right now Agni missiles are out of this programme.
- **Agni:** Ballistic missiles with different ranges,
- **Trishul:** Short-range low-level surface to air missile.
- **Nag:** 3rd generation anti-tank missile.
- **Akash:** Medium-range surface-to-air missile.

What are ballistic missiles?

- A ballistic missile is a type of missile which uses projectile motion to deliver warheads to a target. These weapons are guided only during relatively brief periods—most of the flight is unpowered. In contrast, cruise missiles are jet-propelled at subsonic speeds throughout their flights.

Energy Sector

Jaitapur Nuclear Power Plant

India and France have discussed ways to expedite the construction of six new European Pressurized

Nuclear Power Reactors (EPRs) with a total capacity of 9900 MW at Jaitapur in Ratnagiri district of Maharashtra.

About the project:

- The project would make Jaitapur the world's largest nuclear power generation site (9900), surpassing Japan's current 7965 MW Kashiwazaki-Kariwa Nuclear Power Plant.
- The six nuclear power reactors, which will have a capacity of 1,650 MW each, will be set up with technical cooperation from France.
- This project will embody the strong partnership between India and France, a commitment to low carbon future, and will directly benefit the state of Maharashtra with thousands of local jobs.

Three stage nuclear development programme:

- The Indian nuclear power programme, launched in 1954, envisaged a three-stage development of nuclear power generation from the country's uranium and thorium resources. The three stages are –
 - » Pressurized Heavy Water Reactor (PHWR)
 - » Fast Breeder Reactor (FBR)
 - » Thorium based Reactor

Nuclear Power in India

Among all the developing countries, India is the country which has generated electricity using indigenously developed, demonstrated and deployed nuclear reactors. India ranks third in terms of electricity generation worldwide by producing 1207 TWh of electricity. Nuclear power is the fifth largest source of electricity for India. India also ranks seventh in terms of number of nuclear reactors, with more than 23 nuclear reactors in 7 power plants across the country producing 6780 MW of nuclear power.

Operational Nuclear Power Plants:

- Kaiga Karnatak
- Kakrapar Gujarat
- Kudankulam Tamil Nadu
- Kalpakkam Tamil Nadu
- Narora Uttar Pradesh
- Rawatbhata Rajasthan
- Tarapur Maharashtra

Type of Batteries

- **Lead Acid batteries:** Its advantage includes mature technology, low cost and ruggedness compared with other battery technologies. However it is heavy and bulky, do not cycle well.
- **Nickel-cadmium batteries:** Its advantage includes Availability in all sizes, can be moved around easily. Environmental concerns related to cadmium.

- **Nickel metal hydride batteries:** Its advantage includes widely used in consumer electronics, addresses the issues arising from the environmental effects of cadmium. However it is not considered for large stationary applications because of high cost of Nickel, also have a high self-discharge rate and generally take a long time to charge.
- **Lithium-ion batteries:** Its advantage includes Superior with higher energy densities, lighter and smaller. The main concern is related to Raw material dependency, challenges in manufacturing, overcharging in certain types.
- **All solid-state batteries:** Its advantage includes High energy densities and charge/discharge current limits, a higher life even in harsh conditions. It's Challenges in both manufacturing and fundamental technology understanding.
- **Metal air battery:** Its advantage includes High energy density than lithium-ion batteries. Its disadvantage includes Not electrically rechargeable, lower charge/discharge rates compared with Lithium-ion batteries
- **Sodium ion batteries:** Its advantage includes wider operational temperature range and safer, cheaper than Lithium-ion battery. However it has Lower energy density than lithium-ion batteries.

Terms in News

- **Extended reality:** Extended reality, or XR refers to all real-and-virtual combined environments and human-machine interactions generated by computer technology. o XR is an umbrella term that covers virtual reality (VR), augmented reality (AR), mixed reality (MR).
- **Dark data:** Dark data is data which is acquired through various computer network operations but not used in any manner to derive insights or for decision making.
- **Click Chemistry:** Click Chemistry was introduced by Barry Sharpless and coworkers in 2001 to describe highly efficient and selective reactions that are mainly based on carbon-hetero bond formations. The term Click suggests that the molecules are as easily joined together as mechanical snap fasteners.
- **Flex fuel:** Flex fuel vehicles have an internal combustion engine, but instead of regular petrol, it can run on blended fuel — petrol with ethanol or methanol.

MCQs based on Preliminary Exam

01. Consider the following statements-

1. Insulin is formed by both natural gene cloning and chemical gene cloning methods of bio technology.
2. Somato-statin hormone controls the secretion of human's growth hormone and insulin.
3. Interferon is a protein that acts as the first line of defense at the time of virus attack on body.
4. In DNA vaccines there is lack of genes that can regenerate pathogens.

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

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

02. Consider the following statements-

1. Out of total DNA, around 1000 base sequences represent the scene of population change.
2. These bases are also known as Variable Number of Tandem Repeats (VNTRs).
3. 99% base-sequence are same in human's DNA.
4. The success of DNA finger printing is based on identification of small fragments of DNA.

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

- (a) 1 and 4 (b) 2 and 3
(c) 2, 3 and 4 (d) All of the above

03. Consider the Assertion (A) and Reason (R) and choose your answer by codes given below?

Assertion (A) : DNA vaccines are more effective and safe in nature than other traditional vaccines.

Reason (R) : In this method specific gene has been used for activation of immune system of body in place of living or non living micro organisms.

Code :

- (a) Both (A) and (R) are individually true and (R) is correct explanation of (A)
(b) Both (A) and (R) are individually true but (R) is not correct explanation of (A)
(c) (A) is true but (R) is false
(d) (A) is false but (R) is true

04. Consider the following statements-

1. Brain fingerprinting is based on P-300 complex which is fragment of DNA.

2. Bio Remediation is the method to develop such micro organism which destroys bio-waste and toxic substances.

3. In ex-citu remediation pollutants are treated at the place where they exist.

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

- (a) 1 only (b) 1 and 3
(c) 2 and 3 (d) All of the above

05. Match the list-I with list-II and select the correct answer using the codes given below?

List-I List-II
(Types of stem cell) (Potency)

- | | |
|----------------|---|
| A. Totipotent | 1. Culturing only one type of cell |
| B. Pluripotent | 2. Culturing some types of cell |
| C. Multipotent | 3. Culturing cell of all other parts of body except the placenta. |
| D. Unipotent | 4. Culturing cells of all organs of the body including placenta. |

Code :

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 4 | 3 | 2 | 1 |
| (b) | 3 | 4 | 1 | 2 |
| (c) | 3 | 4 | 2 | 1 |
| (d) | 4 | 3 | 1 | 2 |

06. Consider the following statements-

1. In order to develop the first generation of golden rice, the gene of a bacterium named *pantoea ananotis* and gene of maize was transferred to it.

2. In order to develop the second generation of golden rice, the gene of a bacterium named *pantoea ananotis* and gene of a flower named daffodil was transferred to it.

Which of the above statements is/are incorrect?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

07. Consider the following statements regarding Anglo- Mysore war:

1. In first Anglo- Mysore war Haidar Ali was defeated by British armies.
2. Treaty of Salbai enabled the British to exert pressure on Mysore.
3. British army under Eyre Coote defeated

Haidar Ali in 1781.

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

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

08. Consider the following statements regarding existence of an extremist Nationalist during the national movement:

1. With the beginning of the national movement, a school of militant nationalism had existed in the country.
2. This school was represented by leaders Rajnarain Bose and Ashwini Kumar Dutt in Bengal and Vishnu Shastri Chiplunkar in Maharashtra.

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

09. Consider the following statements -

1. Amba Prasad is known as great supporter of persian revolution so that he was given the title of 'SUF'.
2. Vallabhbhai Patel got the title of 'Sardar' during the Bardoli Satyagraha.
3. M.V. Iyengar was given the title of "NARKESAR" on his distinguish work for the upliftment of women and depressed classes.

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

- (a) 1 only (b) 2 only
(c) 3 only (d) None of these

10. The eligibility criteria quoted by Sarkaria Commission for selection of Governors are:

1. He should be a person from outside the State.
2. He should not be a detached figure and should be intimately connected with the local politics of the States so that he can understand the ground reality well.
3. The Governor should be appointed by the President from a list of three eminent persons suggested by the Chief Minister.

Which of the statements given above is/are correct?

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

11. Article 164 states that there shall be a Minister in charge of tribal affairs in certain states who may in addition be in-charge of the welfare of the Schedule castes and backward classes or

any other work.

This provision applies to which of the following states?

1. Chhattisgarh
2. Jharkhand
3. Madhya Pradesh
4. Odisha
5. Bihar

Select the correct answer using the code given below.

- (a) 1, 2 and 3
(b) 1, 2, 3 and 4
(c) 1, 2 and 4
(d) All of the above

12. Which is the correct chronological sequence of the following Nawabs of the Carnatic?

1. Chanda Saheb
2. Anwar-ud-din
3. Saadutullah Khan
4. Dost Ali

Select the correct answer from the code given below:

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

13. Which of the following statements regarding the Dual System of Training (DST) is/are correct?

1. All the courses under the DST have been aligned with the National Skill Qualification Framework.
2. Industries related to both the engineering trades and non-engineering trades are eligible under DST.
3. It is an Indian origin model of training which is being adopted by most of the countries.

Select the correct answer using the code given below:

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

14. Consider the following statements regarding National Pension System:

1. It was introduced from January 2003.
2. The scheme is structured into three kinds of tiers.

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

15. With reference to the Interoperable Criminal Justice System Project consider the following

statements:

1. It is a central sector scheme.
2. It comes under the Ministry of External Affairs.
3. It is a national platform for enabling integration of the main IT system used for the delivery of criminal justice in the country.

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

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

16. Char Chinari island is located in which city?

- (a) Kolkata
- (b) Guwahati
- (c) Srinagar
- (d) Thiruvananthapuram

17. Consider the following statements regarding the Indian Grey Hornbill:

1. It is a fairly common hornbill species found only in the Indian subcontinent.
2. It's IUCN status is vulnerable.

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

18. The Pal – Dhadhavi Massacre took place at which place?

- (a) Tamil Nadu
- (b) Gujarat
- (c) Maharashtra
- (d) Madhya Pradesh

19. Consider the following statements regarding the Greater Maldives Ridge:

1. It is located in the eastern Indian Ocean.
2. The Ridge is 'aseismic' which means that it is not associated with earthquake activities.

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

20. Consider the following statements regarding the Council of Europe:

1. It was founded in 1949 by the 'Treaty of London'.
2. The council can make binding laws and has the power to enforce selected

international agreements reached by European states.

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

21. Exercise Eastern Bridge – VI is held between which two countries?

- (a) India and UAE
- (b) India and Qatar
- (c) India and Oman
- (d) India and Saudi Arabia

22. Consider the following statements regarding the Geneva Convention:

1. It contains the most important rules limiting the barbarity of war.
2. The convention contains '3 treaties' and 'three additional protocols'.

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

23. Razzaza Lake is situated in which country?

- (a) Turkey
- (b) Syria
- (c) Azerbaijan
- (d) Iraq

24. The base year of Index of eight core industries is:

- (a) 2016-17
- (b) 2011-12
- (c) 2012-13
- (d) 2008-09

25. Benin Bronzes are a group of over 3000 sculptures and artworks from the ancient Kingdom of Benin which dates back to at least the 16th century belongs to which country?

- (a) Gambia
- (b) Nigeria
- (c) Sudan
- (d) Eritrea

26. Sohrai festival is celebrated by which tribe?

- (a) Santhal
- (b) Tharu
- (c) Gaddi
- (d) Bakharwal

27. It is located in the right bank of river Siang and this park has been recognized as one of the 18 biodiversity hotspots. Many endangered species like snow clouded leopard, golden

- langur, hornbill etc are spotted here. The above paragraph is talking about which National Park?
- Dibru Saikhowa National Park
 - Kaziranga National Park
 - Manas National Park
 - Mouling National Park
28. Consider the following statements regarding Kalanamak rice:
- It is a basmati centered rice variety grown primarily in the Terai region of Uttar Pradesh.
 - It is described as 'Buddha Prasad'.
- 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 |
29. It is a form of hidden inflation and it refers to downsizing a product while keeping its price the same. The above statement is indicating about which inflation?
- | | |
|-------------------|-----------------|
| (a) Stagflation | (b) Skewflation |
| (c) Shrinkflation | (d) Reflation |
30. Theyyam is a popular ritual form of dance worship in which two states of India?
- Kerala and Tamilnadu
 - Kerala and Karnataka
 - Tamilnadu and Karnataka
 - Kerala and Andhra Pradesh
31. Consider the following statements regarding International Mother Language Day:
- It is celebrated on 21 February .
 - It was started in the year 2002.
- Which of the statement/s given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
32. Which of the following are included in the eight core industries of Indian Economy?
- Electricity
 - Steel
 - Biogas
 - Refinery products
- Select the correct answer from the code given below:
- | | |
|----------------|-------------------|
| (a) 1, 2 and 3 | (b) 1, 3 and 4 |
| (c) 1, 2 and 4 | (d) 1, 2, 3 and 4 |
33. Consider the following statements:
- Inflation is more likely to have a significant positive effect on a currency's value and foreign exchange rate.
 - Inflation is independent to interest rates.
- Which of the above statement/s is/are incorrect?
- | | |
|------------------|---------------------|
| (a) 1 only | (b) 2 only |
| (c) Both 1 and 2 | (d) Neither 1 nor 2 |
34. Which of the following are released by Labour Bureau in the Ministry of Labour?
- CPI for Industrial Workers (IW)
 - CPI for Urban Non-Manual Employees (UNME)
 - CPI for Rural Labourers (RL)
 - CPI for Agricultural Labourers (AL)
- Select the correct answer from the code given below:
- | | |
|----------------|-------------------|
| (a) 1 and 3 | (b) 1, 2 and 3 |
| (c) 1, 3 and 4 | (d) 1, 2, 3 and 4 |
35. Consider the following statements regarding Nano Technology:
- Nanotechnology is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 1000 nanometers.
 - Stained-glass windows are an example of how nanotechnology was used in the pre-modern era.
 - Nanostructured materials can have different magnetic properties compared to other forms or sizes of the same material.
- Which of the above statement/s is/are correct?
- | | |
|-------------|----------------|
| (a) 1 and 2 | (b) 2 only |
| (c) 2 and 3 | (d) 1, 2 and 3 |
36. Consider the following statements regarding Energy produced from Nuclear Fusion:
- Energy produced from Nuclear Fusion is similar to the way energy is produced in the Sun.
 - Nuclear Fusion energy is of low carbon, safer than how nuclear energy is produced at present.
 - A kilogram of fusion fuel contains about 100 million times as much energy as a kilogram of coal, oil or gas.
- Which of the above statement/s is/are correct?
- | | |
|-------------|----------------|
| (a) 1 only | (b) 1 and 2 |
| (c) 1 and 3 | (d) 1, 2 and 3 |

37. Consider the following statements regarding Indian Space Programme:
1. Aryabhata was the first Indian satellite and it carried scientific experiments to investigate X-ray astronomy and solar neutrons.
 2. Mars Orbiter Mission was ISRO's first interplanetary mission.
 3. Chandrayaan-1 was India's first mission to Moon.
- Which of the above statement/s is/are correct?
- (a) 1 and 2 (b) 1 and 3
 (c) 2 and 3 (d) 1, 2 and 3
38. Consider the following statements:
1. The process of copying genetic information from one strand of the DNA into RNA is termed as transcription.
 2. Bacteria contain only mRNA (messenger RNA) and do not have any tRNA (transfer RNA).
 3. RNAs are not needed to synthesize a protein in a cell.
- Which of the above statement/s is/are correct?
- (a) 1 only (b) 1 and 2
 (c) 1 and 3 (d) 1, 2 and 3
39. Consider the following statements:
1. All power in a democracy ultimately belongs to the country's people.
 2. Finance Commission (FC) is a constitutionally mandated body that balances revenue power with expenditure responsibilities.
- 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
40. Consider the following statements:
1. All Government bills automatically go to Parliamentary committees for examination.
 2. Any member of the Parliament can oppose the introduction of a bill by stating that it initiates legislation outside the legislative competence of the Parliament.
- 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
41. Consider the following statements:
1. All India Service (AIS) officers are recruited by the Union Public Service Commission (UPSC) and their services are placed under various State Cadres.
 2. It is incumbent upon the members of All India Services to serve both under the State and the Centre.
- 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
42. The Protection of language, script and culture of minorities is provided under which of the following rights?
- (a) Right to freedom
 (b) Right to freedom of religion
 (c) Cultural and educational rights
 (d) Right against exploitation
43. Consider the following statements regarding National Commission for Women (NCW):
1. It has all the powers of a High court.
 2. It can attend to cases of harassment of women and order appropriate punishments.
 3. It can review the Constitutional and Legal safeguards for women.
 4. It facilitates redressal of grievances and advise the Government on all policy matters affecting women.
- Which of the above statement/s is/are correct?
- (a) 1, 3 and 4
 (b) 2, 3 and 4
 (c) 3 and 4
 (d) 1, 2, 3 and 4
44. Consider the following statements regarding None Of The Above (NOTA) provision in EVMs in India:
1. It was introduced according to the directions of Supreme Court.
 2. The right to say "none of the above" constituted a basic right of the voters.
 3. 'NOTA' option enables the electors to exercise their right to reject without violation of the secrecy of their decision.
- Which of the above statement/s is/are correct?
- (a) 1 and 2 (b) 1 and 3
 (c) 2 and 3 (d) 1, 2 and 3

45. Consider the following statements regarding the questions posed by members in the Lok Sabha during the Question Hour:

1. Generally, the first hour of a sitting of Lok Sabha is devoted to the Questions and this hour is called the Question Hour.
2. According to Rules of Procedure and Conduct of Business in Lok Sabha, Starred questions are to be replied orally in the House only by the Cabinet Ministers.
3. In Starred questions, members can also ask supplementary questions.

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

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

46. Which of the following bodies is the designated authority to examine and act upon purported malpractices in local body elections?

- (a) The Election Commission of India (ECI)
(b) Zila Parishad
(c) District Planning Committee (DPC)
(d) State Election Commission

47. Consider the following statements:

1. Article 44 of the Constitution says the 'state shall endeavour' 'by suitable legislation' to secure for citizens a uniform civil code throughout the territory of India.
2. The duty of the court is far greater in other directive principles than in Article 44.
3. The definition of 'State', under Article 12, also includes local or other authorities within the territory of India or under the control of the Government of India.

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

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

48. Consider the following statements:

1. The concepts of faith, belief and worship as enshrined in the Preamble are the foundations of Articles 25 and 26 of the Constitution of India.
2. The Supreme Court under Article 142 of the Constitution can pass any order to carry out for doing complete justice being in the public interest, while upholding the Constitution of India.

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

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

49. Consider the following statements regarding the financial role of the Governor in a state:

1. He can make advances out of the Contingency Fund of the state to meet any unforeseen expenditure.
2. He constitutes a State Finance Commission after every five years to review the financial position of the panchayats and the municipalities.
3. He sees that the Annual Financial Statement of the state is laid before the state legislature.

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

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

50. Which of the following are generally the features of Parliamentary Government?

1. Separation of powers between the legislative and executive organs.
 2. Membership of the ministers in the legislature
 3. Dissolution of the lower House
 4. Majority party rule
- (a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2, 3 and 4

ANSWER

1.	(d)	14.	(d)	27.	(d)	40.	(b)
2.	(d)	15.	(c)	28.	(b)	41.	(b)
3.	(a)	16.	(c)	29.	(c)	42.	(c)
4.	(b)	17.	(a)	30.	(b)	43.	(c)
5.	(a)	18.	(b)	31.	(a)	44.	(d)
6.	(d)	19.	(b)	32.	(c)	45.	(c)
7.	(a)	20.	(a)	33.	(c)	46.	(d)
8.	(c)	21.	(c)	34.	(c)	47.	(c)
9.	(b)	22.	(b)	35.	(c)	48.	(d)
10.	(d)	23.	(d)	36.	(b)	49.	(d)
11.	(b)	24.	(b)	37.	(d)	50.	(b)
12.	(b)	25.	(b)	38.	(a)		
13.	(b)	26.	(a)	39.	(c)		

MCQs Based on Current Affairs

1. With respect to Global Quality Infrastructure Index (GQII), consider the following statements-
1. It is given by the World Bank Group.
 2. The calculation of ranking is based on three parameters – Metrology, Standards and Accreditation.
 3. Germany ranks first in this index.

Select the correct statement-

- A. Statements 1 and 2 are correct.
- B. Statements 1 and 3 are correct.
- C. Statements 2 and 3 are correct.
- D. All the statements are correct.

Answer – C

2. Consider the following statements regarding organ donation.

1. The most common organ transplant is for the kidney.
2. The National Organ and Tissue Transplant Organization is the apex center for the procurement and distribution of organs and tissues in India.
3. India is the third largest transplant country in the world.

Which of the above statements are correct?

- A. 2 only
- B. 1 and 2
- C. 2 and 3
- D. All Of The Above

Answer – D

3. Consider the following statements regarding Prohibition of Child Marriage Act 2006.

1. The Prohibition of Child Marriage Act 2006, states that child marriage is illegal and void at the option of the contracting party having children.
2. The Act punishes whoever performs, conducts, directs or abets any child marriage.
3. The Act does not prescribe the minimum marriageable age for men.

Which of the above statements is/are correct?

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

Answer- A

4. Which of the following statements best describes the term 'unicorn' seen in the news in the context of business?

1. Startup that is privately owned with a

valuation of over \$1 billion.

2. Pooled investment funds that manage investors' money.
- C. To get positive return on investment.
- D. A savings product that earns a lump sum interest for a fixed period.

Answer- A

5. With reference to OECD, consider the following statements-

1. It measures the Services Trade Restrictiveness Index (STRI).
2. It is an official observer of the United Nations.

Select the correct options-

- A. Statement 1 is correct.
- B. Statement 2 is correct.
- C. Both the statements are correct.
- D. None of the statements is correct.

Answer- C

6. With reference to digital payments, consider the following statements-

1. Singapore is the first country with which cross-border person-to-person (P2P) payment facilities have been launched.
2. This has been allowed by linking India's UPI and Singapore's Pay Now.

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

7. Consider the following statements regarding *Primencium parvum* algae

1. It is adapted to brackish salinities.
2. Due to the excessive blooming of this algae, fishes die.

Which of the above statements is/are correct?

- A. Only 1
- B. Only 2
- C. Both 1 and 2
- D. None of these

Answer- B

8. Where is Thwaites Glacier located?

- A. In the Arctic
- B. In Antarctic
- C. In eastern Russia
- D. Western Russia

Answer: B

9. Which of the following organisations has recently been declared as terrorist organisations under the Unlawful Activities (Prevention) Act, 1967 by the Ministry of Home Affairs?

1. Khalistan Tiger Force
2. Jammu and Kashmir Ghaznavi Force
3. Jaish-e-Mohammed

Select the correct answer using the code given below.

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

Answer- B

10. Consider the following statements regarding India-China bilateral relations

1. The last meeting of the WMCC was held in October last year.
2. In September last year, Indian and Chinese troops retreated on patrol pillar (15) in gogra-hot spring area of eastern Ladakh.
3. Indian and Chinese troops had a face-off in The Tawang sector of Arunachal Pradesh in December 2022.

Which of the above statements is/are correct?

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

Answer-D

11. Consider the following statements about Uying Festival:

1. It is a hunting festival followed by the Adi tribesmen.
2. It is the first festival of the Adi 'new year'.

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

12. Which of the following are the Geoengineering techniques designed to tackle the effects of climate change?

1. Using unmanned ships to increase above-

ocean cloud cover by spraying sea water into the air.

2. Floating thousands of tiny mirrors in space between Earth and the sun.
3. Artificial trees that pull the CO₂ from the atmosphere using plastic polymers.
4. Adding large quantities of lime to the Ocean water to increase the amount of CO₂ absorption by the oceans.

Select the correct answer code:

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

Answer- D

13. Consider the following statements about World Sustainable Development Summit (WSDS):

1. It is the annual flagship event of UNEP.
2. It is the only Summit on global issues, taking place in the developing world.

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

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

Answer- A

14. With reference to Members of Parliament Local Area Development Scheme, consider the following statements:

1. The MPLADS is a Plan Scheme partially funded by the Government of India.
2. The Ministry of Statistics and Programme Implementation has been responsible for the policy formulation, release of funds and prescribing monitoring mechanism for implementation of the Scheme.
3. The annual MPLADS fund entitlement per MP constituency is Rs 5 crore.

Which of the statements given above is/are correct?

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

Answer: B

Personality



Govind Ballabh Pant's

Pandit Govind Ballabh Pant ji is always remembered for the division of states on the basis of language and for making important contribution in the landlord abolition program in Uttar Pradesh. Bharat Ratna Govind Ballabh Pant's death anniversary was on March 7, 2022. Govind Ballabh Pant was born on 10 September 1887 in Khoont village, Almora, Uttarakhand. He joined Allahabad University in the year 1905 and passed the law examination in 1909. Prior to this, he had formed Happy Club in Almora. Govind Ballabh Pant's father's name was Shri 'Manorath Pant' and his mother's name was Govindi Bai. Shri Manorath Pant moved to Pauri Garhwal with his wife within three years after the birth of Govind. He stayed in Almora permanently. He was brought up by his aunt 'Dhani Devi'.

Govind took education at home till the age of 10 years. In 1897, Govind was admitted to the primary school in the local 'Ramje College'. In 1899, at the age of 12, he was married to 'Ganga Devi', the daughter of 'Pt Baladutt Joshi', at that time he was in class seven. Govind passed the lower middle examination in Sanskrit, Mathematics, English with distinction in the first division. Govind also passed the Inter examination from this school. After this, he took admission in B.A. at Allahabad University with Mathematics, Politics and English Literature as subjects.

He started his career as a lawyer from Kashipur.

Govind Ballabh Pant ji's way of fighting the case was unique, the clients who did not give correct information about their cases, Pant ji did not take their cases at all. Pant ji's advocacy was famous in Kashipur. Kashipur was more aware than other cities of Kumaon from political and social point of view, due to which the British had included Kashipur city in the blacklist. Because of Pantji's leadership, the British used to call Kashipur as "Govindgarh". The Kakori case gave him recognition and prestige. He entered politics in the year 1921 and in the same year he was elected to the Legislative Assembly of the United Provinces of Agra and Oudh. In 1914, 'Prem Sabha' and 'Udayraj Hindu High School' was established in Kashipur by Pant with his efforts. In 1916, Pant was included in the 'Notified Area Committee' of Kashipur. In the freedom struggles of 1921, 1930, 1932 and 1934, Pant spent almost 7 years in jail. 29 November 1927, while protesting in Lucknow against the Simon Commission, Pant suffered several injuries in the lathi charge of the British, due to which his neck was bowed. He fought against the coolie forced labour system in the Kumaon region of Uttarakhand. Under the Coolie Begar Act, the local people had to carry the goods of British officers for free. Pant was against it. He also fought the case of Bismil and Khan in the Kakori case. He also mediated when there was a difference between Congress and Subhas Chandra Bose. He was arrested for signing the Quit India Resolution of 1942 and spent three years in jail with Nehru at Ahmednagar Fort. Earlier in 1932, Pant also stayed with Nehru in the jails of Bareilly and Dehradun. During that time they became friends. In the year 1937, Pant became the first Prime Minister of the United Provinces and in 1946 became the first Chief Minister of Uttar Pradesh. He won from Bareilly Municipality in the 1951 UP assembly elections. On January 10, 1955, he took over as the Home Minister of India. His main contribution as Home Minister was to divide the states on the basis of language and to establish Hindi as the official language of India. In the year 1957, on Republic Day, the patriot, efficient administrator and speaker Pant ji was honoured with India's highest title 'Bharat Ratna'. Govind Vallabh Pant Ji has also contributed significantly in getting Hindi the status of the official language. Govind Ballabh Pant died on March 7, 1961.

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