

GES REPORTER

August 2022
Monthly Current Affairs Compilation
PDF

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Code: SPLIVE

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'Wheat waiver' WTO

- One of the cardinal demands of India in the World Trade Organization (WTO) and rightly so has been to find a permanent solution to the issue of public stockholding (PSH) of food to protect India's food security (PSH policy).
- India's PSH policy is based on procuring food from farmers at an administered price (minimum support price or MSP), which is generally higher than the market price.
- The PSH policy serves the twin objectives of offering remunerative prices to farmers and providing subsidized food to the underprivileged.
- However, under WTO law, such price support-based procurement from farmers is counted as a trade-distorting subsidy, and if given beyond the permissible limit, breaches WTO law.
- Currently, India has temporary relief due to a 'peace clause' that bars countries from bringing legal challenges against price support-based procurement for food security purposes.
- However, a permanent solution to this issue is still not in the offing.
- The WTO ministerial meeting in June at Geneva did precious little to address this issue.
- Paragraph 10 of the declaration on food security adopted at the Geneva ministerial states: "We recognize that adequate food stocks can contribute to the realization of Members' domestic food security objectives and encourage Members with available surplus stocks to release them on international markets consistently with WTO rules"
- India insists that it should also be allowed to export food, most notably wheat, from the pool of the food grain procured under the MSP
- WTO law proscribes countries from exporting food grain procured at subsidized prices.
- There is a sound economic rationale behind it.
- Allowing a country to export food grain procured at subsidized prices would give that country an unfair advantage in global agricultural trade.
- Paragraph 10 of the Geneva ministerial food security declaration, which states that countries may release surplus food stocks in the international market in accordance with WTO law.
- Debatably, the WTO may agree to a temporary waiver to allow the export of wheat from public stockholdings given the ongoing food crisis in some countries.

- In fact, before the WTO ministerial meeting, India reportedly requested such a waiver.
- As per Article IX.3 of the WTO Agreement, waivers can be adopted only in “exceptional circumstances”.
- The WTO filibustered for two years acknowledging a once-in-a-century pandemic such as COVID-19 as an “exceptional circumstance” for the IP waiver.
- Thus, the possibility of it recognizing an ongoing war between two nations as an “exceptional circumstance” to adopt a waiver for permitting wheat exports from public stocks is profoundly remote.
- The legal framework for the INSTC is provided by a trilateral agreement signed by India, Iran, and Russia at the Euro-Asian Conference on Transport in 2000.
- Since then Kazakhstan, Belarus, Oman, Tajikistan, Azerbaijan, Armenia, and Syria have signed instruments of accession to become members of the INSTC.
- Once fully operational, the INSTC is expected to reduce freight costs by 30% and the journey time by 40% in comparison with the conventional deep sea route via the Suez Canal.
- India’s investment in the INSTC is exemplified by its involvement in Iran’s Chabahar port and the construction of a 500-km Chabahar-Zahedan railway line.

THE HINDU

INSTC

- Last week, RailFreight.Com reported that two 40-ft containers of wood laminate sheets crossed the Caspian Sea from Russia’s Astrakhan port, entered Iran’s Anzali port, continued their southward journey towards the Arabian Sea, entered the waters at Bandar Abbas and eventually reach Nhava Shiva port in Mumbai.
- The journey signalled the launch of the International North South Transport Corridor (INSTC), a 7,200-km multi-modal transport corridor that combines road, rail, and maritime routes connecting Russia and India via central Asia and Iran.
- Once completed, this infrastructure will allow India access to Afghanistan and Central Asia
- The India Ports Global Limited, a joint venture between the Jawaharlal Nehru Port Trust and Kandla Port Trust, will develop the port along with Iran’s Aria Banader.
- IRCON International will contribute to constructing the railway line.
- For India, the INSTC achieves several things all at once.
- Firstly, India can now bypass Pakistan to access Afghanistan, central, Asia and beyond.
- Second, the INSTC can shape a north-south transport corridor that can

complement the east-west axis of the China-led Belt and Road Initiative (BRI).

- India's founding role in both the INSTC and the Quad exemplify its departure from non-alignment to multi-alignment.
- The INSTC offers a platform for India to closely collaborate with Russia, Iran and Central Asian republics.
- That two of its partners are subject to Western sanctions hasn't prevented India from collaborating with the U.S., Japan, and Australia as part of the Quad to create and safeguard a free and open Indo-Pacific.

THE HINDU

Sec 295(A) OF IPC

- The closest equivalent to a blasphemy law is Section 295(A) of the Indian Penal Code (IPC), which punishes any speech, writings, or signs that "with premeditated and malicious intent" insult citizens' religion or religious beliefs with a fine and imprisonment for up to three years.
- The legality of Section 295(A) was affirmed by a five-judge Bench of the Supreme Court.
- The court said that the punishment under Section 295(A) deals with aggravated form of blasphemy which is committed with the

malicious aim of offending any religious sensibilities.

- Insulting a religion may be disputed but should not be legally outlawed.
- The reason for this is because hate speech laws are predicated on the critical distinction between criticising religion and encouraging prejudice towards individuals because of their faith.
- Blasphemy laws which prohibit, in general criticism in general are incompatible with the principles of a democratic society.

THE HINDU

HYBRID ELECTRIC VEHICLE

- In recent months, automakers Maruti Suzuki, Toyota and Honda have launched hybrid electric vehicles in India, offering car buyers more choices in the nascent electric vehicle market.
- These new hybrid electric vehicles from different automakers are relying on hybrid technology and its advantages over conventional internal combustion engine (ICE)-powered vehicles to change car buyers' minds.

What is a hybrid electric vehicle?

- A hybrid electric vehicle (HEV) uses an ICE (a petrol/diesel engine) and one or more electric motors to run.

- It is powered by the electric motor alone, which uses energy stored in batteries, by the ICE, or both.
- The powertrain of the HEV is more complex than a regular ICE-powered car as it has EV components and a conventional ICE.
- That means a typical HEV will have a low-voltage auxiliary battery, a traction battery pack to store electricity for the electric motor, an electric generator, an AC/DC converter, a power electronics controller, a thermal system to maintain working temperature, an ICE, a fuel tank, a fuel filler, a transmission and an exhaust system.
- A series-parallel HEV offers a combination of both models and allows to split power, wherein power is routed from the ICE alone or from the battery to the electric motor to drive the vehicle
- The efficiency of HEVs and EVs will in large part be determined by their ability to recover as much energy as possible while braking, with a higher degree of energy recovery lowering fuel consumption.
- The amount of recoverable energy depends upon factors like vehicle speed and stopping pattern.
- The adoption of regenerative braking technology in the auto industry is increasing on account of the operating efficiency of vehicles

through reduced fuel consumption and the extended range of batteries.

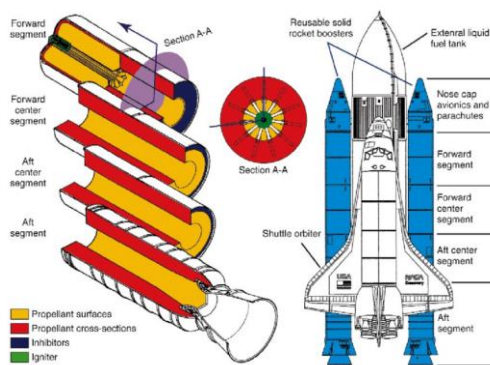
What are the different types of HEVs?

- The HEVs can be categorised into micro, mild and full hybrid vehicles, based on the degree of hybridisation.
- The hybrid variants of the Maruti Suzuki's Grand Vitara and the Toyota's Urban Cruiser Hyryder can be classified as full and mild hybrids.
- A full HEV will have a larger battery and a more powerful electric motor compared with a mild HEV. As a result, a full HEV can power the vehicle for longer distances using just electric mode,
- Whereas a mild HEV cannot drive using only the electric motor and uses the battery at traffic lights or in stop-and-go traffic to support the ICE.
- Micro hybrids do not offer electric torque assistance as they lack an electric motor, but they have an idle stop-start system and energy management functions.
- Full HEVs offer better fuel economy compared with the other two types of HEVs but they also cost more than them.

THE HINDU

BOOSTER ROCKET

- A Chinese booster rocket made an uncontrolled return to earth.
- The Solid Rocket Boosters (SRBs) operate in parallel with the main engines for the first two minutes of flight to provide the additional thrust needed for the Orbiter to escape the gravitational pull of the Earth.



THE HINDU

Rupees vs Dollar

- A number of countries, including India, are now considering the use of other currencies to avoid the U.S. dollar and its hegemonic role in settling international transactions
- In recent times, India has been taking an active interest in having the rupee used for trade and the settlement of payments with other countries, which include Russia, now facing sanctions.
- The advantages India is currently seeking in these arrangements include avoidance of transactions in the highly priced dollar which has an exchange value of ₹80, impacting the Indian economy with inflation, capital flight.
- There are quite a few problems that may prevail in implementing the desired rupee payments and avoiding dollar transactions.
- Apart from issues that concern an agreed exchange rate between the rupee and the ruble (R-R), two volatile currencies, there is also the question of the willingness of private parties (companies, banks) to accept the rupee for trade and settlements.
- The fear continues even after the recent Congressional approval of those purchases as a special case in the backdrop of Chinese aggression.
- Moreover, the deals between India and Russia, especially on oil, can be considered by the West as 'indirect back door support' as India is importing Russian crude at a 30% discount, processing at refineries in Gujarat which include Reliance, and then exporting those to the West.
- Crucial aspects of the bilateral trade and payments agreement arrangement included: participation by state-trading units alone; fixed exchange rates as agreed upon by trade partners, and the offer of credit by countries that had a trade surplus to countries with a trade deficit.

THE HINDU

Human health and animal health

- India has a livestock population of 1.6 billion that in turn translates into a scenario where approximately 280 million farmers rely on the livestock and related industries for livelihood.
- From the perspective of trade, the dairy industry in the country is valued at \$160 billion, while the meat industry is valued at \$50 billion.
- In addition, livestock and related activities have significant overlap with wildlife and humans.

- Statistics indicate that globally, we have witnessed around 9,580 instances of disease outbreaks from 2000 to 2010, of which 60% of diseases were zoonotic in nature
- A major loophole in the context of pandemic preparedness can be attributed to the fact that it has largely been human-centric, leaving a large unaddressed gap for diseases of pandemic potential in animals.
- The Department of Animal Husbandry in Government of India has been working towards increased investment in preparedness to protect health and building economic resilience so that India could become a world leader in animal pandemic preparedness.
- To this end, the Department of Animal Husbandry and Dairying (DAHD) has set up a dedicated 'One Health Unit' in collaboration with the Gates Foundation.
- One of the primary focus areas of the unit has been on coming up with an "animal pandemic preparedness" model by creating a mechanism for storage and seamless exchange of data and information on livestock health this will be implemented through the National Digital Livestock Mission (NDLM)
- To incentivize the growth of the animal health industry in India, companies can now avail incentives for setting up or expansion of animal

vaccines and related infrastructure under the Animal Husbandry Infrastructure Fund.

- **Alpha Fold - X-ray crystallography, Nuclear magnetic resonance (NMR), Cryo-electron microscopy (Cryo-EM)**

What is Alpha Fold?

- AlphaFold is an AI-based protein structure prediction tool.
- It is based on a computer system called deep neural network. Inspired by the human brain, neural networks use a large amount of input data and provides the desired output exactly like how a human brain would.
- The real work is done by the black box between the input and the output layers, called the hidden networks.
- Alpha Fold is fed with protein sequences as input.
- When protein sequences enter through one end, the predicted three-dimensional structures come out through the other.
- It uses processes based on "training, learning, retraining and relearning."
- The first step uses the available structures of 1,70,000 proteins in the Protein Data Bank (PDB) to train the computer model.
- Then, it uses the results of that training to learn the structural predictions of proteins.

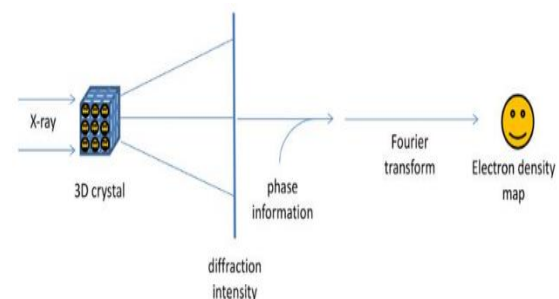
What are the implications of this development?

- Proteins are the business ends of biology, meaning proteins carry out all the functions inside a living cell.
- Therefore, knowing protein structure and function is essential to understanding human diseases.
- Scientists predict protein structures using x-ray crystallography, nuclear magnetic resonance spectroscopy, or cryogenic electron microscopy.
- These techniques are not just time-consuming, they often take years and are based mainly on trial-and-error method.

X-ray crystallography

- X-ray crystallography uses X-ray to determine the position and arrangement of atoms in a crystal.
- The most classical method of X-ray crystallography is single crystal X-ray diffraction, in which crystal atoms cause the incident X-ray beam to produce scattered beams.
- When the scattered beams land on the detector, these beams produce a speckle diffraction pattern.
- As the crystal is gradually rotated, the angle and intensity of these diffracted beams can be measured, and then a three-dimensional image of the electron density within the crystal is generated.
- Based on this electron density, the average position of atoms in the

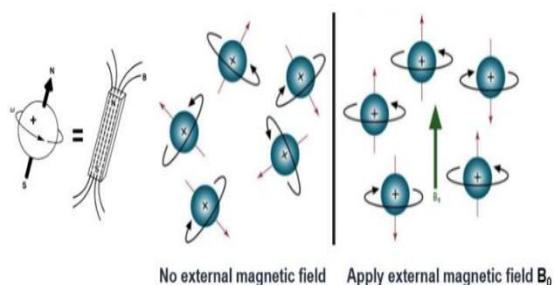
crystal, chemical bonds, crystal barriers, and various information can be determined



Nuclear magnetic resonance (NMR)

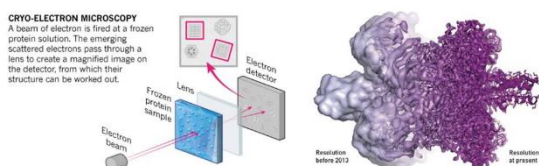
- The second method is nuclear magnetic resonance (NMR). Nuclei are charged, fast spinning particles, which are similar to outer electrons.
- The ratios of different atomic nuclei are different and therefore have different resonance frequencies. The movement of the nucleus is not isolated--it interacts with the surrounding atoms both intra- and inter-molecularly.
- Therefore, through nuclear magnetic resonance spectroscopy, structural information of a given molecule can be obtained.
- Taking protein as an example, its secondary structure, such as α -helix, β -sheet, turn, circular, and curl, reflect the different arrangement of the main chain atoms of protein molecules three-dimensionally.
- The spacing of the atomic nuclei in different secondary domains, the interaction between nuclei, and the dynamic characteristics of polypeptide segments all directly

reflect the three-dimensional structure of proteins.



Cryo-electron microscopy (Cryo-EM)

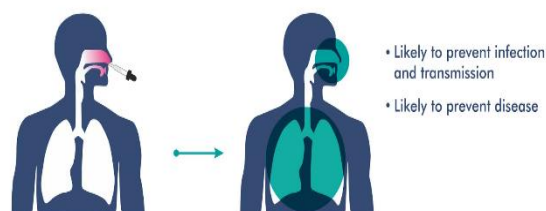
- The third approach is the cryo-electron microscopy (Cryo-EM) technique, which includes three different methods: single particle analysis, electron tomography and electron crystallography.
- The essential mechanism of Cryo-EM is electron scattering. The basic principle is described as follows. Samples are prepared through cryopreservation prior to analysis.
- The coherent electrons are used as a light source to measure the sample.
- After the electron beam passes through the sample and the nearby ice layer, the lens system converts the scattered signal into a magnified image recorded on the detector. And signal processing is performed to obtain the three-dimensional structure of the sample.



Intranasal vaccine

- An intranasal vaccine stimulates a broad immune response neutralizing IgG, mucosal IgA, and T cell responses.
- Immune responses at the site of infection (in the nasal mucosa) essential for blocking both infection and transmission of COVID-19.

Intranasal SARS-CoV-2 Vaccines



- The nasal route has excellent potential for vaccination due to the organized immune systems of the nasal mucosa.
- Non-invasive, Needle-free.
- Ease of administration – does not require trained health care workers.
- Elimination of needle-associated risks (injuries and infections).
- High compliance (Ideally suits for children and adults).
- Scalable manufacturing able to meet global demand.

THE HINDU

PMI

- Purchasing Managers' Index or PMI is an economic indicator, which is derived after monthly surveys of different companies.

- The index shows trends in both the manufacturing and services sector.
 - The index helps in determining whether the market conditions, as seen by purchasing managers, is expanding, contracting or staying the same.
 - It is used to provide information regarding the current and future business conditions.
 - PMI is one of the closely watched indicators of business activity and helps in predicting the economic health of a country.
 - There are two types of PMI Manufacturing PMI and Services PMI.
 - A combined index is also made using both manufacturing PMI and services PMI.
- (20%), suppliers' delivery times (15%) and stock of items purchased (10%).
 - The surveys are conducted on a monthly basis.
 - A PMI number greater than 50 indicates expansion in business activity. A number less than 50 shows contraction.
 - The rate of expansion is also judged by the difference from the mid-point (50) and also by previous month's data.

THE HINDU

How is the manufacturing PMI derived?

- The PMI is derived by sending fact-based questions to a large number of companies in the concerned sector. For manufacturing PMI, the questionnaire is sent to manufacturing companies.
- The questions are factual in nature and the survey is not meant for opinions, intentions, or expectations.
- The questions are related to 5 key variables. The variables with their weights in the index are new orders (30%), output (25%), employment

Freebies vs Welfare

- 'freebies' not only include the free distribution of what may be considered 'club goods' such as televisions and gold chains but also welfare schemes such as free or subsidised rations under the Public Distribution System (PDS), cooked meals under the mid-day meal scheme, supplementary nutrition through anganwadis, and work provided through the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).
- Subsidized food grains distributed under the PDS not only contribute to ensuring basic food security but also act as an implicit income transfer allowing the poor to afford commodities that they otherwise could not.
- Further, the PDS also plays an important role in our country where public procurement at minimum support prices (MSPs) is one of the main instruments of support to farmers.
- Welfare schemes that are repeatedly berated as adding to the 'subsidy' burden of the state also contribute to human development and protection of the basic rights of the people to nutrition, work, etc., essentially the right to life with dignity.
- MGNREGA for instance has been another scheme which has been a lifeline for many during the pandemic and earlier.
- It is important to recognize that most welfare schemes contribute to improving human development outcomes, which also results in higher economic growth in future
- Around ₹1 lakh crore is the revenue forgone annually as a result of 'major tax incentives for corporate tax payers.
- Putting together all tax exemptions and concessions, including on foreign trade and personal income taxes, the revenue forgone.

THE HINDU

Crypto regulation

- Crypto is an Internet native asset not limited by geographical boundaries.
- To transfer crypto, one does not need a pipeline or shipping container.
- A steady Internet connection and some elemental knowledge of crypto services are what are that needed will allow anyone in the world to transfer crypto assets.
- Further, crypto assets are not issued or controlled by any enterprise.
- There are a little over 19 million bitcoins in circulation at present, out

of the total capped supply (hence, the scarcity) of 21 million bitcoin.

- The European Parliament and Council, the legislative arms of the European Union, came to a provisional agreement on long-awaited regulations on crypto, namely, the Regulation of Markets in Crypto-Assets, or MiCA.
- The General Data Protection Regulation, or GDPR, first published in 2016 and implemented in 2018, marked a turning point on consumer data protection and privacy not just in Europe but the world over.
- The GDPR introduced a framework for seeking user consent and introduced several progressive rules such as the right to forget.
- MiCA proposes to regulate crypto asset services and crypto asset issuers.
- By regulating these entities, Europe intends to provide consumer protection, transparency, and decentralized regardless of the decentralized nature of the technology.
- For instance, under MiCA, crypto asset service providers will be liable in case they lose investors' assets, and will be subject to European market-abuse regulations, including those on market manipulation and insider trading.
- Then, MiCA goes further to put forth specific regulations for stable coins,

rightly demarcating them from other crypto assets.

- Under the proposed rules, issuers of stable coin asset-referenced tokens is the term it uses are subject to a greater degree of compliance and declaration.
- Under MiCA, stable coin issuers must maintain reserves to cover all claims of the coins, and should implement a process for immediate redemption if and when holders seek one.

What Is a Stable coin?

- Stable coins are cryptocurrencies the value of which is pegged, or tied, to that of another currency, commodity or financial instrument.
- Stable coins aim to provide an alternative to the high volatility of the most popular cryptocurrencies including Bitcoin (BTC), which has made such investments less suitable for wide use in transactions.

THE HINDU

Antarctica Treaty and system

- The Antarctic Treaty was signed in Washington on 1 December 1959 by the twelve nations that had been active during the IGY (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and USSR).

- The Treaty, which applies to the area south of 60° South latitude, is surprisingly short, but remarkably effective.
- Through this agreement, the countries active in Antarctica consult on the uses of a whole continent, with a commitment that it should not become the scene or object of international discord.
- In its fourteen articles the Treaty:
 - Stipulates that Antarctica should be used exclusively for peaceful purposes, military activities, such as the establishment of military bases or weapons testing, are specifically prohibited;
 - guarantees continued freedom to conduct scientific research, as enjoyed during the IGY;
 - promotes international scientific cooperation including the exchange of research plans and personnel, and requires that results of research be made freely available;
 - sets aside the potential for sovereignty disputes between Treaty parties by providing that no activities will enhance or diminish previously asserted positions with respect to territorial claims, provides that no new or enlarged claims can be made, and makes rules relating to jurisdiction;
 - Prohibits nuclear explosions and the disposal of radioactive waste;
- Provides for inspection by observers, designated by any party, of ships, stations and equipment in Antarctica to ensure the observance of, and compliance with, the Treaty;
- Requires parties to give advance notice of their expeditions; provides for the parties to meet periodically to discuss measures to further the objectives of the Treaty; and
- Puts in place a dispute settlement procedure and a mechanism by which the Treaty can be modified.
- The Antarctic Treaty System
 - The Antarctic Treaty System comprises the Treaty itself and a number of related agreements. It also includes a range of organisations that contribute to the work of the decision-making forums.
 - In addition to the related agreements (described below), the Treaty System includes the recommendations, measures, decisions and resolutions of the Consultative Meetings relating to matters such as: scientific cooperation; protection of the Antarctic environment; conservation of plants and animals; preservation of historic sites;
 - Designation and management of protected areas; management of tourism; information exchange; collection of meteorological data; hydrographic charting; logistic

cooperation; and communications and safety.

THE HINDU

Sec (45) of PMLA

The story so far:

- Recently, the Supreme Court in the case of Vijay Madanlal Chaudhary vs Union of India gave the judicial stamp of approval to the twin conditions of bail under Section 45(1) of the Prevention of Money Laundering Act, 2002 (PMLA). The conditions were contested as being arbitrary and draconian in as much as they reverse the presumption of innocence at the stage of bail.

What are the conditions under Section 45(1) of the PMLA?

- The PMLA was enacted with the objective to prevent money laundering.
- The Act provides for a higher threshold for the grant of bail as compared to the standard procedure under the Code of Criminal Procedure (CrPC).
- Section 45(1) of the PMLA requires that before a person is released on bail or bond, the public prosecutor must initially be given an opportunity to oppose the application and secondly, when the application is opposed, the court

must be satisfied that there are reasonable grounds for believing that the accused is not guilty of the offence and is not likely to commit any crime while out on bail.

Are there other Acts which impose such conditions?

- A similar provision is provided for in Section 43D(5) of the Unlawful Activities (Prevention) Act, 1967 which requires the court to provide an opportunity to the public prosecutor to oppose the bail application and to not release the accused on bail if there are reasonable grounds for believing that the accusation is prima facie true.
- Section 37(1) of the Narcotic Drugs and Psychotropic Substances Act, 1985 too is in pari materia with Section 45(1) of the PMLA. Previously, Section 20(8) of the Terrorist and Disruptive Activities Act, 1987 (TADA) also carried similar conditions for grant of bail.

THE HINDU

Trade deficit

- India's merchandise trade deficit widened sharply to a record \$31.02 billion in July.
- The Commerce and Industry Ministry attributed the decrease in exports largely to a 7.07% fall in

petroleum products, followed by a 28.3% decline in cotton yarn and handloom products, a 94.3% slump in iron ore and a 2.5% dip in engineering goods.

- While coal and petroleum products continued to drive up imports, like they did in June, silver imports shot up exponentially in July.
- Petroleum imports rose 70.4%, while inward shipments of coal jumped 164.4% to cross \$5.1 billion from just a little less than \$2 billion a year earlier.
- Silver imports were up 9,331%, and electronics goods also escalated 27.8%, the Ministry said.
- Gold imports, however, dropped sharply, both on a year-on-year and sequential bases
- “Lower commodity prices should temper the trade deficit going ahead, although the strength of merchandise and services exports in the face of the global slowdown fears remains crucial.

THE HINDU

SC on freebies

- The Supreme Court said Parliament may not be able to effectively debate the issue of doing away with “irrational freebies” offered to voters during elections, saying the “reality” is that not a single political party wants to take away freebies.
- The court suggested specialized body composed of persons who can “dispassionately” examine the problem.
- The observations from a Bench led by Chief Justice of India N.V. Ramana came even as the Centre said these freebies were paving the way for an “economic disaster” besides “distorting the informed decision of voters.
- India follows a mixed economy model, where the state negotiates a free market capitalist economy with social welfare principles.
- The economists, Andrew Glyn, the author of Capitalism Unleashed and John Maynard Keynes, the propounder of ‘Keynesian economics’ argue that ‘unleashed’ capitalism leads to widening inequality, diminishing social welfare, lowering demand, and thus slower economic progress.
- In a mixed economy, private participation is encouraged in areas where government finds it difficult to perform, without making compromises on the social obligation of the state which is as important as a commercial viability.

THE HINDU

Assets sale

- According to Article 1 of the Constitution, India is a Union of States, i.e., the idea of India as a Union lies with the States, which are the owners of land and responsible for the maintenance of other infrastructure.
- Hence, any unilateral sale of assets by the Union without consulting States would only deepen the mistrust between the Union and the States.
- The role Air India played in the repatriation of Indians stranded abroad during the COVID-19 pandemic, its evacuation flights during wars and connecting remote areas to the mainland are some examples of social intervention that have to be kept in mind.
- By divesting the assets of Air India, the Government has stripped the assets and nationalised the debts to be serviced by citizens.

THE HINDU

Empowering demographic dividend

- The UN report, World Population Prospects 2022, forecasts that the world's population will touch eight billion this year and rise to 9.8 billion in 2050.
- What is of immediate interest to India is that its population will surpass China's by 2023 and continue to surge.
- "India's potential workforce to rise from 885 million to "1.08 billion people over the next two decades from today", and "remain above a billion people for half a century," betting that "these new workers will be much better trained and educated," than their existing counterparts.
- "Trends such as digitisation and automation, shifting supply chains, urbanisation, rising incomes and demographic shifts, and a greater focus on sustainability, health, and safety are accelerating" to "create \$2.5 trillion of economic value in 2030 and support 112 million jobs, or about 30% of the non-farm workforce in 2030.
- As the pandemic recedes, four pillars are clearly visible that will support growth in the next decade; the forging of a single national market, an expansion of industry owing to the renewable-energy shift and a move in supply chains away from

China, continued pre-eminence in IT, and a high-tech welfare safety-net for the hundreds of millions left behind by all this , India needs to invest massively in quality school and higher education as well as healthcare sectors it has neglected for decades across India on an unprecedented scale, literally in trillions of rupees between now and 2050 when it would have reached the apogee of its population growth.

THE HINDU

India ocean sea routes and Dhow

- A Chinese military vessel is scheduled to call at the Sri Lankan Port of Hambantota.
- The Indian Government, with their concerns for Indian security, has raised the issue with the Sri Lankan government.
- The Sri Lankan government is heavily in debt and distress partly because of the mega infrastructure of the Hambantota port and many other such projects.
- The Hambantota port is now the property of a Chinese corporation, having been swapped for part of Sri Lanka debt to a variety of Chinese entities.
- China's interests in the Indian Ocean grew in the context of the 'One Belt, One Road' initiative.

- The OBOR consists of two components; namely the Maritime Silk Road Initiative (MSRI) and the Silk Road Economic Belt (SREB).
- It constitutes a massive geopolitical project that aims to construct landscapes to enable flow of trade and investment by 'promoting economic cooperation and connectivity' between Asia, West Asia, Africa, and Europe.
- The recent Chinese attempts to consolidate the Indian Ocean trade routes under the road and belt initiative are yet to materialise.
- Host countries of the Belt and Road ports have gone or are going bankrupt, defaulting on their sovereign debt.
- Attempts to restructure the debt of the Indian Ocean port cities and proceed with the same mega infrastructure programmes must not be the future vision of the Indian Ocean states.
- In one form or another, the Indian Ocean states still maintain their maritime heritage.
- National and private shipping lines are plenty.
- Commodities to trade are in abundance.
- Ship type, wind, and fuel hybrid propulsion can bring in more efficiencies. Revitalizing regional trade networks will be for the advantage of not only the port city

economies in distress but also to maintain peace and stability in the Indian Ocean.

What are dhow?

- Dhow is the generic name of a number of traditional sailing vessels with one or more masts with settee or sometimes lateen sails, used in the Red Sea and Indian Ocean region.
- Typically sporting long thin hulls, dhows are trading vessels primarily used to carry heavy items, such as fruit, fresh water, or other heavy merchandise, along the coasts of Eastern Arabia, East Africa, Yemen and coastal South Asia (Pakistan, India, Bangladesh).
- Larger dhows have crews of approximately thirty, smaller ones typically around twelve.

THE HINDU

MONSOON DHOWS

- Sailors have harnessed the Indian Ocean's monsoon winds for at least two millennia. The Swahili term "dhow" encompasses a diversity of sailing ships, from coastal fishing boats to ocean-going vessels.
- Dhows drew the cosmopolitan urban communities of Indian Ocean world together. The seasonal patterns of monsoons meant that sailors would

stay in distant ports for months at a time.



- They took sojourns in the cities of east Africa and the Horn, the Arabian Peninsula, Persia, India, and beyond to China, Sumatra and Java. Dhow routes created intricate loops of cultural exchange gold and cotton, migrants and merchants, and marriages that tied together people from distant lands. Indian Ocean cities and their citizens continue to reflect the long duration of this cultural dynamism.

THE HINDU

Guidelines for state government foreign visit

- The story so far: Delhi Lieutenant-Governor (LG) Vinai Kumar Saxena recently advised Chief Minister Arvind Kejriwal against attending the World Cities Summit in Singapore as it was for “mayors of cities.

Under which provisions are approvals required?

- On August 16, 1982, the Cabinet Secretariat had issued an office memorandum titled “Guidelines regarding foreign travel of Ministers of State government and Union Territories and State government officials”, stating that foreign visits by members of the State governments in their official capacity would require clearances from the Ministry of External Affairs (MEA), Ministry of Home Affairs, Finance Ministry, and the Central Administrative Ministry.
- It issued another order on March 30, 1995, reiterating the same.
- The Secretariat circulated another order on September 3, 2004, modifying the provisions to the extent that the final orders were to be issued by the Finance Ministry.
- The following directive dated November 2, 2004, stipulated that Chief Ministers required further approval from the Prime Minister’s Office before an official visit.
- On August 26, 2010, yet another office memorandum made political clearances mandatory before private visits of Ministers in State governments, which was reiterated through an order on May 6, 2015.
- The petition seeks a quashing of the 2010 and 2015 office memoranda which require State government

Ministers to ask for political clearances for personal visits abroad.

THE HINDU

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India's climate pledge

- The Union Cabinet approved an update to India's Nationally Determined Contribution (NDC).
- India had laid out five commitments, or Panchamrit, as the government references it, namely:
- India will increase its non-fossil energy capacity to 500 GW (gigawatt) by 2030; will meet 50% of its energy requirements from "renewable energy" by 2030; will reduce the total projected carbon emissions by one billion tonnes from now till 2030; will reduce the carbon intensity of its economy by more than 45%; and will achieve the target of "net zero" by the year 2070, when there will be no net carbon dioxide emitted from energy sources.
- A press statement, following the Cabinet approval, only mentions two of these promises, namely that India is committed to reduce emissions intensity of its GDP by 45% by 2030, from the 2005 level and achieving 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.

SC ON FREEBIES

- A general concern over ‘freebies’ pushing the economy to ruin or unviable pre-election promises adversely affecting informed decision-making by voters seems reasonable.
- However, few will disagree that what constitutes ‘freebies’ and what are legitimate welfare measures to protect the vulnerable sections.



- In this backdrop, the Supreme Court’s decision to form a body of stakeholders to examine the issue raises the question whether the legislature can be bypassed on such a far-reaching exercise.
- The Chief Justice of India, N.V. Ramana, heading a Bench hearing a petition filed in public interest against the distribution or promise of ‘freebies’ ahead of elections, has made it clear that the Court is not going to issue guidelines, but only ensure that suggestions are taken from stakeholders such as the NITI

Aayog, Finance Commission, Law Commission, RBI, and political parties.



- All these institutions, he has said, can submit a report to the Election Commission of India (ECI) and Government.
- A suggestion that Parliament could discuss this issue was met with scepticism by the Bench, which felt that no party would want a debate on this, as all of them support such sops.
- These distorted the voter’s informed decision-making; and that unregulated populism may lead to an economic disaster.
- The Supreme Court, in *S. Subramaniam Balaji vs Government of Tamil Nadu (2013)* addressed these questions and took the position that these concerned law and policy.
- Further, it upheld the distribution of television sets or consumer goods on the ground that schemes targeted at women, farmers and the poorer sections were in furtherance of Directive Principles; and as long as

public funds were spent based on appropriations cleared by the legislature, they could neither be declared illegal, nor the promise of such items be termed a 'corrupt practice'.

- It had, however, directed the ECI to frame guidelines to regulate the content of manifestos.
- The ECI subsequently included in its Model Code of Conduct a stipulation that parties should avoid promises "that vitiate the purity of the election process or exert undue influence on the voters".
- It added that only promises which were possible to be fulfilled should be made and that manifestos should contain the rationale for a promised welfare measure and indicate the means of funding it.
- Any further step, such as distinguishing welfare measures from populist sops and pre-election inducements, or adding to the obligations of fiscal responsibility and fiscal prudence ought to come from the legislature.

THE HINDU

PROTEST IN HASDEO ARANYA REGION

The story so far:

- The Hasdeo Aranya forests are called the lungs of Chhattisgarh.
- Over the past one year, protests against mining in this region have erupted several times and some still continue to sit-in demanding a complete stop to mining.
- On July 26, the Chhattisgarh Legislative Assembly unanimously passed a private member resolution urging the Centre to cancel allocation of all coal mining blocks in the ecologically sensitive area.

What is a private member resolution?

- According to Chakshu Roy, who heads the legislative and civic engagement initiatives at PRS Legislative Research, an MLA who is not a Minister whether she happens to be from the ruling party or not is a private member?
- A private member resolution can be brought in by a private member and if passed, it becomes an expression of what the House thinks.
- This is different from a private member bill which would become law in case of approval.

What is the importance of the Hasdeo-Aranya region?

- The Hasdeo Aranya (Aranya means forest) lies in the catchment area of the Hasdeo river and is spread across 1,878 sq km in North-Central Chhattisgarh.
- The Hasdeo River is a tributary of the Mahanadi River which originates in Chhattisgarh and flows through Odisha into the Bay of Bengal.
- The Hasdeo forests are also the catchment area for the Hasdeo Bango Dam built across the Hasdeo River which irrigates six lakh acres of land, crucial to a State with paddy as its main crop.
- Besides, the forests are ecologically sensitive due to the rich biodiversity they offer and due to the presence of a large migratory corridor for elephants.

When did the controversy surrounding coal mining start?

- Underneath the Hasdeo Aranya is a coalfield that comprises of 22 coal blocks.
- In 2010, the Centre categorised Hasdeo Aranya to be a “no-go” zone for mining.
- It ruled out mining in any of these blocks. However, only a year later, the Ministry of Environment, Forest and Climate Change (MoEF) granted

clearance for the mining for one coal block.

- At present, of the 22 blocks, seven blocks have been allotted to different companies, says the resolution.
- Of these, two the Parsa East Kete Basan (PEKB) and Chotia (I and II) are operational.
- The PEKB Phase I has been completely mined while there has been local opposition to mining and deforestation in Parsa, PEKB Phase II and Kete Extension all three allotted to the Rajasthan Rajya Vidyut Utpadan Nigam Ltd (RRVUNL).
- After the gram sabhas opposed mining in the Madanpur South and Gidmudi Paturia blocks that were allotted to the Andhra Pradesh Mineral Development Company (APMDC) and Chhattisgarh State Power Generation Company (CSPGC) respectively, clearances were withdrawn.
- The resolution isn't expected to change the status quo.
- While the Congress says the onus is on the Centre to stop mining, the BJP has been asking the State government to withdraw the clearances it has issued to mine developers and operators.

THE HINDU

KANSAS WIN

- In a referendum on August 2, voters in the conservative state of Kansas in the U.S. decided to protect rights to abortion.
- The ‘Kansas No State Constitutional Right to Abortion and Legislative Power to Regulate Abortion Amendment’ was defeated.
- It would have allowed elected representatives to pass laws regarding abortion.
- The amendment’s failure will boost Democrats’ hopes that the abortion rights issue will lead voters to the party in the November 8 elections.
- This was the first electoral test in any state after the U.S. Supreme Court overturned Roe vs Wade in June, ending the constitutional right to abortion guaranteed by a 1973 judgment.

What did the amendment propose?

- The amendment, which was to be inserted in Section 22 of the Kansas Bill of Rights, proposed to change the constitution to provide that the state “does not require government funding of abortion and does not create or secure a right to abortion.”
- It would have allowed elected state representatives and state senators to “pass laws regarding abortion,

including, but not limited to, laws that account for circumstance of pregnancy resulting from rape or incest, or circumstances of necessity to save the life of the mother.

THE HINDU

Lachit Borphukan

- 17th century military strategist’s 400th birth anniversary.
- “Lachit Borphukan’s valorous leadership led to the decisive defeat of the Mughals at the Battle of Saraighat in 1671, registering for him a unique space in the annals of Assam history.
- Lachit Borphukan (24 November 1622 - 25 April 1672) was a commander and Borphukan, in the Ahom kingdom, located in present-day Assam, India, known for his leadership in the 1671 Battle of Saraighat that thwarted a drawn-out attempt by Mughal forces under the command of Ramsingh I to take over Ahom kingdom.
- He died about a year later due to illness
- Borphukan was one of the five patra mantris (councillors) in the Ahom kingdom, a position that was created by the Ahom king Prataap Singha.

- The position included both executive and judicial powers, with the jurisdiction of the Ahom kingdom west of the Kaliabor river.
- The headquarters of Borphukan was based in Kaliabor and after the Battle of Itakhuli in 1681 in Itakhuli in Guwahati.
- This position was particularly important and powerful because of its distance from the Ahom capital, giving it a semblance of independence.

THE HINDU

GES
REPORTER

RBI RATE HIKE

- With inflation remaining at 'elevated levels', the Monetary Policy Committee (MPC) of the Reserve Bank of India unanimously decided to raise the policy repo rate by 50 basis points (bps) to 5.4%.
- "Inflation is projected to remain above the upper tolerance level of 6% through the first three quarters of 2022-23, entailing the risk of destabilizing inflation expectations and triggering second-round effects,
- RBI Governor Shaktikanta Das on Friday said banks could not perennially rely on the central bank's money to support credit off-take and needed to mobilise more deposits to aid credit growth.

What is credit offtake?

- The growth of the banking industry is closely interlinked with the growth in the economy. The slowdown in economy in the past few years meant lower credit offtake. With lower demand for credit, banks had no option but to invest in low yielding Government securities.
- However with the recent recovery in economy the credit offtake is likely to pick-up and pick-up in credit offtake means deploying funds to the

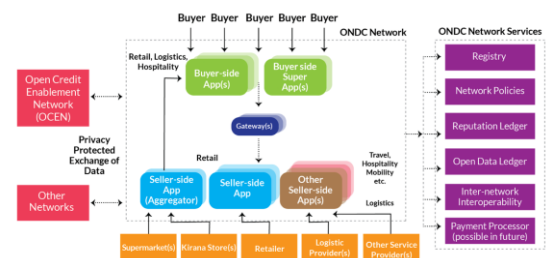
commercial sector and earning a higher return than G-sec. Recovery in the select sectors, like steel, textile and capital goods which have high credit consumption, has led to pick-up in credit offtake. This clearly means a good topline growth for the banks.

THE HINDU

LESSON FROM TAIWAN

- A small island of 23 million people has decided to stand up to one of the strongest military and economic powers on the planet, braving existential consequences.
- India is a far more powerful nation armed with nuclear weapons and with a 1.4 million standing military against whom China has only marginal territorial claims
- And yet, India continues to be hesitant about calling China's bluff.
- China today is a revisionist power, challenging the regional order; is intent on using force to meet its strategic objectives, and is desirous of reshaping the regional balance of power to suit its interests.
- With such a power, appeasement might work in the short term, but will invariably backfire over the long term.

- First, India's policy of meeting/hosting Chinese leaders while the Chinese People's Liberation Army (PLA) continue(d) to violate established territorial norms on the LAC is a deeply flawed one
- The second mistake is unilaterally catering to Chinese sensitivities even during the standoffs between the two militaries.
- The third mistake was the soft peddling of the Quad (Australia, Japan, India and the United States) when China objected to it
- It is often argued that the growing economic and trading relationship between India and China is reason enough to ensure that tensions between the two sides do not escalate and that the two sides must find ways of co-existing peacefully.
- The ONDC network makes it possible for products and services from all participating e-commerce platforms to be displayed in search results across all network apps.
- For instance, a consumer shopping for a product on an e-commerce app named "X" would also receive results from e-commerce app named "Y", if both X and Y integrated their platforms with the ONDC.
- This achieves the dual objective of wider choice for consumers on the one hand and access to a wider consumer base for sellers on the other.



THE HINDU

ONDC

- The Department for Promotion of Industry and Internal Trade (DPIIT) of the Government of India established the Open Network for Digital Commerce (ONDC) to level the playing field by developing open e-commerce and enabling access to small businesses and dealers.
 - With India's e-commerce industry set to reach \$200 billion by 2027, this shift from a platform-centric paradigm to democratisation of the nation's online market will catalyse the inclusion of millions of small business owners and kirana businesses.
- Steps needed**
- Disputes will be the obvious by-product of this e-commerce revolution. Therefore, it is imperative to support this initiative

with a modern-day, cost-effective, timely and high-speed dispute resolution system

- Online Dispute Resolution, or ODR as it is popularly called, has the propensity to work alongside the incumbent setup and deliver quick, affordable and enforceable outcomes.
- The ODR will help mitigate litigation risk and provide valuable insights into problems faced by consumers. The courts and consumer forums can do away with matters which do not warrant their intervention, thus easing the judicial logjam.
- Consumers are provided with another choice for effective redress of their grievances, thereby building trust, confidence and brand loyalty.

THE HINDU

Machine Learning

- Researchers have sounded the alarm about the use of machine learning to make predictions on the basis of data patterns.
- At times, methodological pitfalls could lead to wildly over-optimistic conclusions.
- A prominent issue is 'data leakage' when information from the data set a model learns on includes data that it is later evaluated on.

What is Machine learning?

- Machine learning (ML) is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so.
- Machine learning algorithms use historical data as input to predict new output values.

Why is machine learning important?

- Machine learning is important because it gives enterprises a view of trends in customer behavior and business operational patterns, as well as supports the development of new products.
- Many of today's leading companies, such as Facebook, Google and Uber,

make machine learning a central part of their operations.

What are the different types of machine learning?

- Supervised learning: In this type of machine learning, data scientists supply algorithms with labelled training data and define the variables they want the algorithm to assess for correlations. Both the input and the output of the algorithm is specified.
- Unsupervised learning: This type of machine learning involves algorithms that train on unlabelled data. The algorithm scans through datasets looking for any meaningful connection.
- Semi-supervised learning: This approach to machine learning involves a mix of the two preceding types.
- Data scientists may feed an algorithm mostly labeled training data, but the model is free to explore the data on its own and develop its own understanding of the data set.
- Reinforcement learning: Data scientists typically use reinforcement learning to teach a machine to complete a multi-step process for which there are clearly defined rules.

- Data scientists program an algorithm to complete a task and give it positive or negative cues as it works out how to complete a task.

THE HINDU

Genome editing- CRISPR Cas9, sickle cell anaemia

- A pioneering gene therapy has used CRISPR–Cas9 genome editing to target the root cause of sickle-cell disease caused by a flaw in the body's oxygen-carrying protein, haemoglobin, which affects more than six million people.
- A clinical trial has already achieved exciting results, but the challenge will be reaching those most in need.
- What is Genome editing?
- Genome editing (also called gene editing) is a group of technologies that give scientists the ability to change an organism's DNA.
- These technologies allow genetic material to be added, removed, or altered at particular locations in the genome. Several approaches to genome editing have been developed.
- A well-known one is called CRISPR-Cas9, which is short for clustered regularly interspaced short palindromic repeats and CRISPR-associated protein 9.
- The CRISPR-Cas9 system has generated a lot of excitement in the scientific community because it is faster, cheaper, more accurate, and more efficient than other genome editing methods.
- CRISPR-Cas9 was adapted from a naturally occurring genome editing system that bacteria use as an immune defense
- When infected with viruses, bacteria capture small pieces of the viruses' DNA and insert them into their own DNA in a particular pattern to create segments known as CRISPR arrays.
- The CRISPR arrays allow the bacteria to "remember" the viruses (or closely related ones).
- If the viruses attack again, the bacteria produce RNA segments from the CRISPR arrays that recognize and attach to specific regions of the viruses' DNA.
- The bacteria then use Cas9 or a similar enzyme to cut the DNA apart, which disables the virus.
- Researchers adapted this immune defense system to edit DNA.
- They create a small piece of RNA with a short "guide" sequence that attaches (binds) to a specific target sequence in a cell's DNA, much like

the RNA segments bacteria produce from the CRISPR array.

- This guide RNA also attaches to the Cas9 enzyme. When introduced into cells, the guide RNA recognizes the intended DNA sequence, and the Cas9 enzyme cuts the DNA at the targeted location, mirroring the process in bacteria.

What is Sickle Cell Disease?

- Sickle cell disease (SCD) is a hemoglobin-related red blood cell disorders. Red blood cells contain hemoglobin, a protein that carries oxygen.
- Healthy red blood cells are round, and they move through small blood vessels to carry oxygen to all parts of the body.
- In someone who has SCD, the haemoglobin is abnormal, which causes the red blood cells to become hard and sticky and look like a C-shaped farm tool called a "sickle."
- The sickle cells die early, which causes a constant shortage of red blood cells. Also, when they travel through small blood vessels, they get stuck and clog the blood flow.
- This can cause pain and other serious complications (health problems) such as infection, acute chest syndrome and stroke.

Types of SCD

HbSS

- People who have this form of SCD inherit two genes, one from each parent, that code for haemoglobin "S."
- Haemoglobin S is an abnormal form of hemoglobin that causes the red cells to become rigid, and sickle-shaped.
- This is commonly called sickle cell anaemia and is usually the most severe form of the disease.

HbSC

- People who have this form of SCD inherit a haemoglobin "S" gene from one parent and a gene for a different type of abnormal haemoglobin called "C" from the other parent. This is usually a milder form of SCD.
- HbS beta thalassemia
- People who have this form of SCD inherit a haemoglobin "S" gene from one parent and a gene for beta thalassemia, another type of haemoglobin abnormality, from the other parent.
- There are two types of beta thalassemia: "zero" (HbS beta0) and "plus" (HbS beta+).
- Those with HbS beta0-thalassemia usually have a severe form of SCD. People with HbS beta+-thalassemia tend to have a milder form of SCD.

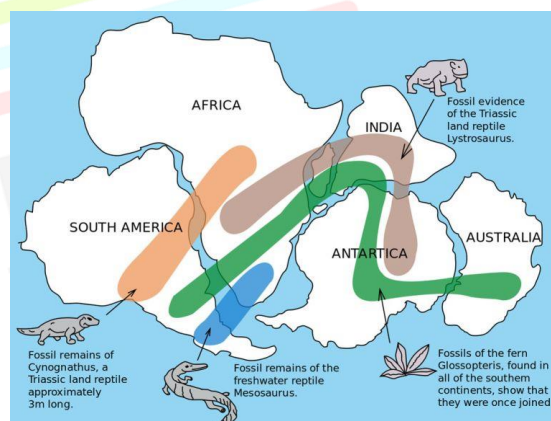
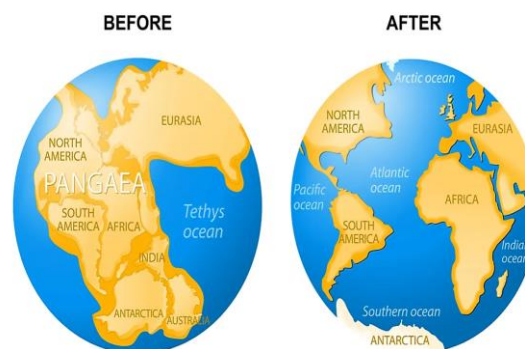
Organism distribution and Continental drift

- Zoologist Philip Sclater was perplexed by the presence of lemurs, their relatives, and their fossils in Madagascar and India, but not in nearby Africa or the Middle East.
- In the 1860s, he proposed that a large island or continent must have once existed between India and Madagascar, serving as a land bridge.
- Over time, this island had sunk. He called this proposed island Lemuria.
- Tamil revivalists such as Devaneya Pavanar also took up the idea, in the form of a Tamil civilization, lost to the sea as described in the literature and in Pandyan legends.
- They called this submerged continent Kumari Kandam.

Continental drift

- Sclater's ideas lost favour when another 'outlandish' theory, of continental drift, began to gain acceptance.
- In plate tectonics, the large rocky plates that we stand on float on molten subterranean rocks and move 2-15 cm per year relative to each other.
- A landmass called Gondwana, split into two 165 million years ago one

containing what is now Africa and South America, the other comprising India, Madagascar, Australia, and Antarctica.



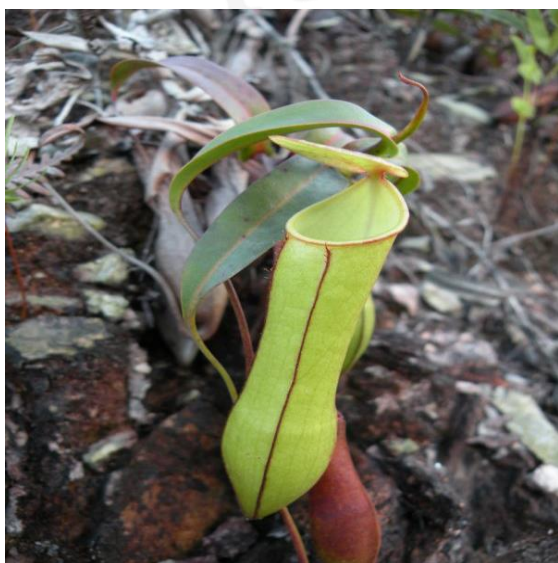
- Around 115 million years ago, Madagascar and India together broke free. Around 88 million years ago, India moved northward, dropping a few parcels of land along the way to form Seychelles.
- It joined the Eurasian mass 50 million years ago giving rise to the Himalayas and South Asia that we are familiar with.

Molecular clocks

- A powerful technique, the molecular clock, is used to estimate the time when two forms of life diverged from each other.
- It is based on the observation that evolutionary changes in the sequence of an RNA or a protein molecule occur at a fairly constant rate.
- The difference in the amino acids of, say the haemoglobin of two animals can tell you how long ago their lineages diverged.
- Molecular clocks corroborate well with other evidence, such as the fossil record.

THE HINDU

Pitcher plant



- Scientists at the University of Bristol have uncovered the deadly workings

of a carnivorous plant Slender Pitcher plant (*Nepenthes gracilis*).

- The Slender Pitcher plant in the steaming jungles of Borneo has developed one of the most ingenious tricks to help them survive and outcompete their neighbours.
- Its elaborate cup-shaped leaves are equipped with a canopy-like hanging lid that turns into a deadly springboard for ants when it is hit by a falling raindrop.
- Pitcher plants trap insects in their modified trap-like organ to fulfill its requirements of Nitrogen and other nutrients as it grows in soil that lacks nitrogen.
- The dead insect inside its trap provides such nutrients required for normal functioning of the plant.

THE HINDU

Peninsular Rock Agama



- The Peninsular Rock Agama (*Psammophilus dorsalis*) which is a

type of garden lizard has a strong presence in southern India.

- Habitat loss and other such features of urbanization have affected the presence of animals in urban centers.
- This lizard is a large animal, strikingly colored in orange and black.
- They do not generate their own body heat, so they need to seek warmth from external sources like a warm rock or a sunny spot on the wall.
- They are important in ecology from different aspects they can indicate which parts of the city are warming, and their numbers show how the food web is changing.

THE HINDU

APOBEC3 protein

- The study also suggests that several mutations that have been identified in the new sequences of the monkeypox virus may have emerged due to interaction between the virus genome and an important family of proteins coded by the human genome known as the Apolipoprotein B Editing Complex (or APOBEC3).
- These proteins offer protection against certain viral infections by editing the genome sequence of the virus while it replicates in the cell.

- Some researchers, therefore, suggest that many of the genetic mutations in the monkeypox genomes from the current outbreak are relics of the effect of APOBEC3 and may not provide a significant evolutionary advantage to the virus.
- Monkeypox virus can infect a range of hosts, including non-human primates and rodents which could act as a natural reservoir.
- Infections in the reservoir could also enable continued transmission and accumulation of mutations before spilling over to cause human infections.

THE HINDU

Types of Orbit

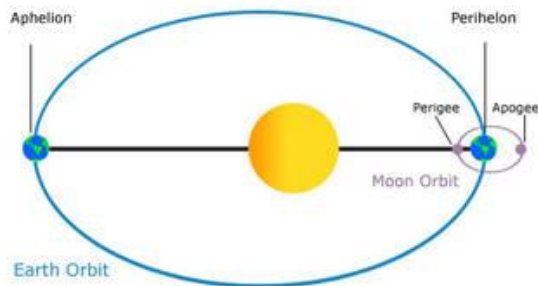
- The Indian Space Research Organisation (ISRO) on Sunday said the satellites on board its maiden Small Satellite Launch Vehicle “are no longer usable” after the SSLV-D1 placed them in an elliptical orbit instead of a circular one.
- The space agency said a committee would analyse, and make recommendations on, Sunday’s episode. With the implementation of those recommendations, “ISRO will come back soon with SSLV-D2”.

What Is an Orbit?

- An orbit is a regular, repeating path that one object in space takes around another one. An object in an orbit is called a satellite.
- A satellite can be natural, like Earth or the moon.
- Many planets have moons that orbit them. A satellite can also be man-made, like the International Space Station.
- Planets, comets, asteroids and other objects in the solar system orbit the sun. Most of the objects orbiting the sun move along or close to an imaginary flat surface. This imaginary surface is called the ecliptic plane.

What Shape Is an Orbit?

- Orbits come in different shapes. All orbits are elliptical, which means they are an ellipse, similar to an oval.
- For the planets, the orbits are almost circular. The orbits of comets have a different shape. They are highly eccentric or "squashed." They look more like thin ellipses than circles.
- Satellites that orbit Earth, including the moon, do not always stay the same distance from Earth. Sometimes they are closer, and at other times they are farther away. The closest point a satellite comes to Earth is called its perigee. The farthest point is the apogee.
- For planets, the point in their orbit closest to the sun is perihelion. The farthest point is called aphelion. Earth reaches its aphelion during summer in the Northern Hemisphere.
- The time it takes a satellite to make one full orbit is called its period.
- For example, Earth has an orbital period of one year. The inclination is the angle the orbital plane makes when compared with Earth's equator.



How Do Objects Stay in Orbit?

- An object in motion will stay in motion unless something pushes or pulls on it.
- This statement is called Newton's first law of motion. Without gravity, an Earth-orbiting satellite would go off into space along a straight line. With gravity, it is pulled back toward Earth.
- A constant tug-of-war takes place between the satellite's tendency to move in a straight line, or momentum, and the tug of gravity pulling the satellite back.

Where Do Satellites Orbit Earth?

- The International Space Station is in low Earth orbit, or LEO. LEO is the first 100 to 200 miles (161 to 322 km) of space.
- LEO is the easiest orbit to get to and stay in. One complete orbit in LEO takes about 90 minutes.
- Satellites that stay above a location on Earth are in geosynchronous Earth orbit, or GEO.

- These satellites orbit about 23,000 miles (37,015 km) above the equator and complete one revolution around Earth precisely every 24 hours.
- Satellites headed for GEO first go to an elliptical orbit with an apogee about 37,015 km. Firing the rocket engines at apogee then makes the orbit round. Geosynchronous orbits are also called geostationary.
- Any satellite with an orbital path going over or near the poles maintains a polar orbit. Polar orbits are usually low Earth orbits. Eventually, Earth's entire surface passes under a satellite in polar orbit.
- When a satellite orbits Earth, the path it takes makes an angle with the equator.
- This angle is called the inclination.
- A satellite that orbits parallel to the equator has a zero-degree orbital inclination. A satellite in a polar orbit has a 90-degree inclination.

THE HINDU

Regulation of minor minerals

Minor minerals vs major minerals

- Minor minerals are those which are prescribed by Mines and Minerals (Development and Regulation) Act,

1957 (section 3(e)) as being categorized as 'minor minerals'.

- Any mineral which by the notification of the Central Government may declare to be a minor mineral.
- The State Government may, by notification in the Official Gazette, make rules for regulating the grant of quarry leases, mining leases or other mineral concessions in respect of minor minerals and for purposes connected therewith.
- Major minerals are those specified in the Mines and Minerals (Development and Regulation) Act, 1957.
- Some of the major minerals include Lignite, Uranium, Coal, Gold, Iron ore, Lead-Zinc, Magnesium, Tungsten, and Diamond etc.
- Unlike major minerals, the regulatory and administrative powers to frame rules, prescribe rates of royalty, mineral concessions, enforcement, etc. are entrusted exclusively to the State governments.
- The Environment Impact Assessment (EIA) Notifications of 1994 and 2006 made environmental clearance compulsory for mining in areas more than or equal to five hectares.
- However, the Supreme Court of India after taking cognisance of a report by the Ministry of Environment, Forest and Climate Change on Environmental Aspects of Quarrying of Minor Minerals (2010) directed all State governments to make the requisite changes in the regulatory framework of minor minerals, requiring environmental clearance for mining in areas less than five hectares.
- Consequently, the EIA was amended in 2016 which made environmental clearance mandatory for mining in areas less than five hectares, including minor minerals.
- The amendment also provided for the setting up of a District Environment Impact Assessment Authority (EIAA) and a District Expert Appraisal Committee (EAC).
- The problem of illegal mining of minor minerals is often underestimated, thus accentuating undesired environmental consequences.
- There have been numerous cases of the illegal mining of dolomite, marble and sand across States.

THE HINDU

Observations by agencies

- The United Nations Environment Programme, in 2019, ranked India and China as the top two countries where illegal sand mining has led to sweeping environmental degradation.
- Despite this, there is no comprehensive assessment available to evaluate the scale of sand mining in India.
- Protecting minor minerals requires investment in production and consumption measurement and also monitoring and planning tools.
- To this end, technology has to be used to provide a sustainable solution.

THE HINDU

The power of technology

- Satellite imagery can be used to monitor the volume of extraction and also check the mining process.
- Even for past infractions, the NGT and administrative authorities can obtain satellite pictures for the past 10 to 15 years and uncontrovertibly show how small hillocks of earth, gravel or small stone dunes have disappeared in an area.
- Drones, the internet of things (IoT) and blockchain technology can be

leveraged to monitor mechanisms by using Global Positioning System, radar and Radio Frequency (RF) Locator.

What is Data Fudging?

- Data fudging on the other hand is clearly inventing data to fit the curve or trend, and is deliberate and thus harder to catch.
- It can also be included to give confusing rather than inaccurate data just to avoid greater scrutiny.

How data is often fudged?

- Factors-This starts by recognizing all factors that can positively or negatively impact the final numbers that are being presented. Note the list can be expanded to many more factors than needed just to divert attention from main causal factors.
- Sensitivity-This gives the range of answers gotten by tweaking individual factors within a certain range say +/- 10% and noting the final figures. Assumptions can be both conservative and aggressive in terms of recognizing the weightage of causal factors in order to suit the final numbers.
- Causal Equation-Recognizing the interplay between various factors due to correlation as well to the final numbers due to causing variance

changes. The causal equation can then be tweaked including playing with weightage, powers of polynomial expression, as well correlation between many factors.

THE HINDU

Coral reef

The story so far:

- The highest levels of coral cover, within the past 36 years, has been recorded in the northern and central parts of Australia's Great Barrier Reef (GBR), according to the annual long-term monitoring report by the Australian Institute of Marine Science (AIMS)

There are two types of corals:

- Hard, shallow-water corals the kind that builds reefs. Soft corals and deepwater corals that live in dark cold waters.
- Australia's Great Barrier Reef is the world's largest reef system stretching across 2,300 km and having nearly 3,000 individual reefs.
- It hosts 400 different types of coral, and gives shelter to 1,500 species of fish and 4,000 types of mollusc.
- Coral reefs support over 25% of marine biodiversity even as they take up only 1% of the seafloor.

- The marine life supported by reefs further fuels global fishing industries. Besides, coral reef systems generate \$2.7 trillion in annual economic value through goods and service trade and tourism.
- In Australia, the Barrier Reef, in pre-COVID times, generated \$4.6 billion annually through tourism and employed over 60,000 people including divers and guides.
- Incidentally, these fast growing corals are also the most susceptible to environmental pressures such as rising temperatures, cyclones, pollution, crown-of-thorn starfish (COTs) attacks which prey on hard corals and soon.
- Besides predatory attacks and tropical cyclones, scientists say that the biggest threat to the health of the reef is climate change-induced heat stress, resulting in coral bleaching.
- Corals share a symbiotic relationship with single-celled algae called zooxanthellae.
- The algae prepares food for corals through photosynthesis and also gives them their vibrant colouration.
- When exposed to conditions like heat stress, pollution, or high levels of ocean acidity, the zooxanthellae start producing reactive oxygen species not beneficial to the corals.

- So, the corals kick out the colour-giving algae from their polyps, exposing their pale white exoskeleton and leading to coral starvation as corals cannot produce their own food.
- Bleached corals can survive depending on the levels of bleaching and the recovery of sea temperatures to normal levels.
- Severe bleaching and prolonged stress in the external environment can lead to coral death.
- Over the last couple of decades, climate change-induced rise in temperature has made seas warmer than usual.
- Under all positive outlooks and projections in terms of cutting greenhouse gases, sea temperatures are predicted to increase by 1.5°C to 2°C by the time the century nears its end.
- The AIMS report says that the prognosis for the future disturbance suggests an increase in marine heatwaves that will last longer and the ongoing risk of COTs outbreaks and cyclones.

THE HINDU

Collegium system

- The Three Judges cases saw the evolution of the collegium system. In the First Judges case, the court held that the consultation with the CJI should be “full and effective”.
- The Second Judges case introduced the collegium system in 1993. It ruled that the CJI would have to consult a collegium of his two senior-most judges in the apex court on judicial appointments.
- The court held that such a “collective opinion” of the collegium would have primacy over the government.
- It was the Third Judges case in 1998, which was a Presidential reference, which expanded the judicial collegium to its present composition of the CJI and four of his senior-most judges.

How does the collegium system work?

- The collegium of the CJI and four senior-most judges of the Supreme Court make recommendations for appointments to the apex court and High Courts. The collegium can veto the government if the names are sent back by the latter for reconsideration.
- The basic tenet behind the collegium system is that the judiciary should have primacy over the government

in matters of appointments and transfers in order to remain independent.

- However, over time, the collegium system has attracted criticism, even from within the judicial institution, for its lack of transparency. It has even been accused of nepotism.

How are judicial appointments to the Supreme Court made?

- The appointment of the CJI and judges of the apex court is governed by a Memorandum of Procedure.
- The CJI and the judges of the Supreme Court are appointed by the President under clause (2) of Article 124 of the Constitution.
- The appointment to the office of the CJI should be of the senior-most judge of the Supreme Court considered fit to hold the office.
- The Union Law Minister would, at an “appropriate time”, seek the recommendation of the outgoing CJI on his successor.
- Once the CJI recommends, the Law Minister forwards the communication to the Prime Minister who would advise the President on the appointment.
- In the case of an appointment of a Supreme Court judge, when a vacancy is expected to arise in the apex court, the collegium would

recommend a candidate to the Union Law Minister.

- The CJI would also ascertain the views of the senior-most judges in the Supreme Court, who hail from the High Court from where the person recommended comes from.
- The opinions of each member of the Collegium and other judges consulted should be made in writing and form part of the file on the candidate sent to the government.
- If the CJI had consulted non-judges, he should make a memorandum containing the substance of consultation, which would also be part of the file.
- After the receipt of the Collegium recommendation, the Law Minister would forward it to the Prime Minister, who would advise the President in the matter of appointment.

THE HINDU

CSIR

- The Council of Scientific and Industrial Research (CSIR) has, for the first time in its 80-year history, appointed a woman Director-General. N. Kalaiselvi, currently Director of the CSIR-Central Electro Chemical Research Institute (CSIR-

CECRI), Karaikudi, Tamil Nadu, will now lead the network of 38 laboratories and nearly 4,500 scientists, and has been appointed for two years.

THE HINDU

GES
REPORTER

African swine fever

- With more than 100 pigs dead in Ranchi district since July 27 due to suspected swine fever, the Jharkhand animal husbandry department (AHD) has sounded the alert and asked the others to take precautionary measures.
- African Swine Fever (ASF) is a highly contagious viral disease of pigs.
- In its acute form the disease generally results in high mortality. ASF is a different disease to swine flu.
- The virus does not affect people and there is no impact on human health.
- African swine fever virus (ASFV) is a large, double-stranded DNA virus in the Asfarviridae family.
- It is the causative agent of African swine fever (ASF).
- The virus causes a hemorrhagic fever with high mortality rates in domestic pigs; some isolates can cause the death of animals as quickly as a week after infection.

How is the disease transmitted?

- African swine fever can be spread through:
- direct contact with infected pigs, faeces or body fluids
- Indirect contact via fomites such as equipment, vehicles or people who

work with pigs between pig farms with ineffective biosecurity

- Pigs eating infected pig meat or meat products
- Biological vectors ticks of the species *Ornithodoros*.

THE HINDU

Fair and Remunerative Price (FRP)

- The Cabinet Committee on Economic Affairs, at its meeting chaired by Prime Minister here on Wednesday, has approved Fair and Remunerative Price (FRP) of sugarcane for sugar season 2022-23 (October - September) at ₹305 per quintal.
- What is the Fair and Remunerative Price (FRP)?
- FRP is the price declared by the government, which mills are legally bound to pay to farmers for the cane procured from them.
- The payment of FRP across the country is governed by The Sugarcane Control order, 1966.
- It mandates payment within 14 days of the date of delivery of the cane.
- The concept of Statutory Minimum Price (SMP) of sugarcane was replaced with the 'Fair and Remunerative Price (FRP)' of

sugarcane for 2009-10 and subsequent sugar seasons with the amendment of the Sugarcane (Control) Order, 1966 in 2009.

- The cane price announced by the Central Government is decided on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) in consultation with the State Governments and after taking feedback from associations of the sugar industry.

THE HINDU

DRAGON FRUIT CULTIVATION

- A key feature of these crops is that they can grow in extremes of temperature.
- Dragons grow well in poor soils but are best suited to tropical climates with 40–60 cm rainfall for growth. The temperature between 20°C to 30°C is considered best for growing dragon fruit crops.
- If your climate outside is too cold or too hot for dragon fruit, you can also successfully grow a potted dragon fruit plant.
- Although dragon fruit is in the cactus family, it is not like the cacti you typically see in the desert. Dragon fruit is a subtropical cactus native to Central America and South America,

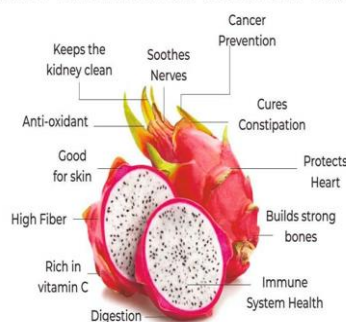
which means it thrives in mild, humid environments.



Origin of Dragon Fruit

- Dragon fruit grows on the Hylocereus cactus, also known as the Honolulu Queen, whose flowers open only at night. The plant is native to Central America and southern Mexico.
- However, today farmers grow it all over the world. As a result, it is known by many names, including papaya, pitahaya and strawberry pear.

HEALTH BENEFITS OF DRAGON FRUIT



THE HINDU

MILLET

- Millets are traditional grasses or crops that are friendly to arid

environments and considered to do well in drought-like conditions, according to Food and Agriculture Organization.

- Millet farming directly results in preserving and conserving biodiversity.
- This is one reason why women farmers, with their ecological acumen and their close association with climate protection, are best suited to be ambassadors of millet cultivation.
- They also universally succeed in practicing seed sovereignty principles and water conservation.
- With the creation of incentives toward promoting the woman farmer, these goals of millet cultivation and sustainable development, especially those related to agriculture and sustainable production and consumption, can be achieved.
- Around 4,000 litres of water is required to produce one kilogram of rice, it has been argued.
- For the last few years, millets such as jowar, bajra, ragi have dominated urban consumption baskets through either direct-cooked consumption, or more popularly, via the fast-moving consumer goods penetration.

- There is an imported penetration of seeds, whole grains and cereals not native to the Indian geography or cuisine.
- Quinoa is a prominent example that has seen increasing domination in urban diets.
- Therefore, under the 'Vocal for Local' campaign, indigenous crops must be lent more support and focus.
- A sustainable way to pursue this is to empower women farmers and self-help groups (SHG), by equipping them with advanced packaging techniques, agro-marketing, financial literacy and other entrepreneurial skills.
- Grassroots workers like the anganwadi and ASHA workers must be further involved as nutrition ambassadors and entrepreneurs in the millet revolution.

THE HINDU

CONCERN of reintroduction of cheetah

- In 2020, the Supreme Court provided a glimmer of hope when it gave a go-ahead to central government's ambitious plan for bringing in the cheetah from Namibia, Africa.
- The sites that have been suggested for the relocation are the Kuno-

Palpur Wildlife Sanctuary in Madhya Pradesh, the Velavadar National Park in Gujarat and the Tal Chapar sanctuary in Rajasthan.

- Genetic differences in cheetah subspecies
- One of the major issues that has concerned experts is the genetic differences in the cheetah subspecies.
- The cheetahs coming to India will not be from the Asiatic subspecies, but instead from the African subspecies.
- The African cheetahs not only look different, but are also used to a different habitat and prey base. In comparison, the Asiatic cheetah is smaller, thinner and slightly paler in colour than its African counterpart.
- Introducing a different subspecies to new ecological setting carries its own set of biodiversity issues and disease risks.
- Not enough space to accommodate cheetahs
- A cheetah requires a substantial amount of space.
- Many activists have said that the proposed habitats in India are not large enough to accommodate cheetahs, and do not have enough prey to sustain the big cats.
- According to a report by Smithsonian Magazine, the proposed Indian wildlife habitats do not have an area of more than 1,000 square kilometers, and also have much less prey base than the African homes of cheetahs.
- Might take focus away from species that need attention
- With renewed focus on bringing the cheetah back to India, experts fear that it might take away the focus away from other species that need more attention.
- One such example is the great Indian bustard, which stands on the brink of extinction in the country today.
- Risk of diseases in new setting
- A Down to Earth report explains that when animals are being introduced to a new landscape, there is a risk of disease spread to both the individual animals and to the wildlife species which inhabit the site chosen for reintroduction.
- The stress of unfamiliar or unnatural conditions of confinement, especially during the translocation process might trigger diseases in cheetahs.

THE HINDU

REUSABLE SPACECRAFT

- A reusable spacecraft is a class of spacecraft that have been designed with repeated launch, orbit, deorbit and atmospheric re-entry in mind.

THE HINDU

- This contrasts with conventional spacecraft which are designed to be expended (thrown away, allowed to burn during re-entry) after use.
- Examples of reusable spacecraft are spaceplanes (such as the Space Shuttle orbiters and the Dream Chaser) and space capsules like the SpaceX Dragon.
- Such spacecraft need mechanisms to prevent the disintegration of the spacecraft and its occupants/cargo during re-entry. Failure of such systems may be catastrophic.
- Reusable spacecraft include mechanisms to deorbit and reenter the atmosphere in a controlled fashion
- For this purpose, the Space Shuttle included OMS pods, and the SpaceX Dragon included its own engines, used for deorbiting. Deorbiting slows the spacecraft down, lowering its perigee to inside the atmosphere where the vehicle descends to Earth.
- As a rough rule of thumb, 15% of the landed weight of an atmospheric re-entry vehicle needs to be heat shielding.
- Thermal Protection Systems (TPS) can be made of a variety of materials, including reinforced carbon-carbon and ablative materials.

Why has the government withdrawn the Personal Data Protection Bill, 2019 after JPC scrutiny?

- The story so far: On Wednesday, August 3, the government withdrew the Personal Data Protection Bill that it had tabled in the Lok Sabha on December 11, 2019.

What are the origins of the Bill?

- In the seminal Justice K.S. Puttaswamy (Retd) vs Union of India case, the Supreme Court of India ordered in 2017 that the right to privacy is an intrinsic part of the right to life and personal freedom guaranteed by the Indian constitution.
- In the light of this judgment, and the concerns around how large tech platforms were handling the personal data of its Indian users, the Centre in 2017 set up an expert committee chaired by retired Supreme Court Justice B.N. Srikrishna to formulate a regulatory framework for data protection.
- The Srikrishna Committee submitted its report and a draft for the Data Protection Bill to the Ministry of Electronics and Information Technology on July 27, 2018.

- The Bill that was tabled by the Ministry in Parliament over a year later was, however, criticised by Justice Srikrishna for giving much more control to the Central government over the data than envisaged in the committee's draft.
- The JPC that then deliberated on the Bill submitted its report in November, 2021, clearing clause 35, the provision that enables government agencies to circumvent provisions of the law citing "public order", "sovereignty", "friendly relations with foreign states" and "security of the state".
- The opposition members of the JPC had submitted strong dissent notes along with the report.

Why has the Bill been withdrawn now?

- Despite the government retaining its access to data, it has withdrawn the Bill now citing the significant number of amendments, recommendations, and corrections suggested by the JPC.
- Alongside this, the government has also said that it received several concerns from the tech industry specifically from Indian start-ups regarding the stipulations on data localisation in the Bill.

What does the Bill say on data localisation?

- Personal data was defined in the Bill as “any characteristic, trait, attribute or any other feature information” that can be used to identify a person.
- The Bill also identified a sub-category of Sensitive Personal Data, such as details on a person’s finance, health, sexual orientation and practices, caste, political and religious beliefs, and biometric and genetic data.
- It also created a Critical Personal Data category, which was “personal data as may be notified by the Central government” in the future.
- The Bill stated that while Sensitive Personal Data can be transferred abroad for processing, a copy of it must be kept in India.
- Critical Personal Data can be stored and processed only in India. It also stipulates the conditions under which sensitive data can be sent abroad, such as government authorised contracts.
- Several countries have such localisation provisions, considering the strategic and commercial implications of data, the “new oil”

What were the concerns of the tech industry?

- Indian start-ups have raised the issue that the infrastructure needed to comply with the localisation stipulations will be a huge drain on their resources.
- Start-ups also often depend on international companies for services such as customer management, analytics and marketing, which will require them to send data on their customers abroad.
- Data localization requirements would not only reduce their choices on such services but also burden them with compliance processes.
- The compliance requirements have implications for the larger U.S.-based tech companies as well, with reports indicating that umbrella organisations of U.S. businesses were lobbying against the Bill.

THE HINDU

Why did SSLV Failed?

The story so far:

- On August 7, ISRO got ready for the first developmental flight of the SSLV-D1/EOS-2 mission.
- The launch took place from the Satish Dhawan Space Centre at Sriharikota.

- The Small Satellite Launch Vehicle (SSLV) D1/EOS-2 mission, was carrying two satellites the Earth Observation Satellite-2 (EOS-2) which weighed about 135 kg and AzadiSAT which weighed about eight kg.
- The mission aimed to place the EOS-2 in a circular low-Earth orbit at a height of about 350 km above the Equator and inclined at an angle of 37 degrees.
- The initial part of the story was successful with the launch vehicle operating smoothly.
- However, the mission failed to place the satellites in their required orbits, and the satellites, as they were already detached from the launch vehicle, were lost.

What was the purpose of the SSLV-D1/EOS-2 mission?

- The purpose of this mission was to place the two satellites in circular low-Earth orbits at a height of about 350 km above the Equator.
- The larger one, the EOS-2 which was designed and developed by ISRO, offered advanced optical remote sensing operations.
- It would have operated in the infrared region and could have served many purposes, from imaging

for climate studies to simply keeping an eye on Earth.

- AzadiSAT, on the other hand, was a collective of 75 tiny payloads weighing around 50 grams each, which were integrated by students.
- It carried tiny experiments which would have measured the ionising radiation in its orbit and also a transponder which worked in the ham radio frequency to enable amateur operators to access it.

Which part of the mission succeeded and where did it fail?

- The SSLV was composed of three stages powered by solid fuels and these three performed their function as planned.
- However, when it came to the stage when the satellites had to be set in orbit, there was a glitch which resulted in the satellites being lost forever.
- With a degree of openness that is unprecedented in ISRO, it was announced that there was a malfunctioning of a sensor which resulted in placing the satellites in an elliptical orbit, rather than a circular orbit.

Why were the satellites lost?

- If the closest distance to the Earth is only 76 km, as it happened this time,

there is an atmospheric drag experienced by the object at that height.

- Thereafter, unless adequate thrust is applied to overcome the drag, it will lose height and fall towards the Earth because of gravity and may eventually burn up due to friction
- In the present case, the announcement was that “failure of a logic to identify a sensor failure and go for a salvage action caused the deviation.

Why do we need to develop an SSLV when we have successfully used PSLV and GSLV?

- The PSLV (Polar Satellite Launch Vehicle) and GSLV (Geosynchronous Satellite Launch Vehicle) are quite powerful and can carry huge loads. To place an Earth Orbiting Satellite in a low Earth orbit, one does not need such power horses.
- The SSLV can easily carry small-to-medium loads from 10 kg to 500 kg. It is less expensive.
- The three stages being powered by solid fuel is another advantage. Solid fuel is easier to handle, whereas handling the liquid propellants used in the PSLV and GSLV is more complex.

THE HINDU

Parliamentary Panel On guardianship and adoption of minors

- The story so far: A Parliamentary panel has recommended conferring equal rights on mothers as guardians under the Hindu Minority and Guardianship Act (HMGA), 1956 instead of treating them as subordinates to their husband, and has called for joint custody of children during marital disputes.
- It has also proposed allowing the LGBTQI community to adopt children.
- What are the recommendations of the Parliamentary panel on guardianship and child custody?
- The department-related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice tabled its report on August 8, 2022, in both Houses of Parliament on the ‘Review of Guardianship and Adoption Laws’.
- In its report the committee has said that there is an “urgent need to amend the HMGA (Hindu Minority and Guardianship Act, 1956) and accord equal treatment to both mother and father as natural guardians as the law violated the right to equality and right against

discrimination envisaged under Articles 14 and 15 of the Constitution.”

- In cases of marital dispute, the panel says there is a need to relook at child custody which is typically restricted to just one parent where mothers tend to get preference.
- It says courts should be empowered to grant joint custody to both parents when such a decision is conducive for the welfare of the child, or award sole custody to one parent with visitation rights to the other.
- On adoption, the Committee has said that there is a need for a new legislation that harmonises the Juvenile Justice (Care and Protection of Children) Act, 2015 and the Hindu Adoptions and Maintenance Act (HAMA), 1956.
- The Supreme Court’s landmark judgment in Githa Hariharan vs Reserve Bank of India in 1999 challenged the HMGA for violating the guarantee of equality of sexes under Article 14 of the Constitution of India and the court held that the term “after” should not be taken to mean “after the lifetime of the father “, but rather “in the absence of the father”.
- But the judgment failed to recognise both parents as equal guardians,

subordinating a mother’s role to that of the father.

- Though the judgment sets a precedent for courts, it has not led to an amendment to the HMGA.
- The panel's proposals on guardianship have been made by the Law Commission of India in its 257th report on "Reforms in Guardianship and Custody Laws in India" in May 2015 as well as its 133rd report in August, 1989 on "Removal of discrimination against women in matters relating to guardianship and custody of minor children and elaboration of the welfare principle.

THE HINDU

Teesta agreement

- Teesta is a 414km long river flowing through the Indian states of West Bengal, Sikkim before going to the Bay of Bengal through Bangladesh.
- It is the fourth largest transboundary river shared between India and Bangladesh after Ganges, Brahmaputra, and Meghna river systems.
- Total catchment area: 1.75 million Sq. km

For Bangladesh:

- According to the report of Asian Foundation in 2013, its flood plain covers about 14% of the total cropped area of Bangladesh and provides direct livelihood opportunities to approximately 73% of its population.

For West Bengal

- Teesta is the lifeline of North Bengal and almost half a dozen of districts of West Bengal are dependent on the waters of Teesta.
- Article 253 of Indian Constitution gives power to the Union Government to enter any transboundary river water related treaty with a riparian state.
- The centre cannot do it arbitrarily without taking into consideration the social, political and eco-impact of such a treaty in the catchment area.
- Many of the glaciers on the Teesta river basin have retreated, says a strategic foresight group, a Mumbai think tank.
- Estimates suggested that Teesta River has a mean average flow of approximately 60 billion cubic meters, of which significant amount flows during June and September and October to April is considered to be a lean season.

- Any treaty will dry out northern region of West Bengal and will hurt farmers.

THE HINDU

Corbevax and types of vaccines

Corbevax

- Corbevax is a “recombinant protein sub-unit” vaccine, which means it is made up of a specific part of SARS-CoV-2, that is, the spike protein on the virus’s surface.
- The spike protein allows the virus to enter cells so that it can replicate and cause disease. However, when just the spike protein is injected into the body, it is not as harmful as the virus itself, because the rest of the virus is missing.
- The body is expected to develop an immune response against the injected spike protein and, if and when the real virus attempts to infect, the body has an immune response ready, which will make it unlikely that the virus can make the victim seriously ill.
- This technology itself is not new. It has been used for decades to make hepatitis B vaccines. However, Corbevax is among the first Covid-19 vaccines to use this platform.
- Gaithersburg, Maryland-based Novavax too has developed a protein-based vaccine, which has been manufactured in India under licence by Serum Institute of India.

How is Corbevax different?

- The Covid-19 vaccines manufactured by Pfizer and Moderna are mRNA vaccines; those made by AstraZeneca-Oxford (Covishield in India), Johnson & Johnson and Sputnik V are viral vector vaccines; and Covaxin, Sinovac-CoronaVac, and Sinopharm’s SARS-CoV-2 Vaccine-Vero Cell are inactivated vaccines.
- Inactivated vaccines, which contain killed particles of the whole SARS-CoV-2 virus, seek to target the entire structure of the virus. On the other hand, Corbevax, like the mRNA and viral vector vaccines, targets only the spike protein, but in a different way.
- Viral vector and mRNA and vaccines use a code to induce human cells to make the spike proteins against which the body has to build immunity.

THE HINDU

G20 in changing scenario

- The G20 plays an important role in shaping and strengthening global architecture and governance on all major international economic issues.
- It recognises that global prosperity is interdependent and economic

opportunities and challenges are interlinked.

- India will strengthen international support for priorities of vital importance to developing countries in diverse social and economic sectors, ranging from energy, agriculture, trade, digital economy, health and environment to employment, tourism, anti-corruption and women empowerment, including in focus areas that impact the most vulnerable and disadvantaged.

Changing Scenario

- First, multilateral commitments on aid and trade are faltering. Governance in a world that is steadily becoming more equal needs institutional innovation.
- This is because the role of the United Nations and the World Trade Organization in securing cooperation between donor and recipient country groups is losing centrality.
- Second, Ukraine's long shadow, rival finance, the expanding influence of the trade and value chains dominated by the U.S. and China, and the reluctance of developing countries to take sides in the strategic competition as they have a real choice requires fresh thinking on

the nature and form of collaboration from the G20.

- Third, the primary role of the G20, which accounts for 95% of the world's patents, 85% of global GDP, 75% of international trade and 65% of the world population, needs to be reoriented to prevent a clash of ideas to the detriment of the global good.
- The solution lies in a new conceptual model seeking agreement on an agenda limited to principles rather than long negotiated anodyne text.

A new conceptual frame

- First, the presumed equality that we are all in the same boat, recognised in the case of climate change, needs to be expanded to other areas with a global impact redefining 'common concerns'.
- Second, emerging economies are no longer to be considered the source of problems needing external solutions but source of solutions to shared problems.
- Third, the BRICS provides an appropriate model for governance institutions suitable for the 21st century where a narrow group of states dominated by one power will not shape the agenda.

Steps ahead

- The starting point should be building on the global consensus in the Vienna Declaration on Human Rights 1993 reaffirming the indivisibility of all human rights.
- Second, the global agenda has been tilted towards investment, whereas science and technology are the driving force for economic diversification, sustainably urbanising the world, and ushering the hydrogen economy and new crop varieties as the answer to both human well-being and global climate change.
- Third, harnessing the potential of the digital-information-technology revolution requires redefining digital access as a “universal service” that goes beyond physical connectivity to sharing specific opportunities available.
- Fourth, space is the next frontier for finding solutions to problems of natural resource management ranging from climate change-related natural disasters, supporting agricultural innovation to urban and infrastructure planning.
- Fifth, public health has to learn from the COVID-19 fiasco with infectious diseases representing a market failure.
- A major global challenge is the rapidly growing antimicrobial resistance which needs new antibiotics and collaboration between existing biotechnology facilities.
- Sixth, overriding priority to development suggests avoiding strategic competition
- Lastly, a Global Financial Transaction Tax, considered by the G20 in 2011, needs to be revived to be paid to a Green Technology Fund for Least Developed Countries.

THE HINDU

Inflation Reduction Act (IRA) 2022

The story so far:

- On August 7, the U.S. Senate approved a Bill titled the Inflation Reduction Act (IRA) 2022, with a simple majority of 51 to 50.
- The IRA has a special focus on climate, healthcare, and tax provisions to address inflation.
- What are the climate change provisions?
- The Bill marks the largest American investment aimed toward making the U.S. a leader in clean energy. It includes packages worth \$369 billion for the clean energy transition.

- It provides a tax deduction to low and middle-income households to go electric and seeks to lower the energy bills of American households.
- It also aims to bolster the domestic production of heat pumps and critical minerals.
- The Bill provides significant investment in renewable energy through heavy tax credits for wind and solar energy projects and electric vehicles.
- Additionally, the Bill imposes a tax on the largest and most profitable companies in order that they pay their fair share, without levying any taxes on households with income less than \$40,000 per annum.
- It seeks to expand oil and gas drilling, with the federal government offering land for onshore and offshore drilling as a prerequisite for developing renewable energy

Why does the U.S. want to invest in addressing climate change?

- The U.S is currently facing extreme climate threats.
- This includes heatwaves, wildfires, cyclones, floods, and hurricanes that have become frequent and intense in the past few years.
- The Bill being the largest-ever investment in addressing the climate crisis in U.S. history, will help the

nation get closer to its climate target of reducing 50-52% emissions below 2005 levels by 2030.

THE HINDU

Electricity (Amendment) Bill, 2022

What is the history of the Bill?

- The Electricity Bill was brought for the first time and passed in Parliament in 2003, when A. B. Vajpayee was the Prime Minister.
- The intention was to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity.
- The Act also offered to protect the interest of consumers and supply of electricity to all areas, rationalisation of electricity tariff, transparent policies regarding subsidies etc.
- The Act resulted in privatisation of distributing companies. It was amended in 2007.
- The provisions for “cross subsidy” ensuring subsidy to poor households was added to the Bill in 2007.
- There were attempts to amend the Bill further in 2014, 2017, 2018, 2020 and 2021.
- While the 2014 Bill was cleared by the Standing Committee on Energy,

it could not be passed in the House as the Centre wanted to revise it.

Why is there opposition to the Bill?

- The opposition to the Bill is primarily from farmers' groups as they fear that the Bill will lead to stopping subsidies and that power distribution will thereafter be under the control of private companies.
- The workers in the power sector also oppose the Bill citing that privatisation of distribution companies and generating units will result in job losses.

What are the main amendments to the Act?

- Compared to the drafts of 2020 and 2021, the Electricity Act (Amendment) Bill of 2022 has a number of changes.
- The main change among them could be the proposal for the Centre's intervention in the area of power distribution, a domain under the State governments. Such provisions can be seen in clauses 5, 11, 12, 13, 15 and 23 of the Bill.
- Clause 5 amends Section 14 of the parent Act that deals with the criteria for electricity distributors.
- Another clause that causes worry for those who oppose the Bill is Clause 11, which seeks to amend section 42

of the principal Act to facilitate operation of multiple distribution licensees in the same area and to avoid parallel network and optimise usage of the distribution network

- Similarly, Clause 13 seeks to amend section 60 of the principal Act to enable management of power purchase and cross subsidy in case of multiple distribution licensees in the same area of supply.
- It says in case of issuance of licence to more than one distribution licensee in an area of supply, the State Government shall set up a cross subsidy balancing fund which shall be managed by a government company.

THE HINDU

Audio Visual Co-production Treaty

- The Union Cabinet has approved the signing of an Audio Visual Co-production Treaty between India and Australia, which is aimed at facilitating joint production of films between the two countries.
- India has so far signed 15 audio visual co-production treaties with other countries.
- "The proposed agreement will boost ties with Australia, lead to exchange

of art and culture, showcase the soft power of our country and lead to generation of employment among artistic, technical as well as non-technical personnel engaged in audio visual co-production, including production and post-production work.

THE HINDU

GES
REPORTER

Langya virus

- Dozens of people in China have fallen ill with a new virus that is also found in shrews, a report has said, but there is so far no evidence of human-to-human transmission.
- The virus is called Langya henipavirus or LayV,
- Research findings suggested shrews may be a natural reservoir for the pathogen.
- The study adds that Langya's genome organization is "identical to that of other Henipaviruses", and that it is closely related to the "Mojiang Henipavirus, which was discovered in southern China".

Henipavirus

- Henipavirus is a genus of negative-strand RNA viruses in the family Paramyxoviridae, order Mononegavirales containing six established species, and numerous others still under study.
- Henipaviruses are naturally harboured by several species of small mammals, notably pteropid fruit bats (flying foxes), microbats of several species, and shrews.
- Henipaviruses are characterised by long genomes and a wide host range.

- Their recent emergence as zoonotic pathogens capable of causing illness and death in domestic animals and humans is a cause of concern.

THE HINDU

ILO report on Youth Employment

- India experienced severe working-hour and employment losses in 2020 and 2021, and Indian youth employment deteriorated in 2021 compared with the 2020 situation, according to the Global Employment Trends for Youth 2022 report released by the International Labour Organisation on Thursday.
- The recovery in youth employment is still lagging globally, the report says confirming that COVID-19 has hurt young people more than any other age group.
- It finds that the pandemic has worsened the numerous labour market challenges facing those aged between 15 and 24.
- "The total global number of unemployed youth is estimated to reach 73 million in 2022, a slight improvement from 2021 (75 million), but still six million above the pre-pandemic level of 2019,
- Unemployment rate of young people in the Asia and Pacific region is projected to reach 14.9% in 2022,

the same as the global average, although there are important divergences between Subregions and countries.

- In India, the report added that school closures lasted 18 months and among the 24 crore school-going children, only 8% of such children in rural areas and 23% in urban areas had adequate access to online education.
- “Given the deeply unequal access to online resources in developing countries, children from socio-economically disadvantaged families, which are the large majority, had almost no access to education,” the report said.
- It said school closures not only prevented new learning, but also led to the phenomenon of “learning regression”, that is, children forgetting what they had learned earlier.
- “In India, 92% of children on average lost at least one foundational ability in language and 82% lost at least one foundational ability in mathematics.

THE HINDU

NACO AND HIV ACT

- The NACO, functioning under the Union Health and Family Welfare Ministry, is a nodal agency responsible for overlooking and

coordinating activities of the National AIDS Control Programme

- India’s AIDS Control Programme is globally acclaimed as a success story.
- The National AIDS Control Programme (NACP), launched in 1992, is being implemented as a comprehensive programme for prevention and control of HIV/AIDS in India.
- NACP I was implemented with an objective of slowing down the spread of HIV infections so as to reduce morbidity, mortality and impact of AIDS in the country.
- National AIDS Control Board (NACB) was constituted and an autonomous National AIDS Control Organization (NACO) was set up to implement the project.
- The first phase focused on awareness generation, setting up surveillance system for monitoring HIV epidemic, measures to ensure access to safe blood and preventive services for high risk group populations.
- In November 1999, the second National AIDS Control Project (NACP II) was launched with World Bank credit support of USD 191 million.
- The policy and strategic shift was reflected in the two key objectives of NACP II:
- To reduce the spread of HIV infection in India, and

- To increase India's capacity to respond to HIV/AIDS on a long-term basis. Key policy initiatives taken during NACP II included: adoption of National AIDS Prevention and Control Policy (2002); Scale up of Targeted Interventions for High risk groups in high prevalence states; Adoption of National Blood Policy; a strategy for Greater Involvement of People with HIV/AIDS (GIPA); launch of National Adolescent Education Programme (NAEP); introduction of counselling; Launch of National Anti-Retroviral Treatment (ART) programme; and setting up of the National Council on AIDS, chaired by the Prime Minister; and setting up of State AIDS Control Societies in all states.
- In response to the evolving epidemic, the third phase of the national programme (NACPIII) was launched in July 2007 with the goal of Halting and Reversing the Epidemic by the end of project period.
- The HIV & AIDS (P & C) Act, 2017
- The HIV and AIDS (Prevention & Control) Act, 2017 is a central legislation protecting and promoting the rights of persons infected with and affected by HIV and AIDS.
- The Act came into force on September 10, 2018 with the objective to prevent and control the spread of HIV and AIDS and for reinforcing the legal and human rights of persons infected with and affected by HIV and AIDS. It also seeks to protect the rights of healthcare providers.
- The Act addresses stigma & discrimination and strives to create an enabling environment for enhancing access to services.
- It provides for diagnostic facilities related to ART and opportunistic infection management to people living with HIV and AIDS.
- The Act also provides for a robust grievance redressal mechanism in the form of Ombudsman at the State level and Complaints Officer at the establishment level aiming to provide speedy redressal.

THE HINDU

(UNMOGIP)

- United Nations (UN) Secretary-General Antonio Guterres has appointed Rear Admiral Guillermo Pablo Rios of Argentina as the Head of Mission and Chief Military Observer for the United Nations Military Observer Group in India and Pakistan (UNMOGIP).
- The Karachi Agreement of July 1949 firmed up the role of UN-level military observers and permitted supervision of the Ceasefire Line established in Jammu and Kashmir.

- India officially maintains that the UNMOGIP's role was "overtaken" by the Shimla Agreement of 1972 that established the Line of Control or the LoC which with "minor deviations" followed the earlier Ceasefire Line.
- Pakistan, however, did not accept the Indian argument and continued to seek cooperation from the UNMOGIP. As a result of this divergent policies.
- In view of the difference of opinion between India and Pakistan, the UN has maintained that the UNMOGIP could be dissolved only with a decision from the UN Security Council.


THE HINDU

The Criminal Procedure (Identification) Act, 2022

- The story so far: The Criminal Procedure (Identification) Act, 2022 provides legal sanction to law enforcement agencies for "taking measurements of convicts and other persons for the purposes of identification and investigation of criminal matters".
- While the legislation was enacted earlier this year, the Ministry of Home Affairs notified it to come into effect from August 4, 2022.
- It also repeals the existing Identification of Prisoners Act, 1920.

What is the use of identification details in criminal trials?

- Measurements and photographs for identification have three main purposes.
- First, to establish the identity of the culprit against the person being arrested, second, to identify suspected repetition of similar offences by the same person and third, to establish a previous conviction.



A comparison between the two Identification Acts

The previous Identification of Prisoners Act, 1920 and the freshly notified Criminal Procedure (Identification) Act, 2022 have similarities as well as major differences. A quick look at how "measurements" of convicts and arrested persons will be collected from now on.

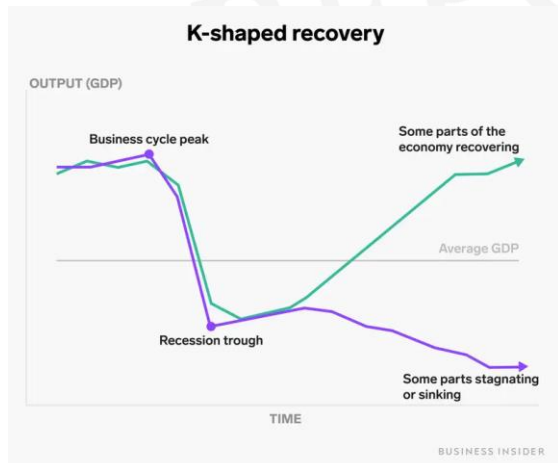
Identified provisions	Identification of Prisoners Act	Criminal Procedure & Identification Act
Persons whose measurements can be taken	Should be convicted of an offence punishable with rigorous imprisonment of one year or upwards should be arrested for an offence punishable with rigorous imprisonment of one year or upwards If directed by the Magistrate for measurements to be taken for the purposes of investigation of proceedings under the CrPc, provided the person has been arrested in connection with such investigation previously	If convicted of an offence punishable under any law If arrested for an offence punishable under any law or if detained under preventive detention laws If directed by the Magistrate for measurements to be taken for the purposes of investigation of proceedings under the CrPc or any other law in force, there is no requirement for the person to have been arrested in connection with such proceedings previously
Measurements that can be taken	Finger impressions, foot impressions, measurements and photographs	ordered to give security for his good behaviour under CrPc Finger impressions, palm-prints impressions, foot-prints impressions, photographs, iris and retina scan, physical, biological samples and their analysis, behavioural attributes including signatures, handwriting or any other examination referred to in section 53 or section 53A of the CrPc, 1973
Destruction of measurements	In case of acquittal, discharge or release, if not previously convicted of any offence punishable with rigorous imprisonment of one year or upwards	ordered to give security for his good behaviour under CrPc In case of acquittal, discharge or release, if not previously convicted of any offence punishable with rigorous imprisonment for any term. For convicts, records are to be destroyed from 75 years of collection

THE HINDU

K shaped recovery

What is a K-shaped recovery?

- A K-shaped recovery is a post-recession scenario in which one segment of the economy begins to climb back upward while another segment continues to suffer. If illustrated, the economic growth would roughly resemble the two diverging diagonal lines of the letter "K" hence the name.
- When compared with other recovery shapes, the K-shaped recovery poses a troubling, divergent economic future, one where the economy rebounds unevenly, and where the wealthy benefit while just about everyone else gets left behind.



THE HINDU

Garuda shield

- Soldiers from the U.S., Indonesia and Australia joined a live-fire drill, part

of annual joint combat exercises on Sumatra Island amid growing Chinese maritime activity in the Indo-Pacific region.

- More than 5,000 personnel from the U.S., Indonesia, Australia, Japan and Singapore are participating in the Super Garuda Shield exercises, making them the largest since they began in 2009.
- The drills are seen by China as a threat.
- The U.K., Canada, France, India, Malaysia, South Korea, New Zealand, Papua New Guinea and East Timor also sent observers to the exercises.

GARUDA SHIELD

- Garuda Shield is a two-week joint-exercise between the United States Army and Indonesian Army.
- The purposes of this joint-exercise is to enhance and enrich the jungle warfare ability of both U.S. Army and Indonesian Army.
- This joint-exercise took place in Indonesia. This joint-exercise was first held in 2007.
- In April 2022, a new Garuda Shield joint-exercise has been announced, which will involve 14 countries, making it the largest edition of Garuda Shield since it was established in 2009.

- The exercise, which is known as Super Garuda Shield, will include nations such as Japan, Australia, and Britain.

Essential commodity act

- With tur dal prices surging since mid-July and reports coming in of some traders creating artificial supply squeeze by restricting sales, the Centre has invoked the Essential Commodities Act of 1955 to ask States to monitor and verify the stocks available with such traders.
- The ECA was enacted in 1955 and has since been used by the Government to regulate the production, supply, and distribution of a whole host of commodities that it declares 'essential' to make them available to consumers at fair prices. Additionally, the government can also fix the minimum support price (MSP) of any packaged product that it declares an "essential commodity".

What is the definition of an 'essential commodity'?

- There is no specific definition of essential commodities in The EC Act. Section 2(A) of the act states that an "essential commodity" means a commodity specified in the "Schedule" of this Act.

- The Act gives powers to the central government to add or remove a commodity in the "Schedule." The Centre, if it is satisfied that it is necessary to do so in public interest, can notify an item as essential, in consultation with state governments.
- At present, the "Schedule" contains 9 commodities drugs; fertilisers, whether inorganic, organic or mixed; foodstuffs, including edible oils; hank yarn made wholly from cotton; petroleum and petroleum products; raw jute and jute textiles; seeds of food-crops and seeds of fruits and vegetables, seeds of cattle fodder, jute seed, cotton seed; face masks; and hand sanitisers.

THE HINDU

Population control

- The United Nations' World Population Prospects (WPP), 2022, forecasts India becoming the most populous country by 2023, surpassing China, with a 140 crore population
- India has 17.5% of the world's population. As per the latest WPP, India will reach 150 crore by 2030 and 166 crore by 2050.
- India reached a significant demographic milestone as, for the

first time, its total fertility rate (TFR) slipped to two, below the replacement level fertility (2.1 children per woman), as per the National Family Health Survey.

Demographic dividend

- A larger population is perceived to mean greater human capital, higher economic growth and improved standards of living.
- In the last seven decades, the share of the working age population has grown from 50% to 65%, resulting in a remarkable decline in the dependency ratio (number of children and elderly persons per working age population).
- As in the WPP 2022, India will have one of the largest workforces globally, i.e., in the next 25 years, one in five working-age group persons will be living in India.
- This working-age bulge will keep growing till the mid-2050s, and India must make use of it.

HURDLES

- India's labour force is constrained by the absence of women from the workforce; only a fourth of women are employed.
- The quality of educational attainments is not up to the mark, and the country's workforce badly

lacks the basic skills required for the modernised job market.

- Having the largest population with one of the world's lowest employment rates is another enormous hurdle in reaping the 'demographic dividend'.
- Another demographic concern of independent India is the maledominant sex ratio.
- Every other woman in the reproductive age group in India is anaemic, and every third child below five is stunted. India stands 101 out of 116 nations in the Global Hunger Index;
- There has been a transition towards noncommunicable diseases (NCDs), the cause of more than 62% of total deaths.
- India is a global disease burden leader as the share of NCDs has almost doubled since the 1990s, which is the primary reason for worry.
- India is home to over eight crore people with diabetes.
- Further, more than a quarter of global deaths due to air pollution occur in India alone.
- With an increasingly ageing population in the grip of rising NCDs, India faces a serious health risk in the decades ahead.

- In contrast, India's healthcare infrastructure is highly inadequate and inefficient.
- Additionally, India's public health financing is low, varying between 1% and 1.5% of GDP, which is among the lowest percentages in the world.
- India is called a young nation, with 50% of its population below 25 years of age. But the share of India's elderly population is now increasing and is expected to be 12% by 2050.
- After 2050, the elderly population will increase sharply.
- The focus of action should be on extensive investment in human capital, on older adults living with dignity, and on healthy population ageing.
- We should be prepared with suitable infrastructure, conducive social welfare schemes and massive investment in quality education and health.

THE HINDU

Langya (LayV)

- The virus called Langya (LayV), was reported in patients in Eastern China.
- The pathogen belongs to the henipavirus family, closely associated with Nipah and Hendra viruses
- The virus was named after the town this patient lived in Langya in the Shandong province in China
- With the available evidence, that the virus must have been directed transmitted by shrews or any other intermediary animal.
- While LayV as we know it now does not pose a huge threat, it is apparent that the nature of a connected world facilitates the easy transmission of viruses globally.
- Constant, unflagging surveillance, and adequate sharing of information between nations is essential, experts underscore.

THE HINDU

CAG Report-Conservation of Coastal Ecosystems from 2015-20

The story so far:

- This week, the Comptroller and Auditor General (CAG) of India tabled a report in Parliament on

whether steps taken by the Union Environment Ministry to conserve India's coastal ecosystems have been successful

- This latest report contains the observations from an audit of 'Conservation of Coastal Ecosystems from 2015-20.'

What are the Centre's obligations on conserving the coastline?

- The government has issued notifications under the Environment Protection Act, 1986, to regulate activities along India's coasts particularly regarding construction.
- The Coastal Regulation Zone Notification (CRZ) 2019, implemented by the Ministry, classifies the coastal area into different zones to manage infrastructure activities and regulate them.
- The three institutions responsible for the implementation of the CRZ are the National Coastal Zone Management Authority (NCZMA) at the Centre, the State/Union Territory Coastal Zone Management Authorities (SCZMAs/UTCZMAs) in every coastal State and Union Territory and the District Level Committees (DLCs) in every district that has a coastal stretch and where the CRZ notification is applicable.

- These bodies examine if CRZ clearances granted by the government are as per procedure, if project developers once given the go-ahead are complying with conditions, and if the project development objectives under the Integrated Coastal Zone Management Programme (ICZMP) are successful.
 - They also evaluate the measures taken up by the government towards achieving the targets under Sustainable Development Goals, a set of United Nations-prescribed targets for countries towards eradicating poverty and becoming sustainable societies.
- consequences not being present during project deliberations.
- There were also instances of the members of the EAC being fewer than half of the total strength during the deliberations.
 - The SCZMA had not been reconstituted in Karnataka and there was delayed reconstitution in the States of Goa, Odisha and West Bengal.
 - There were instances of projects being approved despite inadequacies in the Environment Impact Assessment (EIA) reports.

THE HINDU

Methane emission

Why did the CAG undertake this audit?

- The CAG has a constitutional mandate to investigate and report on publicly funded programmes. The CAG conducted “pre-audit studies” and found that there were large-scale CRZ violations in the coastal stretches.

What did the audit find?

- Expert Appraisal Committees are a committee of scientific experts and senior bureaucrats who evaluate the feasibility of an infrastructure project and its environmental

- A new study has found that landfills make substantial contributions to greenhouse gas emissions in four major cities of the world.
- Methane is emitted from a variety of anthropogenic (human-influenced) and natural sources. Anthropogenic emission sources include landfills, oil and natural gas systems, agricultural activities, coal mining, stationary and mobile combustion, wastewater treatment, and certain industrial processes.
- Methane is the second most abundant anthropogenic GHG after carbon dioxide (CO₂), accounting for

about 20 percent of global emissions. Methane is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere.

- Over the last two centuries, methane concentrations in the atmosphere have more than doubled, largely due to human-related activities.
- Because methane is both a powerful greenhouse gas and short-lived compared to carbon dioxide, achieving significant reductions would have a rapid and significant effect on atmospheric warming potential.

THE HINDU

Lidar

- The southwest corner of the Amazon Basin was once the site of complex urban settlements built by ancient civilizations.
- Researchers used a laser remote-sensing technology called LIDAR to map land inhabited by the Casarabe culture, which existed around AD 500 to 1400, in what is now known as Bolivia.

Lidar

- Lidar, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the

form of a pulsed laser to measure ranges (variable distances) to the Earth.

- These light pulses combined with other data recorded by the airborne system generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.
- A lidar instrument principally consists of a laser, a scanner, and a specialized GPS receiver.
- Airplanes and helicopters are the most commonly used platforms for acquiring lidar data over broad areas.
- Two types of lidar are topographic and bathymetric. Topographic lidar typically uses a near-infrared laser to map the land, while bathymetric lidar uses water-penetrating green light to also measure seafloor and riverbed elevations.
- Lidar systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility.

THE HINDU

Retrovirus

- People living with HIV need access to treatment with a combination of drugs known as antiretroviral therapy to suppress the virus, preserve their health, and prevent transmission of the virus to an HIV-negative partner.
- Staying on anti-retroviral therapy continuously is crucial to keep the virus suppressed.
- But the virus can mutate into a resistant form if treatment delivery is poor or patchy.

About Retrovirus

- A retrovirus is a virus that uses RNA as its genomic material.
- Upon infection with a retrovirus, a cell converts the retroviral RNA into DNA, which in turn is inserted into the DNA of the host cell.
- The cell then produces more retroviruses, which infect other cells. Many retroviruses are associated with diseases, including AIDS and some forms of cancer.

THE HINDU

Lactose Tolerance

Studies on the global prevalence of this mutation suggest that 65% of humanity is lactose-intolerant, meaning they lack the gene to break down lactose into adulthood.

- Beyond the age of five, lactose, a sugar present in milk, cannot be naturally broken down in the stomach and this remains in the gut causing flatulence, acidity and diarrhoea.
- The genetic variant present in Indians is almost identical to that found in Europeans, meaning that it likely spread into India from migrant European populations
- As populations and settlement sizes grew, human health would have been increasingly impacted by poor sanitation and increasing diarrheal diseases, especially those of animal origin.
- Consuming milk under these conditions would have been harmful to those who lacked the digestive gene.

THE HINDU



Asymmetric federalism

- Diversity and plurality call for an arrangement that can pave the way for accommodation and integration reflected in the existing system of asymmetrical federalism.
- India is not the only country with asymmetrical arrangements in its federal setup
- The capacity to accommodate various social groups and their interests makes India a thriving federal democracy as it displays enormous asymmetric characteristics.

Protecting diversity

- While constructing an asymmetrical framework, our founding fathers chose the salad bowl approach instead of the melting pot approach.
- Recognizing the existing pluricultural society in India necessitated such a choice
- An asymmetrical constitutional setup is indisputably necessary for a multicultural and multinational country such as India to protect the rights of the community and the minorities.
- While in every federal nation the former is based on the territorial and demographic sizes of the constituent units, the latter characterizes the

Constitution's extension of legislative and executive powers to the constituent units.

- So when we find representation of States in the Rajya Sabha based on their population, it is a political asymmetry.
- That is why States such as Uttar Pradesh have 31 seats in the Rajya Sabha, whereas Meghalaya and Mizoram have just one each.

Self-rule within shared rule

- We find constitutional asymmetry in Article 370 (now diluted) and in the special provisions and powers extended to Nagaland, Mizoram and others in the omnibus Article 371
- Article 371 requires the State legislature's permission before implementing any parliamentary law to exemplify asymmetrical provisions protecting the religious and social practices, customary laws and procedures of Nagas and Mizos.
- In addition, creation of the Autonomous District Council as per the Sixth Schedule also acknowledges the socio-cultural, political and historical rights of the tribes of the Northeast, thereby facilitating the provisions of self-rule within the scheme of shared rule.
- Furthermore, the Indian asymmetrical setup has evolved to

include another type of asymmetry, i.e. Union Territories (UTs). Their establishment is in line with the spirit of federal asymmetry.

- UTs were too small to be declared as States or could not be merged with a neighbouring State due to prevailing cultural dissimilarities, inter-State indifferences, extensive isolation and other specific needs, as in the case of National Capital Territory (NCT).
- Among all the UTs, Delhi, Puducherry and Chandigarh are distinct examples. Since 2019, we now have Jammu and Kashmir as a UT with a legislative assembly and Ladakh as a UT without.

On fiscal arrangements

- Another significant asymmetry is the fiscal arrangements enshrined in the Constitution.
- When transferring funds from the Centre to States, statutory transfers are made based on the recommendations of the Finance Commission.
- Also, while the Central government entirely funds specific Central sector development schemes in India, the cost of implementing centrally sponsored schemes to bring about welfare is co-shared by both the Centre and sub-national units.

- Asymmetrical federalism will continue to have its relevance in the future because to pave the way for cooperative federalism we must be able to accommodate various groups and provide them with a share in the governance of the country at the same time.

THE HINDU

Foreign policy and moral leadership

- For India, the challenge today is to define its unique foreign policy identity, and shape the contours of its engagement with an increasingly chaotic world.
- India can address this by reclaiming its moral leadership in the region and beyond.
- India has long given up on non-alignment, and its legatee concept 'of strategic autonomy.
- While it is not wrong to argue that in an increasingly chaotic world, self-help is unavoidable, and moral arguments or policies alone will not take nations very far especially those located in hard geopolitical situations, it is also not inaccurate to argue that nations and leaders who can provide moral leadership have a special place in the comity of nations.

- It has been keen on participating in global institutions, including the UN Security Council (which it has been kept out of), it has made significant contributions to various types of international organizations, international or intergovernmental, and it has been a keen participant in various global efforts at addressing common global challenges.
- India's reluctance over building institutions in its 'periphery' which can sustain democratic values and economic integration has come back to haunt the country given how Beijing's predatory economic practices have managed to sway the region so effortlessly.
- Our loss (or wilful renunciation) of moral agency in foreign policy has a number of consequences.
- For one, our ability to build peace or mediate for global peace has vastly diminished
- Second, contemporary India's pursuit of its interests is hardly backed by normative arguments but by material power or exploitation of great power contradictions or playing the balance-of-power games.
- India will soon become the most populous country in the world, but it will hardly be a demographic superpower;
- It is set to be the world's sixth-largest economy but it is still too poor to spend for global peace, stability or maintenance of world order
- The argument is not that India must relinquish its hard national interests, but that moral arguments have the power to highlight the appeal of our national interests even more.

THE HINDU

Local government empowerment

- Local government system obtained constitutional status only through the 73rd and 74th constitutional amendments, which mandated panchayats and municipalities, devolved a range of powers and responsibilities and made them accountable to the people.
- These amendments, which came into force in 1993, were revolutionary; they changed the scope and extent of India's democracy.
- From a mere 4,000 MLAs and MPs, the number of our elected representatives exploded to nearly 3.2 million.
- We progressed from being representationally sparse to one of the most intense democratic participatory systems envisaged.

- Scope was provided for the participation of women and the marginalized sections of society in government.
- A three-pronged strategy is used to cripple the local government system. Every local government needs to have organizational capacity, by way of staff such as engineers, office staff and social mobilisers.
- Staffing of local governments is scanty
- Second, local governments are starved of money.
- The Union Finance Commissions have made desirable recommendations, but the pitifully low finances that are devolved to local governments, not more than 5% of the divisible pool of Union taxes, come with conditionalities that bind them to specific uses.
- Furthermore, these funds are tied down by restrictive procedures that give officers control over local government expenditure decisions, through cheque signing conditionalities.
- Funds meant for the mandated duties of local governments are diverted to parallel corporate structures that perform these duties without accountability to, or consultation with the people.
- The Smart City 'Special Purpose Vehicle' is a particularly ill-reputed example.
- Third, technology is a much-loved tool of bureaucrats to centralise the delivery of local services, much to the detriment of local decision-making

Observed changes

- Urban NGOs have sprung up, which educate and exhort urban citizens to take a greater interest in urban governance. There are many good examples of local action in practice.
- Second, there is a growing failure of local services being delivered by line departments.

THE HINDU

India-EU

- A cooperation agreement signed in 1994 took the bilateral relationship beyond trade and economic cooperation.
 - The first India-EU Summit, in June 2000, marked a watershed in the evolution of the relationship.
 - At the fifth India-EU Summit in 2004, the relationship was upgraded to a 'Strategic Partnership'.
 - The two sides adopted a Joint Action Plan in 2005 towards strengthening dialogue and consultation mechanisms in the political and economic spheres, enhancing trade and investment, and bringing peoples and cultures together.
 - The 15th India-EU Summit, in July 2020, provided a common road map to guide joint action and further strengthen the partnership over the next five years.
 - The road map highlights engagement across five domains: foreign policy and security cooperation; trade and economy; sustainable modernization partnership; global governance; and people-to-people relations.
- Areas of cooperation**
- The EU is India's second-largest trading partner after the U.S. and the second largest destination for Indian exports.
 - There are 6,000 European companies in the country that directly and indirectly create 6.7 million jobs.
 - Beyond the economic partnership, India and the EU have several avenues of collaboration.
 - For example, the 'green strategic partnership' between India and Denmark aims to address climate change, biodiversity loss, and pollution, and the India-Nordic Summit in May focused on green technologies and industry transformation that are vital for sustainable and inclusive growth.
 - All this will act as a catalyst for enhanced cooperation between the two regions.
 - Cooperation with the EU in the defense sector has also increased substantially.
 - This is critical for India at this juncture, to reduce its hardware dependence on Russia in the backdrop of the Ukraine conflict and seek diversification of its armament imports from other regions with latest technologies in wake of its confrontation with China
 - India and the EU regularly conduct joint military and naval exercises which reflects on their commitment to a free, open, inclusive and rules-based order in the Indo-Pacific.

- The first maritime security dialogue between the two in 2021 focused on cooperation in maritime domain awareness, capacity-building, and joint naval activities.
- France's on-time delivery of 36 Rafale fighter jets and willingness to offer Barracuda nuclear attack submarines to the Indian Navy reflects the growing level of trust in their relationships
- Another rapidly growing area of engagement is the start-up and innovation ecosystem across India and Europe.
- Furthermore, the Science and Technology Joint Steering Committee between the two focus on areas such as healthcare, Artificial Intelligence, and earth sciences.
- In 2020, there was an agreement for research and development cooperation in the peaceful uses of nuclear energy between the European Atomic Energy Community and the Government of India.

Challenges

India's reluctance to explicitly condemn Russia's intervention in Ukraine, and the country's increasing economic cooperation with Russia, has been one area of disagreement.

There is also ambiguity on the EU's strategy in tackling the rise of China

- India's economic, political and demographic weight could be deftly leveraged by the EU to counterbalance China's influence across the region.

THE HINDU

Nagorno Karabakh

- In 1991 when the Soviet Union collapsed, the newly independent Armenia and Azerbaijan went to war over Nagorno Karabakh, which had been an autonomous region within Azerbaijan during the Soviet years.



- Armenians have made historical claims over the enclave, which is largely populated by ethnic Armenians.
- By the time the all out war came to an end in 1994, Armenia had captured Nagorno Karabakh and seven surrounding districts from Azeri forces.
- In September, Azerbaijan President Ilham Aliyev launched the offensive vowing to take back Nagorno Karabakh and other Armenian-occupied districts.

- In six weeks, Azeri forces, backed by Turkey supplied armed drones and other equipment, cut through Armenian defense and retook territories.
- Russia, which has a security agreement with Armenia, remained neutral in the early days of the war when Turkey threw its weight behind Azerbaijan
- When Azerbaijan defeated Armenian troops and captured territories, Armenian Prime Minister Nikol Pashinyan sought Russian help.
- But President Vladimir Putin said the security guarantee is for Armenia, not for the Armenians in Nagorno Karabakh.
- But Russia was apparently concerned about the rapid change in the status quo and the more assertive security role Turkey was playing in its backyard.

Russia Role

By the third week of October, Russia established small military outposts along the Armenian border, apparently to prevent the conflict being spilling into mainland Armenia and also

- Mr. Putin accepted Azerbaijan's victory (as the ceasefire allows Azeri troops to take control of the territories they have seized) but prevented a total defeat of Armenia.
- Under pressure from a decisive Moscow, both sides agreed to cease the operations.
 - According to the ceasefire, Armenia agreed to withdraw its troops from much of the territories around Nagorno Karabakh.
 - The core of the enclave with ethnic Armenians and Stepanakert as its capital would remain outside the control of Azerbaijan.
 - Baku will build a road linking the newly captured territories to Nakhchivan, an autonomous republic of Azerbaijan which has been geographically separated from the mainland.
 - As the broker of the truce, Russia would send some 2,000 peacekeepers to the region, who would patrol between the Azeri troops and Nagorno Karabakh, including the Lachin corridor, which connects the enclave with Armenia
 - In sum, Azerbaijan gained territories, but not the whole of Nagorno - Karabakh.
 - Armenia lost territories it controlled since the 1990s but avoided a total defeat as much of Nagorno Karabakh would remain independent of Azeri control.
 - And Russia gained a bigger foothold in the region with its troops being deployed within Azerbaijan.

- That Russia could enforce the ceasefire and keep Turkey and western countries out of the final talks shows that Moscow remains a dominant power in the South Caucasus.

What does the 2020 agreement say?

- The nine-point agreement of November 10, 2020 was signed by Armenian Prime Minister Nikol Pashinyan, Azerbaijani President Ilham Aliyev, and Russian President Vladimir Putin.
- The agreement imposed an immediate ceasefire, a timeline for withdrawal from Azerbaijan's occupied regions, the introduction of Russian peacekeepers, and the need for new transport corridors.
- However, this failed to initiate a peace agreement because it altered the power balance between the two countries and lacked clarity on several issues resulting in the subsequent ceasefire violations on both sides.

Why are ceasefire agreements not working?

- First, the issue of delineating the shared international border
- Second, the dispute over transport routes. The overland route that goes from Stepanakert (a city within the Nagorno-Karabakh region) to

Armenia has become an issue between the two countries.

- The 2020 agreement states that the parties should build an alternative road within three years, after which the Russian peacekeepers deployed along the current route would relocate to the new one.
- Presently, there is only one road which is the Lachin corridor, which runs past the outposts through Azerbaijan's mountainous Lachin region to Shusha, which Azerbaijani forces retook in the 2020 war
- Third, the difference over the status of Nagorno-Karabakh.
- The ethnically Armenian enclave of Nagorno-Karabakh, which is also known as the Republic of Artsakh, has expressed frustration over Armenia's willingness to make concessions to Azerbaijan as part of a larger prospective peace settlement
- Fourth, is the dispute over the exchange of prisoners.

THE HINDU

Yuan Wang 5

The story so far: On August 13, Sri Lanka approved the arrival of a Chinese satellite-tracking vessel to its southern Chinese-funded Hambantota port

What is the vessel?

Yuan Wang 5 was described by the Sri Lankan government as a “scientific research ship

How have different countries reacted?

- India has expressed its concern over the Chinese vessel visit.
- The spokesperson of the Ministry of External Affairs commented twice on the issue.
- The official initially stated that India “carefully monitors any development having a bearing on its security and economic interests” and later said that they were “rejecting insinuations” that Sri Lanka was “pressured
- The developments showed that Colombo was caught between the U.S. and India on the one hand, and China on the other
- China reacted strongly after they were asked to defer the vessel visit. Without directly referring to India, China said that it was “completely unjustified for certain countries to cite the so-called ‘security concerns’ to pressure Sri Lanka.”

THE HINDU

One china policy vs One china principle

- China announced more military drills around Taiwan as the self-governing island’s President met with members of a new U.S. congressional delegation
- China accuses the U.S. of encouraging the island’s independence through the sale of weapons and engagement between U.S. politicians and the island’s government.
- Washington says it does not support independence, has no formal diplomatic ties with the island and maintains that the two sides should settle their dispute peacefully but it is legally bound to ensure the island can defend itself against any attack.

What is One China Policy? Differentiate it from One China Principle. What is India's position?

- The One-China policy refers to the policy or view that there is only one state called "China", despite the existence of two governments that claim to be "China".
- As a policy, this means that countries seeking diplomatic relations with the People's Republic of China (PRC, Mainland China) must break official relations with the Republic of China (ROC, Taiwan) and vice versa.

- The One China policy is different from the "One China principle", which is the principle that insists both Taiwan and mainland China are inalienable parts of a single "China".
- India initially for a long period accepted the One China policy.
- Examples of CapEx include the purchase of land, vehicles, buildings, or heavy machinery.

THE HINDU

THE HINDU

Capex

- States aim to ramp up capital spending and rein in revenue deficits this year as they chart a return to fiscal consolidation following the pandemic shock

What Are Capital Expenditures (CapEx)?

- Capital expenditures (CapEx) are funds used by a company to acquire, upgrade, and maintain physical assets such as property, plants, buildings, technology, or equipment.
- CapEx is often used to undertake new projects or investments by a company. Making capital expenditures on fixed assets can include repairing a roof (if the useful life of the roof is extended), purchasing a piece of equipment, or building a new factory
- Unlike CapEx, operating expenses (OpEx) are shorter-term expenses used for the day-to-day operations of a business.

Petcoke

- Indian companies are importing significant volumes of petroleum coke from Venezuela for the first time.
- India's growing appetite for Venezuela's petcoke is being driven by a scramble for inexpensive fuel to power industries as global coal prices have surged.

Petcoke

- Petroleum coke, abbreviated coke or petcoke, is a final carbon-rich solid material that derives from oil refining, and is one type of the group of fuels referred to as cokes.
- Petcoke is the coke that, in particular, derives from a final cracking process a thermo-based chemical engineering process that splits long chain hydrocarbons of petroleum into shorter chains that takes place in units termed coker units.
- Cracking is the process whereby complex organic molecules such as kerogens or long-chain hydrocarbons are broken down into simpler molecules such as light hydrocarbons, by the breaking of carbon-carbon bonds in the precursors.
- Petcoke is a byproduct created when bitumen found in tar sands, like those in Alberta, Canada, is refined into crude oil.
- Bitumen contains a higher number of carbon atoms than regular oil and it's these atoms, extracted from large hydrocarbon molecules using heat, that go on to form petcoke.
- High-grade petcoke which is low in sulphur and heavy metals can be used to make electrodes for the steel and aluminium industry.
- But the majority of petcoke manufactured globally, approximately 75-80%, is of a much lower grade, containing higher levels of sulphur and heavy metals and is used solely as fuel.
- The majority of petcoke produced in the U.S. is exported to China the world's largest consumer of coal to feed its many coal-fired power stations.
- Petcoke is an extremely stable fuel which means there is little risk of combustion during transportation, but due to its high carbon content when it does combust it releases up

to 10% more CO2 per unit of energy that normal coal.

THE HINDU

What is hegemony?

- Russian President Vladimir Putin accused the United States of trying to encourage extended hostilities in Ukraine as part of what he described as Washington's alleged efforts to maintain its global hegemony.

Hegemony

- Hegemony is the political, economic, and military predominance of one state over other states.
- In Ancient Greece (8th c. BC – AD 6th c.), hegemony denoted the politico-military dominance of the *hegemon* city-state over other city-states.
- In the 19th century, *hegemony* denoted the "social or cultural predominance or ascendancy; predominance by one group within a society or milieu" and "a group or regime which exerts undue influence within a society".
- In cultural imperialism, the leader state dictates the internal politics and the societal character of the subordinate states that constitute the hegemonic sphere of influence,

either by an internal, sponsored government or by an external, installed government.

- The term *hegemonism* denoted the geopolitical and the cultural predominance of one country over other countries, e.g. the hegemony of the Great Powers established with European colonialism in Africa, Asia, and Latin America.

THE HINDU

Ethanol blending

What is ethanol blending?

- Blending ethanol with petrol to burn less fossil fuel while running vehicles is called ethanol blending.
- Ethanol is an agricultural by-product which is mainly obtained from the processing of sugar from sugarcane, but also from other sources such as rice husk or maize. Currently, 10% of the petrol that powers your vehicle is ethanol.
- Though we have had an E10 or 10% ethanol as policy for a while, it is only this year that we have achieved that proportion.
- India's aim is to increase this ratio to 20% originally by 2030 but in 2021, when NITI Aayog put out the ethanol

roadmap, that deadline was advanced to 2025.

- Ethanol blending will help bring down our share of oil imports (almost 85%) on which we spend a considerable amount of our precious foreign exchange.
- Secondly, more ethanol output would help increase farmers' incomes.
- The NITI Aayog report of June 2021 says, "India's net import of petroleum was 185 million tonnes at a cost of \$55 billion in 2020-21," and that a successful ethanol blending programme can save the country \$4 billion per annum.

What are first-generation and second-generation ethanol?

- With an aim to augment ethanol supplies, the government has allowed procurement of ethanol produced from other sources besides molasses which is first-generation ethanol or 1G.
- Other than molasses, ethanol can be extracted from materials such as rice straw, wheat straw, corn cobs, corn Stover, bagasse, bamboo and woody biomass, which are second-generation ethanol sources or 2G

How does it impact the auto industry?

- At the time of the NITI Aayog report in June last year, the industry had committed to the government to make all vehicles E20 material compliant by 2023.
- This meant that the petrol points, plastics, rubber, steel, and other components in vehicles would need to be compliant to hold/store fuel that is 20% ethanol. Without such a change, rusting is an obvious impediment.

What are the challenges before the industry when it comes to 20% ethanol blended fuel?

- The Niti Aayog report points out that the challenges before the industry are: "optimization engine for higher ethanol blends and the conduct of durability studies on engines and field trials before introducing E20 compliant vehicles

What have been the objections against this transition?

- Ethanol burns completely emitting nil carbon dioxide.
- By using the left-over residue from rice harvests to make ethanol, stubble burning will also reduce.

- The 2G ethanol project inaugurated last week will reduce greenhouse gases equivalent to about three lakh tonnes of CO₂ emissions per annum, which is the same as replacing almost 63,000 cars annually on our roads.
- However, it does not reduce the emission of another key pollutant nitrous oxide.
- The Institute for Energy Economics and Financial Analysis (IEEFA) in a report in March talks about the inefficient land use in ethanol production
- The water needed to grow crops for ethanol is another debating point
- Sugar and cane production that end up in the petrol tank cannot also appear on the dinner plate, in animal fodder, be stored in warehouses, or be exported.
- As was evident in India's wheat harvest earlier this year, climate change-induced heatwaves are a worrying factor and can lead to lower-than-expected harvests with little notice,"
- Global corn, or maize, production is down, and this adds an incentive for India to try and export more.

Approach to science and tech

- Starting off as a poor country in 1947, with its GDP a mere ₹2.7 lakh crore, and food grain production meager million tonnes, the challenges of educating the people, feeding the population, implementing democracy, promoting industry and trade, and ensuring the country's security remained daunting.
- Council of Scientific Industrial Research (CSIR), which had been founded in 1942 - immediate priority of the CSIR was to establish a number of national laboratories under its umbrella, and also promote similar organizations independently
- A key mandate of the CSIR was, therefore, to help develop local industries by making contemporary technologies available and training requisite manpower.
- A prominent example of the CSIR's contributions in this context has been in developing the leather industry
- During the Green Revolution, the CSIR's footprint could be seen in the development of agrochemicals and the mechanisation of agriculture.

- The chemicals industry needed the necessary thrust for its maturation although the Bengal Chemicals and Pharmaceuticals Ltd. had been formed by Acharya Prafulla Chandra Ray long before Independence
- Similarly, production of anti-HIV drugs by processes developed in CSIR laboratories provided the necessary impetus to the growth of generic pharmaceutical companies.
- The mechanisation of agriculture was achieved through the indigenous development of the Swaraj tractor at the CSIR-Central Mechanical Engineering Research Institute (CMERI), leading to the formation of Punjab Tractors Ltd. in 1970
- The CSIR successfully developed technologies to convert buffalo milk into powder and commercialised it with the help of Amul Industries.
- The Aroma Mission of the CSIR in recent times has been transforming the lives of thousands of farmers across the country.
- The cultivation of lavender in the Union Territory of Jammu and Kashmir has been attracting attention worldwide as India's 'Purple Revolution.

USNS Charles Drew in Chennai

- The docking of the USNS Charles Drew, a United States Navy dry cargo ship, for repairs at an Indian facility in Chennai last week, marks an important first in the India-U.S. military relationship
- During the bilateral 2+2 dialogue held in April this year, the two countries agreed to explore the possibilities of using Indian shipyards for the repair and maintenance of ships of the U.S. Military Sealift Command (MSC).
- Functionally, it signals a more efficient leveraging of the Logistics Exchange Memorandum of Agreement (LEMOA) the military logistics agreement India signed with the U.S. in 2017
- Politically, too, the development is noteworthy, as it signals a consolidation of the India-U.S. partnership, and the Quadrilateral (India, Japan, Australia, and the United States) Security Dialogue.
- Despite its intention to strengthen logistics exchanges among Quad members,
- This is an incremental step forward in the U.S. moving to bolster its military presence in the Eastern Indian Ocean.
- Recent assessments of the evolving security picture in the Indian Ocean point to the possibility of China's military expansion in the Asian littorals, holding at risk U.S. and European assets. Reportedly, the North Atlantic Treaty Organization (NATO) has been readying to play a more active security role in the region.
- The Indian Navy has formally commenced its cooperation with the Bahrain-based multilateral partnership, Combined Maritime Forces (CMF), as an 'associate member'
- India's political and military leadership is seeing this as a demonstration of Indian commitment towards the collective responsibility of ensuring security in the shared commons.
- According to the CMF website, "associate members provide the assistance that they can offer, if they have the time and capacity to do so, whilst undertaking national tasking".
- This is not unlike India's earlier model of cooperation, whereby the Indian Navy worked alongside CMF and other security forces in the Western Indian Ocean on a need-to-basis all while operating independently, and under the

broader banner of the United Nations.

- Despite increased engagement with the U.S. Navy, India's liaison officer at the U.S. Navy component (NAVCENT, or the U.S. Naval Forces Central Command) in the U.S. Central Command (CENTCOM) is still the military attaché at the Indian Embassy in Bahrain.
- Combined Maritime Forces (CMF)
- Combined Maritime Forces (CMF) is a multi-national naval partnership, which exists to promote security, stability and prosperity across approximately 3.2 million square miles of international waters, which encompass some of the world's most important shipping lanes.
- CMF's main focus areas are defeating terrorism, preventing piracy, encouraging regional cooperation, and promoting a safe maritime environment.
- CMF counters violent extremism and terrorist networks in maritime areas of responsibility; works with regional and other partners to improve overall security and stability; helps strengthen regional nations' maritime capabilities and, when requested, responds to environmental and humanitarian crises.
- Comprised of three task forces: CTF 150 (maritime security and counter-terrorism), CTF 151 (counter-piracy) and CTF 152 (Arabian Gulf security and cooperation).
- 34 member nations: Australia, Bahrain, Belgium, Brazil, Canada, Denmark, Egypt, France, Germany, Greece, Italy, Iraq, Japan, Jordan, Republic of Korea, Kuwait, Malaysia, the Netherlands, New Zealand, Norway, Pakistan, The Philippines, Portugal, Qatar, Saudi Arabia, Seychelles, Singapore, Spain, Thailand, Turkey, UAE, United Kingdom, United States and Yemen.
- Commanded by a U.S. Navy Vice Admiral, who also serves as Commander U.S. Naval Forces Central Command and U.S. Fifth Fleet? All three commands are co-located at U.S. Naval Support Activity Bahrain.

THE HINDU

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THE HINDU

China aim for Taiwan

- Geopolitically, Taiwan is critical for China's great power ambition. No country can become a global superpower without establishing regional hegemony.
- The U.S. is protected by the world's two largest oceans the Atlantic Ocean and the Pacific Ocean and has successfully established hegemony in the Western Hemisphere.
- The Soviet Union had enjoyed hegemony in the Black Sea and the Baltic Sea. On the contrary, China, despite its military capabilities, is a caged naval power in a crowded neighbourhood.
- And if it loses Taiwan for good, which is just 180 kilometres from its mainland, China's attempts to establish regional hegemony would be complicated further.
- So, it would like control of the island not only to fulfil a historical promise (political benefits for the leader or, as many have pointed out, taking control of the global semiconductor supplies), but also to shore up its

geopolitical stature as a great power in the western Pacific.

- China thinks the strategic environment around Taiwan has shifted to its favor, with a window of opportunity to make the move as the U.S. is caught in a triangular entanglement its failures in the Muslim world, its desire to defeat Russia in Europe and a strategy to contain China's rise in the Indo Pacific.
- Once the structures of the new Cold War are in place and Taiwan emerges as a front line, it would be as difficult for China to get the island back as it was for the German or Korean unification under the communists.
- This is what is making the Fourth Taiwan Strait Crisis the most dangerous one.

THE HINDU

G20 AND data regulation

- Coupled with economic interests have compelled governments to institute rules and standards that govern and restrict cross-border flows with natural implications for negotiations on global trade and commerce.

- Indeed, the sheer amount of data being generated and shared globally has necessitated governments to exert more control over the use, sharing, and cross-border flow of data.
- Data regulation efforts transcend data localization.
- The G-20 appears as a viable platform to discuss data, particularly sharing and transfer, given seemingly converging positions on data governance amongst major G-7 powers and emerging economies as the state finds a greater role in regulating data.
- Since 2017, India has attempted to incubate governance of non-personal data, personal data, e-commerce regulation and artificial intelligence (AI) with a preference to harness "India's data for India's development."

- These policies, including the recently withdrawn Personal Data Protection Bill,
- India's digital economy stewardship must transcend data localization by highlighting best practices on data protection, competition law, data stewardship, and responsible artificial intelligence both in India and other G20 countries.

THE HINDU

AIS and Centre vs States

- The Government of India (GOI) painfully admitted recently to what some of us already knew.
 - Fewer and fewer All India Services (AIS) officers working in States were coming forward to opt for a tenure with the Centre.
 - There are many positives in working for the GOI.
 - These include a psychological satisfaction of contributing to the formulation of national policy on many critical issues, such as education, health care or preservation of the environment.
 - This throws up many opportunities for foreign travel and a chance to be deputed to work for international agencies.
 - This is a serious situation if one reckons that the manpower demands of GOI ministries (at the level of Deputy Secretaries and Directors who generally come from the IAS) are growing.
 - There are far too many vacancies in the Central Police Establishment comprising the paramilitary forces
 - One organization particularly affected is the CBI.
- Centre's dialogue with the States over amending the AIS rules assumes importance.
 - Such amendment would empower the Centre to commandeer the services of any officer serving in the States to work for the former, with or without the concurrence of the State concerned or the consent of the particular officer.

THE HINDU

Arctic Amplification

- What is Arctic amplification?
- What causes it?
- Global warming, the long-term heating of the earth's surface, hastened due to anthropogenic forces or human activities since pre-industrial times and has increased the planet's average temperature by 1.1 degrees Celsius.
- While changes are witnessed across the planet, any change in the surface air temperature and the net radiation balance tend to produce larger changes at the north and south poles.
- This phenomenon is known as polar amplification; these changes are more pronounced at the northern latitudes and are known as the Arctic amplification.

- Among the many global warming-driven causes for this amplification, the ice-albedo feedback, lapse rate feedback, water vapour feedback and ocean heat transport are the primary causes.
- Sea ice and snow have high albedo (measure of reflectivity of the surface), implying that they are capable of reflecting most of the solar radiation as opposed to water and land. In the Arctic's case, global warming is resulting in diminishing sea ice.
- As the sea ice melts, the Arctic Ocean will be more capable of absorbing solar radiation, thereby driving the amplification.
- The lapse rate or the rate at which the temperature drops with elevation decreases with warming.

What are the consequences of Arctic warming?

- The causes and consequences of Arctic amplification are cyclical.
- The Greenland ice sheet is melting at an alarming rate, and the rate of accumulation of sea ice has been remarkably low.
- The warming of the Arctic Ocean and the seas in the region, the acidification of water, and changes in the salinity levels, are impacting the biodiversity, including the marine species and the dependent species.
- The warming is also increasing the incidence of rainfall which is affecting the availability and accessibility of lichens to the reindeer.
- The Arctic amplification is causing widespread starvation and death among the Arctic fauna.
- The permafrost in the Arctic is thawing and in turn releasing carbon and methane which are among the major greenhouse gases responsible for global warming.

What is the impact on India?

- In recent years, scientists have pondered over the impact the changing Arctic can have on the monsoons in the subcontinent.
- The link between the two is growing in importance due to the extreme weather events the country faces, and the heavy reliance on rainfall for water and food security.
- Changes in the atmospheric circulation due to diminishing sea ice combined with the warm temperatures in the Arabian Sea contribute to enhanced moisture and drive extreme rainfall events.
- In 2014, India deployed IndARC, India's first moored-underwater observatory in the Kongsfjorden

fjord, Svalbard, to monitor the impact of the changes in the Arctic Ocean on the tropical processes such as the monsoons.

- Sea level along the Indian coast is rising faster than the global average rate.
- One of the primary reasons for this rise is the melting of sea ice in the Polar Regions, especially the Arctic

THE HINDU

GES
REPORTER

OBOR

- China's investments in infrastructure projects under its Belt and Road Initiative (BRI) have declined while Beijing's short and medium term assistance to partner countries, some of which are dealing with rising debt levels, is increasing.
- The report noted three clear trends in the BRI: a growing role for Chinese State-owned Enterprises; the average size for project deals falling, from \$558 million in 2021 to \$325 million last year; and an increasingly uneven spread of engagement.

About OBOR

- The Belt and Road Initiative, reminiscent of the Silk Road, is a massive infrastructure project that would stretch from East Asia to Europe.
- Some analysts see the project as a disturbing expansion of Chinese power, and the United States has struggled to offer a competing vision.
- The initiative has stoked opposition in some countries involved in Belt and Road that have taken on high levels of debt.

What was the original Silk Road?

- The original Silk Road arose during the westward expansion of China's Han Dynasty (206 BCE–220 CE), which forged trade networks throughout what are today the Central Asian countries of Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, as well as modern-day India and Pakistan to the south.
- Those routes extended more than four thousand miles to Europe.
- Central Asia was thus the epicentre of one of the first waves of globalization, connecting eastern and western markets, spurring immense wealth, and intermixing cultural and religious traditions.

THE HINDU

Great India Bustard

- The perceived beliefs and recorded observations of egg laying habit of Great Indian Bustard (GIB) have changed after the recent excessive rains in western Rajasthan.
- The critically endangered bird species has adopted an altogether new behaviour of giving clutch of two eggs at a time after getting an

additional protein diet during the monsoon season.

About Great Indian bustard

- Historically, the great Indian bustard was distributed throughout Western India, spanning 11 states, as well as parts of Pakistan. Its stronghold was once the Thar Desert in the north-west and the Deccan plateau of the peninsula. Today, its population is confined mostly to Rajasthan and Gujarat.
- A small population occurs in Maharashtra, Karnataka and Andhra Pradesh. Bustards generally favour flat open landscapes with minimal visual obstruction and disturbance, therefore adapt well in grasslands.
- In the non-breeding season they frequent wide agro-grass scrub landscapes.
- While in the breeding season (summers and monsoons) they congregate in traditional undisturbed grassland patches characterized by a mosaic of scantily grazed tall grass (below 50 cm).
- They avoid grasses taller than themselves and dense scrub like thickets.
- Listed in Schedule I of the Indian Wildlife (Protection) Act, 1972, in Appendix I of CITES, as Critically Endangered on the IUCN Red List

and the National Wildlife Action Plan (2002-2016).

- It has also been identified as one of the species for the recovery programme under the Integrated Development of Wildlife Habitats of the Ministry of Environment and Forests, Government of India.

THE HINDU

VideoLAN ban and IT act

The story so far:

- The website of VideoLAN Client (VLC) has been banned in India.
- Although there is no official information on the ban, VLC states that according to its statistics, its website has been banned since February this year.

In which situations can online content be blocked to the public?

- There are two routes through which content can be blocked online executive and judicial.
- First, given the reach of the internet and its potential to cause significant harm to online users, governments across the world reserve the power to monitor and issue directions for regulation of the online content being available in their jurisdictions.

- The Government of India gets this power from Section 69A of the Information Technology Act, 2000.
 - Section 69A allows the government to direct an intermediary to “block for access by the public any information generated, transmitted, received, stored or hosted in any computer resource” if it is “necessary or expedient to do so, in the interest of sovereignty and integrity of India, defense of India, security of the state, friendly relations with foreign states or public order or for preventing incitement to the commission of any cognizable offense”.
 - Section 69A draws its power from Article 19(2) of the Constitution which allows the government to place reasonable restrictions on the fundamental right to freedom of speech and expression.
 - Second, courts in India, also have the power to direct intermediaries to make content unavailable in India to provide effective remedy to the victim/plaintiff.
 - For example, courts may order internet service providers to block websites which provide access to pirated content and violate the plaintiff’s copyright.
- What is the procedure for blocking access to content online?**
- A detailed procedure for blocking content is provided by the Information Technology Rules, 2009 (IT Rules, 2009) that have been formulated under Section 69A of the Information Technology Act, 2000.
 - An important point to note is that only the Central government can exercise this power of directing intermediaries to block access to online content directly, and not the State governments.
 - The procedure typically provides that Central or State agencies will appoint a “nodal officer” who will forward the blocking order to the “designated officer” of the Central government.
 - The designated officer, as part of a committee, examines the request of the nodal officer.
 - The committee comprises representatives from the Ministries of Law and Justice, Information and Broadcasting, Home Affairs, and the Cert-In
 - The creator/host of the content in question is given a notice to submit clarifications and replies.

THE HINDU

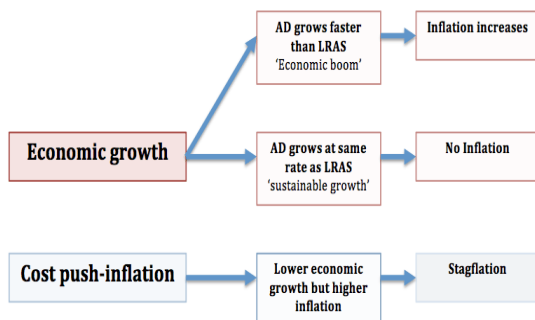
Chinese Manja

- Traditional Manja is based on fine pure cotton thread coated with a mixture of rice glue, tree gums and similar natural ingredients and an abrasive: finely powdered glass, aluminium oxide or zirconia alumina.
- In some places, individuals make their own Manja from personal 'secret' recipes - but most are made by specialist craftsmen on a large scale.
- So-called "chemical manja" or "Chinese manja" is a relatively recent introduction. It is based on non-biodegradable synthetic fibres.
- This makes it harder to break, which can be seen as unsportsmanlike, and makes the string more dangerous to bystanders and birds.
- In Brazil, in addition to cerol, there is a more dangerous version of the kite string, the so-called "linha chilena" (Chilean string), which contains essentially the same ingredients used to make cerol, but with the addition of quartz powder and aluminium powder, which makes the string four times more dangerous than regular cerol.

THE HINDU

Inflation vs Growth

- What is the relationship between inflation & economic growth?
- If economic growth is caused by aggregate demand (AD) increasing faster than productive capacity (LRAS) if economic growth is above the 'long-run trend rate' then economic growth is likely to cause inflation.
- If economic growth is caused by increased productivity (LRAS), then the growth can be sustainable and not cause inflation.
- With cost-push inflation, it is possible to get both negative economic growth and inflation at the same time (Stagflation).



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Why can economic growth lead to inflation?

- If demand rises faster than firms can increase supply, firms will respond to the excess demand and supply constraints by putting up prices.

- In a period of rapid growth, firms will employ more workers and unemployment will fall. As unemployment falls, firms may find it harder to fill job vacancies; this shortage of labor will cause wages to rise.
- If wages rise, firm's costs increase and therefore firms pass these cost increases on to consumers.
- Also, with rising wages, workers have more disposable income to spend causing a further rise in aggregate demand (AD).
- With higher economic growth, people may start to expect inflation and this expectation of rising prices can become self-fulfilling.
- Therefore, rapid economic growth tends to cause upward pressure on prices and wages leading to a higher inflation rate.

THE HINDU

Rat hole mining

- A rat-hole mine involves digging of very small tunnels, usually only 3-4 feet deep, in which workers, more often children, enter and extract coal. Rat-hole mining is broad of two types side-cutting and box-cutting.
- Although the coal is of bad quality, people see it as a treasure-chest.

- In backward regions, where there is loss of livelihood, lack of employment opportunities and under-education, people see rat-hole mines as an opportunity to earn daily bread.
- People with power (also called as bahubali) employ poverty-ridden people to go into the rat-hole mines and dug out coal.
- A major portion of these employees are children, who are preferred because of their thin body shape and ease to access depths. This practice has become very popular in Meghalaya.



- Rat-hole mining is primarily practiced only in Meghalaya. Such cases are not witnessed in Jharkhand and Chhattisgarh because the coal seams are thick in Jharkhand and Chhattisgarh while in Meghalaya coal seams are very thin.
- So, economically it is not a good idea to do an open mining, and therefore, they prefer rat-hole mining.

- The National Green Tribunal (NGT) banned rat-hole mining in 2014 and retained the ban in 2015. The ban was on grounds of the practice being unscientific and unsafe for workers.
- The NGT order bans not only rat-hole mining but all “unscientific and illegal mining.
- Coal is stored near rivers because of shortage of space which leads to pollution around water bodies.
- The water in the Kopili River (flows through Meghalaya and Assam) has turned acidic.
- The entire roadsides in and around mining areas are for piling of coal.
- This is a major source of air, water, and soil pollution.
- Off road movement of trucks and other vehicles in the area causes further damage to the ecology of the area. Due to rat-hole mining, during rainy season, water gets flooded into the mining areas resulting in death of many workers due to suffocation and hunger.

THE HINDU

Monetary policies

- Monetary policy increases liquidity to create economic growth.
- It reduces liquidity to prevent inflation. Central banks use interest

rates, bank reserve requirements, and the number of government bonds that banks must hold.

- All these tools affect how much banks can lend. The volume of loans affects the money supply.
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THE HINDU

Ocean diversity pact

- A delegation from India and other member countries of the United Nations are in New York to deliberate on a one-of-its-kind agreement to conserve marine biodiversity in the high seas, namely the oceans that extend beyond countries' territorial waters.
- The agreement follows a resolution by the UN General Assembly in May and is expected to be the final in a series set in motion since 2018 to draft an international legally binding instrument under the 1982 United Nations Convention on the Law of the Sea (UNCLOS).
- A key aspect of the agreement is deciding on the rights of companies that undertake exploration for biological resources on the high seas.
- Do companies have absolute rights on any discovery or extraction in

these regions or should they share their gains, in terms of intellectual property and royalties with an UN-prescribed body.

- Typically, the focus of mining activity in the sea has been for gas hydrates, precious metals and other fossil fuel resources.
- However, with advances in biotechnology and genetic engineering, several companies see potential in exotic microbes and other organisms several of them undiscovered that abide in the deep ocean and could be used for drugs and vaccines.
- Last June, the Union Cabinet approved a 'Blue Economy' policy for India, a nearly ₹4,000-crore program spread over five years.
- This among other things will develop a manned submersible vessel as well as work on "bio-prospecting of deep-sea flora and fauna including microbes.
- Free midday meals (now extended to free breakfast) have encouraged socially backward parents to send their wards to school at least for the meals, resulting in keeping the evil of child labor under control and, more importantly, imparting education.
- Introduction of free colour television in villages as it has resulted in a decrease in domestic violence and also enabled women's empowerment (women, who are largely indoors due to customary practices/household duties, have been able to connect with the outside world through visual media).
- It has ensured self-respect, as women and children are able to watch TV in their houses rather than visit the homes of those who are rich and own TV set.
- In *S. Subramaniam Balaji vs State of Tamilnadu* (2013 9 SCC 659) while dismissing the challenge to the much discussed free gifts schemes (colour television, mixer grinder, laptops) of the T.N. government, the Court observed that the distribution of gifts relates to implementation of directive principles of state policy.
- Social welfare measures (freebies) may differ from State to State or region to region.
- For example, in the desert regions of Rajasthan it could be free drinking

THE HINDU

Freebies vs welfare schemes

- The World Inequality Report 2022 says that the top 1% of India held 22% of the total national income as of 2021, and the top 10% owned 57% of the income

water, in Kerala, it could be fiscal incentives to encourage corporates/entrepreneurs to boost industrial growth, and in T.N., educational/marriage assistance and a free bus pass to help girl empowerment.

- By recommending a central committee, the Supreme Court seems to have considered India to be a single administrative unit facing the same set of issues without due consideration of socio-economic diversity.
- This step would not only be counter productive to the economic freedom of the States but also to the 'Idea of India' as a 'Union of States' as highlighted in Article 1 of the Constitution of India.

THE HINDU

Homogeneous vs heterogeneous boosting

- In homologous boosting, a person is injected with the same vaccine that was used for the two previous doses.
- In heterologous boosting, a person is injected with a different vaccine from that was used for the primary dose
- In heterologous boosting “A person who got two doses of Moderna (mRNA vaccine), would get jabbed with a different vaccine type such as Covaxin (Inactivated/Dead Virus) or Sputnik Light (Non-Replicating Viral Vector),
- According to a study published by Lancet, homologous boosters increased neutralizing antibody titers by a factor of 4 to 20, whereas heterologous boosters increased titers by a factor of 6 to 73.
- For all clinical outcomes considered, heterologous boosters showed higher vaccine effectiveness than homologous boosters, providing additional support for use of a mix-and-match approach.

THE HINDU

Genetic modulation

- The Green Revolution of the 1960s brought about a marked improvement in the yield of agricultural crops such as rice and wheat.
- It was based on the use of newly developed high-yielding crop varieties in conjunction with the intense use of irrigation, chemical fertilizers and pesticides.
- India saw a threefold increase in rice yield per hectare.
- Fifty years later, some negative effects of this intense methodology are becoming apparent nitrogen fertilizers and agrochemicals pose environmental hazards; water is often in short supply; and agricultural soil is increasingly fatigued.
- To obtain more food for the world’s growing population, forests and grasslands would have to be converted to farms in order to produce food.
- This, in turn, would enormously strain our ecosystems.

USE OF GENES

- When a second copy of a single gene (called OsDREB1C) is added to rice, it improves photosynthesis and nitrogen use, speeds up flowering and absorbing nitrogen more efficiently offering larger and more abundant grains.

- The change helps the plant absorb more fertilizer, photosynthesis, and accelerate flowering, all of which could contribute to larger harvests.

Rice exports

- India is the world's largest exporter of rice. It exported 18.75 million metric tons to over 150 countries during the year 2021-22, thereby earning \$6.11 billion
- A key point is that the researchers have added the same gene again, and not any foreign one.
- This is best described as genetic modulation. It is not a genetic modification (GM) and neither is the result a transgenic plant, carrying elements from another donor.
- "India has exempted crops with certain kinds of genetic modifications from the regulations previously imposed on the commercialisation of all genetically modified crops".
- For example, BT cotton involves the transfer of the gene from the bacterium called *Bacillus thuringiensis* (BT) to be transferred to normal cotton.

THE HINDU

Noble gases in moon

- Researchers at ETH Zurich discover the first definitive proof that the

Moon inherited indigenous noble gases from the Earth's mantle.

- They show that the Moon inherited the indigenous noble gases of helium and neon from Earth's mantle.
- Noble gas mass spectrometer named "Tom Dooley" the researchers were able to measure sub-millimetre glass particles from the meteorites and rule out the solar wind as the source of the detected gases.
- Mass spectrometry is an analytical tool useful for measuring the mass-to-charge ratio (m/z) of one or more molecules present in a sample.
- These measurements can often be used to calculate the exact molecular weight of the sample components as well.

THE HINDU

Flash floods

Flood:

- An overflow of water onto normally dry land.
- The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch.
- Ponding of water at or near the point where the rain fell. Flooding is a longer-term event than flash flooding: it may last days or weeks.

- Flash flood: A flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours.
- Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them.
- They can occur within minutes or a few hours of excessive rainfall.
- They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.
- Flash Floods can be caused by a number of things, but is most often due to extremely heavy rainfall from thunderstorms.
- Flash Floods can occur due to Dam or Levee Breaks, and/or Mudslides (Debris Flow).
- The intensity of the rainfall, the location and distribution of the rainfall, the land use water content, vegetation types and growth/density, soil type, and soil water content all determine just how quickly the Flash Flooding may occur, and influence where it may occur.
- Urban Areas are also prone to flooding in short time-spans and, sometimes, rainfall (from the same storm) over an urban area will cause flooding faster and more-severe than in the suburbs or countryside.
- The impervious surfaces in the urban areas do not allow water to infiltrate the ground, and the water runs off to the low spots very quickly.

THE HINDU

Data protection way forward

- Genesis of this law, which arose out of the Justice K.S. Puttaswamy v. Union of India case where the court held that the right to privacy had both a positive and negative aspect.
- The former implies the need for the state to actively take measures to protect an individual's privacy.
- Thus, the government was more or less forced to initiate the drafting of a data protection law.
- The government has suggested that it will introduce multiple legislation comprising a new comprehensive legal framework.
- This is the right approach, as trying to fit all objectives related to the digital ecosystem or even data governance into one Bill would be a mistake.
- Separate laws could deal with issues concerning state surveillance, or issues in the data economy such as dealing with competition related concerns arising out of the monopolisation of data by certain entities.
- Over time, such a system may lead to more balanced and beneficial results.
- It should build in a risk based approach to data protection, so that

the regulatory focus is directed towards addressing sources of potential harm. Second, based on risk assessments, the law could enable co-regulation and self-regulation

- New Bill should include more provisions to ensure that the regulator uses its powers well.
- These include provisions relating to appointments, consultations, reporting, and so on.
- Even while the law is being drafted, the government should invest in building some administrative capacity to implement it, so that when the law is eventually passed, implementation can begin soon after.

THE HINDU

Facial recognition technology

What is facial recognition?

- Facial recognition is an algorithm-based technology which creates a digital map of the face by identifying and mapping an individual's facial features, which it then matches against the database to which it has access.

It can be used for two purposes:

- Firstly, 1:1 verification of identity wherein the facial map is obtained for the purpose of matching it against the person's photograph on a database to authenticate their identity.
- Secondly, there is the 1:n identification of identity wherein the facial map is obtained from a photograph or video and then matched against the entire database to identify the person in the photograph or video.

Why is the use of FRT harmful?

- The use of FRT presents two issues: issues related to misidentification due to inaccuracy of the technology and issues related to mass surveillance due to misuse of the technology.
- Extensive research into the technology has revealed that its accuracy rates fall starkly based on race and gender.
- Even if accurate, this technology can result in irreversible harm as it can be used as a tool to facilitate state sponsored mass surveillance.
- At present, India does not have a data protection law or an FRT-specific regulation to protect against misuse.

- In such a legal vacuum, there are no safeguards to ensure that authorities use FRT only for the purposes that they have been authorised to, as is the case with the Delhi Police.

THE HINDU

Nepal's new citizenship law

What is the issue of citizenship in Nepal about?

- Nepal transitioned into a democracy beginning with the fall of the monarchy in 2006 and the subsequent election of the Maoist government in 2008. The emergence of the multiparty system was followed by the adoption of a constitution on September 20, 2015.
- All Nepalese citizens born before this date got naturalised citizenship.
- But their children remained without citizenship as that was to be guided by a federal law which has not yet been framed.
- This amendment Act is expected to pave the way to citizenship for many such stateless youth as well as their parents.

What are the issues with the Act?

- The main criticism against the Citizenship Amendment Act, 2006 is

that it goes against established parameters of gender justice.

- A cursory reading also reveals contradictions among various sections of the law.
- According to Article 11(2b), a person born to a father or a mother with Nepalese citizenship can get citizenship by descent.
- Article 11(5) of the constitution says a person who is born to a Nepalese mother (who has lived in the country) and an unidentified father will also get citizenship by descent.
- But this section appears humiliating for a mother as she has to declare that her husband is unidentified for the child to be eligible for citizenship.
- In the case of a Nepalese father, such declarations are not required.
- Article 11(7) which says that a child born to a Nepalese mother and a father holding a foreign citizenship can get "naturalised citizenship" in accordance with the laws of Nepal appears to contradict Article 11(2b).
- It places a condition of permanent residency on the mother (and the child) which will determine the grant of citizenship for the child.

THE HINDU

Non-tangible token

What are NFTs?

- Non-fungible tokens (NFTs) are cryptographic assets on a blockchain with unique identification codes and metadata that distinguish them from each other.
- Unlike cryptocurrencies, they cannot be traded or exchanged at equivalency. This differs from fungible tokens like cryptocurrencies, which are identical to each other and, therefore, can serve as a medium for commercial transactions.
- NFTs are digital assets whose ownership is verified through transaction records stored on blockchains.
- Artwork, digital avatars, and accessorized monkeys are some of the most commonly traded NFTs.
- "Tokenizing" these real-world tangible assets makes buying, selling, and trading them more efficient while reducing the probability of fraud.
- NFTs can also function to represent individuals' identities, property rights, and more.
- In January Open Sea's monthly volumes for Ethereum shot over \$4.8 billion. However, after the crypto crash in May, both Bitcoin and Ether

fell and more than halved in value during the first six months of 2022.

- Daily transactions on Open Sea have been gradually declining since then.

Lumpy Skin

- Lumpy skin disease (LSD) is an infectious disease in cattle caused by a virus of the family Poxviridae, also known as Neethling virus.
- The disease is characterized by fever, enlarged superficial lymph nodes and multiple nodules (measuring 2–5 centimetres (1–2 in) in diameter) on the skin and mucous membranes (including those of the respiratory and gastrointestinal tracts).
- Infected cattle also may develop edematous swelling in their limbs and exhibit lameness.
- The virus has important economic implications since affected animals tend to have permanent damage to their skin, lowering the commercial value of their hide
- Additionally, the disease often results in chronic debility, reduced milk production, poor growth, infertility, abortion, and sometimes death.

THE HINDU

Monsoon and mountains

- Monsoon rainfall over India is 8% more than what is usual for this time of the year.
- While this might bode well for agriculture in some regions, it also means floods and concentrated downpours with devastating consequences.
- The monsoon compresses around 75% of India's annual rainfall into four months and unevenly waters the country's highly diverse terrain.
- It is, therefore, inevitable that some spots are far more vulnerable and bear a disproportionate impact of climate fury.
- A recent report released by Himachal Pradesh's Department of Environment, Science, and Technology underline that mountain areas are highly vulnerable to natural disasters, where development over the years has compounded the problem by upsetting the ecological balance of various physical processes.
- Monsoon rain patterns are being disrupted leading to a rise in cloudburst-like events as well as a rise in the frequency of high-energy cyclones and droughts.
- One strategy adopted by the government has been to improve the system of early warning forecasts
- In recent years, improvements in early warnings for incoming cyclones have helped state agencies evacuate and rehabilitate the most vulnerable, but such success has not been observed for floods.
- While the inherent risks of infrastructure development in hills and unstable terrain is well understood, these are often elided by authorities in the name of balancing the demands of the people for better infrastructure and services.
- The increased risk and cost to such projects and infrastructure should be factored in when they are tendered out by the government, and scientific advice regarding development ought to be strictly adhered to.

THE HINDU

Kerala Savari

- Kerala has soft launched 'Kerala Savari', the country's first online taxi service owned by a State government, to ensure fair and decent service to passengers along with fair remuneration to auto-taxi workers.

- Operated by the Motor Workers Welfare Board under the aegis of the Labour Department, the Kerala Savari ensures safe travel for the public at 'government approved fares' without any 'surge pricing.'
- Kerala Savari only charges an 8% service charge in addition to the rate set by the government.
- Of the 8% service charge, 6% will go to the technical partner, and the remaining 2% will go to the implementation of this scheme and for providing promotional incentives to passengers and drivers.

Why has the State government decided to launch this initiative?

- The alleged unfair trade practices and violation of consumer rights by private app-based cab aggregators have come as a major concern for governments.
- Recently, the Central Consumer Protection Authority (CCPA) had issued notices to cab aggregators Ola and Uber for unfair trade practices and violation of consumer rights.
- Passengers often complain about the deficiency in services including charging exorbitant fares during peak hours, unprofessional behavior from the part of drivers, lack of proper response from customer support, and undue levy of cancellation charges despite the cab driver refusing to accept the ride booked by the passenger etc.
- It is against this backdrop that the Kerala government has decided to come up with an app-based platform to offer auto-taxi service for the public.
- Kerala Savari is a safe and reliable online service for women, children, and senior citizens.
- A police clearance certificate is mandatory for drivers joining the scheme apart from the required proper training.

THE HINDU

Natural farming

- Natural Farming is a chemical-free alias traditional farming method.
- It is considered as agroecology-based diversified farming system which integrates crops, trees, and livestock with functional biodiversity.
- In India, Natural farming is promoted as Bharatiya Prakritik Krishi Paddhati Programme (BPKP) under centrally sponsored scheme- Paramparagat Krishi Vikas Yojana (PKVY).
- BPKP is aimed at promoting traditional indigenous practices

which reduces externally purchased inputs.

- It is largely based on on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations; periodic soil aeration and exclusion of all synthetic chemical inputs.
- According to HLPE Report, natural farming will reduce dependency on purchased inputs and will help to ease smallholder farmers from credits burden.
- The BPKP programme has been adopted in State of Andhra Pradesh, Karnataka, Himachal Pradesh, Gujarat, Uttar Pradesh and Kerala.
- Several studies have reported the effectiveness of natural farming-BPKP in terms of increase in production, sustainability, saving of water use, improvement in soil health and farmland ecosystem.
- It is considered as a cost- effective farming practices with scope for raising employment and rural development.

THE HINDU

Tomato flu

- A new infection dubbed tomato flu, or tomato fever, has been detected in India mostly among children

younger than five, according to a report in the Lancet Respiratory Journal.

- The primary symptoms of tomato flu are similar to those of chikungunya, which include high fever, rashes, and intense pain in the joints.
- As with other viral infections, further symptoms include fatigue, nausea, vomiting, diarrhoea, dehydration, swelling of joints, body aches, and common influenza-like symptoms, which are similar to those manifested in dengue.
- As tomato flu is similar to chikungunya and dengue as well as hand, foot, and mouth disease, the treatment is also similar.
- Similar to other types of influenza, tomato flu is very contagious and children are at an increased risk of exposure as viral infections are common in this age group and the spread is likely to be through close contact, the report noted
- “The ‘tomato flu’ is caused by Coxsackie virus A 16.
- It belongs to Enterovirus family.
- Coxsackievirus 16 (CA16) is one of the major pathogens associated with hand, foot, and mouth disease (HFMD) in infants and young children
- CA16 was first isolated in South Africa in 1951.

- It is a member of Human enterovirus A (HEV-A) species of the Enterovirus genus of Picornaviridae.

THE HINDU

India Iran sign pact

- As talks over the development of Chabahar Port gain momentum, India and Iran on Monday signed a memorandum of understanding (MoU) mutually recognising certificates of competency in unlimited voyages of seafarers from both the nations.as per the provisions of the International Convention on Standards of Training, Certification and Watch keeping for Seafarers, 1978
- The signing of the MoU is aimed at smoothening the movement of seafarers from both countries.

Importance of Chabahar Port

- Chabahar Port is slated to be India's gateway for trade with central Asian and European nations, along with increased engagement with Russia, once its potential is leveraged by linking it to INSTC.
- It was developed with Indian assistance and is currently operated by state-owned India Ports Global.

- The role of Chabahar as a trade multiplier for the region.
- India Ports Global Private Ltd. (IPGPL) assumed the operations of Shahid Beheshti Port, it has handled over 4.8 million tonnes of bulk cargo.
- With close cooperation between India's IPGPL and Iranian stakeholders including Iran's Port and Maritime Organisation, Iranian Customs Administration and the Chabahar Free Zone Authority, the Shahid Beheshti Port Authority & other stakeholders, the port is likely to act as a catalyst to unlock the huge trade potential in the region.
- ULV pesticides to Iran via the Chabahar port in an effort to mitigate locust threat to agriculture and enhance food security in the region.

THE HINDU



5G Roll out for law enforcement

- The 5G rollout is set to enhance efficiency, productivity, and security by helping the police access critical information in real-time and nab criminals.
- 5G has high bandwidth and low latency, so its adoption would ensure the best performance of police devices such as body cams, facial recognition technology, automatic number-plate recognition, drones, and CCTVs. 5G promises to transmit clearer images.
- This will simplify the task of the police who, at present, often look at hazy images from devices and attempt to decipher them while working on cases.
- The increased storage capacity promised by 5G will allow the police to streamline their investigation methods.
- 5G will also allow rapid and secure communication within the organisation as well as between civilians and emergency responders.
- With 5G, the police can remotely access and analyse crime data and information from other infrastructure such as traffic lights.

Challenges

- The government and telecommunication companies must first ensure that law enforcement agencies have the necessary infrastructure to take full advantage of all that 5G can offer.
- Even if law enforcement agencies get access to secure data from telecom operators, they will still need tools to access this data.
- Also, most police systems are outdated and may not be compatible with 5G.
- To bridge this technology gap, the police must invest in modern tools, software, and infrastructure.

Cyber security concerns

- Deploying 5G when we have a shaky cyber security foundation is like erecting a structure on soft sand.
- 5G is a software-defined digital routing.
- This makes it susceptible to cyber threats such as botnet attacks, man-in-the-middle attacks, and distributed denial-of-service (DDoS) overloads.
- As 5G lacks end-to-end encryption, hackers can plot their attacks more precisely and perpetrate cybercrimes by hacking into systems or disseminating illegal content

- 5G may also make it easier for criminals to perpetrate cyber bullying
- They could also hack into Internet of Things (IoT) devices and remotely commit crimes.
- Terrorists, too, could benefit from 5G as the high speed would allow them to execute attacks more rapidly and precisely.
- Steps needed
- First, the police will need to be trained so that they recognise new 5G-enabled crimes.
- Second, training programmes focusing on such crimes must be developed.
- Third, the government and telecom companies could think of setting up a 5G crime monitoring task force to monitor and identify new crimes and develop countermeasures.
- Fourth, it is imperative to create regulations that make it a crime for people to use 5G technology to commit crimes.
- Fifth, regulations may also require telecom companies to allow police officers access to their equipment to track the location of victims and perpetrators of 5G-facilitated crimes for countermeasures
- Finally, law enforcement agencies will have to evolve strategies to identify victims of 5G-facilitated

crimes, locate them and take action against the perpetrators of such crimes.

THE HINDU

Freebies

- Over time, freebies expanded beyond rice, to gas stoves, colour TVs, laptops, payments for household work etc
- The Delhi government has notably offered water and electricity (up to a certain limit) free for the city's voters;
- The Himachal Pradesh government is offering locals free power upto 125 units, along with free water in villages and a 50% discount in bus fares for women;
- In Assam, the State government has announced direct and indirect cash benefit schemes worth ₹6,000 crore impacting nine lakh beneficiaries
- Over time, such frivolous promises have had consequences Andhra Pradesh annually spends close to ₹1.62 lakh crore across various such schemes;
- the push in Punjab to offer free electricity to 51 lakh households will inevitably add to the unpaid dues to the tune of ₹7,117 crore of the State discom.
- Not every scheme or manifesto promise is a freebie some parties

may offer free electricity, LPG cylinders, public transportation and loan waivers; other schemes are more focused on the development and capital expenditure.

- Free food at schools for students, as offered under the mid-day meal scheme, should not be classified as a freebie, given that it helps improve the health of our children.
- Governments (whether State or Centre) announcing freebies should be required to provide a funding plan to bolster Parliament (and State Assembly) budgetary understanding and enhance their ability to act.

The way out

- Given the difficulty in classifying a scheme as “essential” or a “freebie”, governments should be statutorily bound towards key financial indicators such as government debt-to-GDP ratio, revenue expenditure as a percentage of government income, revenue collection efficiency etc.
- Transfers towards capital expenditure schemes should be prioritised over other schemes.
- Banning political parties for promising freebies would be a step too far and hence, the Election Commission should push political

parties to provide a funding mechanism for such promises.

- More importantly, we need to have a conversation within and between political parties.

THE HINDU

Chabahar port

- The strategic objective for the Chabahar route has appeared, with China’s Belt and Road Initiative making inroads in the region.
- The government hopes to provide Central Asia with an alternate route to the China-Pakistan Economic Corridor (CPEC) through Iran for future trade.
- India’s vision to make the Shahid Beheshti port a “a transit hub” and link it to the International North South Trade Corridor (INSTC), that also connects to Russia and Europe.
- The Chabahar plan had three main objectives to build India’s first offshore port; to circumvent trade through Pakistan; and to find an alternative land route to Afghanistan.
- The Modi government also snapped ties with Afghanistan after the Taliban takeover in August 2021, which put an end to the

humanitarian aid of wheat and pulses that was being sent to Kabul via Chabahar.

THE HINDU

Chinese firm scrutiny

What are the allegations against various Chinese companies?

- In India, Vivo, Xiaomi, and Oppo have been broadly accused of tax evasions, discharging illegal remittances, forged identifications and incorrect disclosures.
- In April this year, the Enforcement Directorate (ED) seized ₹5,551.27 crores from Xiaomi's India unit.
- This was seen to be in violation of certain provisions of the Foreign Exchange Management Act (1999).
- Oppo was issued a show-cause notice after the Directorate of Revenue Intelligence (DRI) detected customs duty evasion of ₹4,389 crore
- This is in violation of various provisions of the Customs Act (1962) and Customs Valuation (Determination of Value of Imported Goods) Rules, 2007.
- Across the world Chinese companies have been disfavoured for providing critical infrastructure for essential telecommunication services.

- Reuters reported that the Biden administration was investigating Huawei over concerns that cell towers in the country were fitted with gear that could capture sensitive information from military bases.

Are we also looking at cyber-attacks?

- On multiple occasions, China has been accused of cyberattacks aimed at collecting information of a sovereign's critical infrastructure.
- North American cybersecurity firm Recorded Future stated that the October 2020 Mumbai blackout was carried out by China-linked hacker group 'RedEcho' as a follow-up act to the Galwan Valley clash between the armies of the two countries.

What happens to the market in the face of a potential exit?

- What has helped the growth of Chinese telecom companies in India is its price competitiveness in a price sensitive market.
- According to Counterpoint Research, Chinese players have a 75-80% share in the sub-\$150 segment contributes to 31% of the overall smartphone market.

- There has, therefore, emerged an urgency to find a perfect competitive replacement for Chinese products.
- Make in India' does possess the bandwidth to provide an alternative but it would be a "plan for many years".

amalgamation and transmutation of cultures.

THE HINDU

THE HINDU

Acculturation

- The concept of acculturation was coined in 1880 by American geologist John Wesley Powell.
- Acculturation is defined as the process in which a person or group from one culture comes in contact with another culture, adopting the values and practices of the other while still retaining their own distinct identity.
- Sociologists understand acculturation as a two-way process, wherein the minority culture adopts aspects of the majority to fit in and the culture of the majority is also influenced by that of the minority.
- India, with its distinctive fusion of various cultures, has archetypes that present us with a deeper understanding of the concept of acculturation.
- The Urdu language, a blend of Arabic, Persian, Turkish and Hindi, is a beautiful example of the

G20 and India's choices

- The G20 membership represents nearly 90% of the world's GDP, 80% of global trade, and 67% of the planet's population.
- It is an advisory body, not a treaty-based forum and, therefore, its decisions are recommendations to its own members.
- The representation of the United Nations, the World Bank, the International Monetary Fund, the World Trade Organization, the World Health Organization, and other multilateral institutions in it makes the G20 an incomparable body.
- The G20 has played a vital role in addressing financial and economic challenges such as the global financial crisis of 2008-09 and the Eurozone crisis of 2010.
- The forum was elevated from the finance ministers to the heads of government/state in 2008.
- In this second decade of the G20, the forum is faced with an existential crisis, where the major powers have fallen out
- The disastrous impact of the novel coronavirus pandemic, the war in Ukraine, India-China border tensions, EU/U.S.-Russia hostility, and deteriorating U.S.-China

relations are already visible in the run-up to the 2022 Bali summit (in November) where all G20 leaders may not be sitting physically in the same room.

- The outcome in Bali will affect the Delhi summit.

India's choices

- First, the G20 presidency offers a unique branding opportunity for India's recent achievements, including the ability effectively OVID-19 effectively at home and abroad through vaccine aid and diplomacy.
- Other major achievements are India's digital revolution, its steady progress in switching to renewables, meeting its targets to counter climate change, and its push for self-reliance in manufacturing and reshaping global value chains.
- New trends in entrepreneurship, business innovation, the rise of many start-ups as unicorns, and gender progress too need to be showcased.
- Second, by a remarkable coincidence, four democracies on the path to becoming powerful economic players Indonesia, India, Brazil, and South Africa hold the presidency from December 2021 to November 2025.
- This offers a rare opportunity for synergy and solidarity to advance

the interests of the developing world and to assert their combined leadership of the Global South.

- Third, another exceptional coincidence is that all three members of IBSA India, Brazil, and South Africa will hold the G20 presidency consecutively in 2023, 2024, and 2025.
- This forum, insulated from the geopolitical pressures constraining the BRICS (where these three countries are required to work with Russia and China), can develop a cohesive plan to project the priority concerns of the Global South.
- Four, India needs to get ready to emerge as the chief global diplomat.
- As the G20 president, India will be obliged to take a broader view of the G20 agenda to synthesize divergent interests of all constituents of the forum: five permanent members of the UN Security Council, the developed world united under the flag of the G7, five members of BRICS, and other G20 members such as Argentina and Mexico.
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THE HINDU

Social Security in India

- Social security mainly encompasses food security, health security, and income security.
- India operates the widest spectrum of social security schemes which cater to the largest number of people than any other country.

- The Indian food security programme, for example, has over 800 million beneficiaries being provided heavily subsidised food grain under the National Food Security Act (NFSA).
- The NFSA is the world's largest food security programme. About 120 million children are provided free lunch under the Mid-Day Meal Scheme
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THE HINDU

Competition amendment bill 2022

The story so far:

- The Indian Competition Act was passed in 2002, but it came into effect only seven years later.
 - The Competition Commission primarily pursues three issues of anti-competitive practices in the market: anti-competitive agreements, abuse of dominance and combinations.
 - As the dynamics of the market changes rapidly due to technological advancements, artificial intelligence, and the increasing importance of factors other than price, amendments became necessary to sustain and promote market competition.
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- Therefore, a review committee was established in 2019 which proposed several major amendments.
- The long-awaited Bill to amend the Competition Act, 2002,

What is the major change in dealing with new-age market combinations?

- Any acquisition, merger or amalgamation may constitute a combination.
- Section 5 currently says parties indulging in merger, acquisition, or amalgamation need to notify the Commission of the combination only on the basis of 'asset' or 'turnover'.
- The new Bill proposes to add a 'deal value' threshold.
- It will be mandatory to notify the Commission of any transaction with a deal value in excess of ₹2,000 crore and if either of the parties has 'substantial business operations in India'.
- The Commission shall frame regulations to prescribe the requirements for assessing whether an enterprise has 'substantial business operations in India'
- When business entities are willing to execute a combination, they must inform the Commission.
- The Commission may approve or disapprove the combination,

keeping in mind the appreciable adverse effect on competition that is likely to be caused.

- The new Bill seeks to accelerate the timeline from 210 working days to only 150 working days with a conservatory period of 30 days for extensions.

What is gun-jumping?

- Parties should not go ahead with a combination prior to its approval.
- If the combining parties close a notified transaction before the approval, or have consummated a reportable transaction without bringing it to the Commission's knowledge, it is seen as gun-jumping.
- The penalty for gun-jumping was a total of 1% of the asset or turnover.
- This is now proposed to be 1% of the deal value.
- Does the amendment Bill address the issue of Hub-and-Spoke Cartels?
- A Hub-and-Spoke arrangement is a kind of cartelisation in which vertically related players act as a hub and place horizontal restrictions on suppliers or retailers (spokes).
- Currently, the prohibition on anti-competitive agreements only covers entities with similar trades that engage in anti-competitive practices.

- This ignores hub-and-spoke cartels operated at different levels of the vertical chain by distributors and suppliers.
- To combat this, the amendment broadens the scope of 'anti-competitive agreements' to catch entities that facilitate cartelization even if they are not engaged in identical trade practices.
- What is the amendment to the 'settlements' and 'commitments' mechanisms?
- The new amendment proposes a framework for settlements and commitments for cases relating to vertical agreements and abuse of dominance.
- In the case of vertical agreements and abuse of dominance, the parties may apply for a 'commitment' before the Director General (DG) submits the report. 'Settlement' will be considered after the report is submitted and before the Commission decides.
- According to the amendment, the Commission's decision regarding commitment or settlement will not be appealable after hearing all stakeholders in the case.
- What are the other major amendments?
- In the amendment Bill, a provision called 'Leniency Plus' allows the commission to give an additional waiver of penalties to an applicant who discloses the existence of another cartel in an unrelated market, provided the information enables the Commission to form a prima facie opinion about the existence of the cartel.
- Other noteworthy amendments include the appointment of the DG by the Commission rather than the Central government, giving the Commission greater control.
- According to the Bill, the DG has the power to conduct investigations, including raids.
- The Commission will only consider information filed within three years of the occurrence of the cause of action.
- As part of the Bill, penalties and penalty guidelines are proposed to be amended.
- For any false information filed, a penalty of five crore will be imposed, and for failure to comply with the Commission directions, a penalty of ₹10 crores will be imposed.
- Additionally, the Commission will develop guidelines regarding the amount of penalties for various competition violations.
- For an appeal to be heard by the National Company Law Tribunal (NCLT) against the Commission's

order, the party will have to deposit 25% of the penalty amount.

THE HINDU

Tomato flu

What does The Lancet report say?

- In the article 'Tomato flu outbreak in India', published in The Lancet Respiratory Medicine journal on August 17, the authors define the infection as a "new virus" that has emerged in Kerala in children younger than five years.
- The report, however, contradicts itself by also claiming the infection to be in an endemic state. 'Endemic is a term used to refer to a disease which has spread in a limited area but has been around for some time.
- The report further claims that 'tomato flu' was first identified in the Kollam district of Kerala on May 6 this year.
- The authors do not mention a specific origin, type, or cause of the infection.
- They suggest that it may be an after-effect of chikungunya or dengue fever in children rather than a viral infection, or that the virus could also be a new variant of the HFMD a common viral infection affecting young children that appears with

fever, rashes or blisters on the skin and mouth sores.

What are experts saying?

- As far as its etymology is concerned, the Lancet report claims that the 'tomato flu' is so named because of the "eruption of red and painful blisters throughout the body that gradually enlarge to the size of a tomato
- 'Tomato flu' is caused by Coxsackievirus A16. It belongs to the Enterovirus family.

THE HINDU

Yudh Abhyas

- The upcoming edition of the “Yudh Abhyas” joint exercise is expected to take place next month in a high-altitude area in Uttarakhand less than 100 km from the LAC.
- In April 2020, two divisions of the PLA, having completed routine exercises, deployed in large numbers close to the LAC and carried out multiple transgressions which, India has pointed out, violated the 1993 and 1996 agreements to maintain peace in the border areas.
- Yudh Abhyas is a joint military exercise, bilaterally occurring between India and the US. It started in 2002 and is undertaken by the armies of both countries to promote defence cooperation.
- The latest edition (17th edition) of the Yudh Abhyas Exercise is currently underway at Joint Base Elmendorf Richardson in Alaska, USA.
- The 16th edition of the Yudh Abhyas exercise took place between February 8 and February 21, 2021, at Mahajan Field Firing Range in Rajasthan.

Year	Agreement	Key Points of Consensus
September 7, 1993	Agreement on the Maintenance of Peace and Tranquillity along the Line of Actual Control in the India-China Border Areas	Respect, and abide by, the Line of Actual Control (LAC).
November 29, 1996	Agreement Between the Government of the Republic of India and the Government of the People's Republic of China on Confidence-Building Measures in the Military Field Along the Line of Actual Control in the India-China Border Areas	Continue implementing confidence-building measures in the military field along the LAC. Maintain peace and tranquillity in areas along the LAC in the India-China border areas.
April 11, 2005	Agreement between the Government of the Republic of India and the Government of the People's Republic of China on the Political Parameters and Guiding Principles for the Settlement of the India-China Boundary Question	Neither side shall use its military capability against the other side and their respective military strengths shall not be used to attack the other side.
January 17, 2012	India-China Agreement on the Establishment of a Working Mechanism for Consultation and Coordination on India-China Border Affairs	Neither side shall use or threaten to use force against the other by any means or seek unilateral military superiority.
October 23, 2013	Agreement between the Government of the Republic of India and the Government of the People's Republic of China on Border Defence Cooperation	

Source: Prepared by the author with reference to government documents.

THE HINDU

SPG Act

Special Protection Group (SPG)

- The Special Protection Group (SPG) is an agency of the Government of India whose sole responsibility is protecting the Prime Minister of India.
- It was formed in 1988 by an Act of the Parliament of India.
- The SPG protects the Prime Minister at all times both in India and abroad, as well as the Prime Minister's immediate family members residing with them at their official residence. Family members, however, may decline security.
- Previously, the SPG's mandate included protecting the Prime Minister's “parents, wife (sic) and children” resident anywhere in India during their term of office and for five years after leaving office.

- However, the Special Protection Group (Amendment) Act, 2019 reduced such mandate.
- Currently, Prime Minister Narendra Modi is the only SPG protectee.
- On 18 February 1985, the Ministry of Home Affairs set up the Birbal Nath Committee to examine the issue and submit recommendations to the government for prime ministerial security.
- In March 1985, the Committee submitted its recommendation for the raising of an independent agency for prime ministerial protection, known as the Special Protection Unit (SPU).
- On 30 March 1985, the President of India, by executive order, created 819 posts for the unit within the Cabinet Secretariat.
- The name of the unit was re-christened Special Protection Group, led by a Director who would be an Indian Police Service officer with the rank of Inspector General of Police.
- State role
- Under the new arrangements, on domestic visits, the Intelligence Bureau and concerned State Police were responsible for coordination, collection and dissemination of intelligence affecting the Prime Minister's security.
- State Police and the SPG would then provide physical security arrangements for the Prime Minister in two-layers.

About SPG Act-

- The Prime Minister's security is the domain of the Special Protection Group or SPG which is described as an "armed force" in the SPG Act.
- The SPG Act came into being in 1988 and the body functions under the cabinet secretariat.
- The Act was passed by the parliament after the assassination of former Prime Minister Indira Gandhi and was extended to all former Prime Ministers and their immediate families after former Prime Minister Rajiv Gandhi was assassinated.
- The Act has provisions for "providing proximate security" to the Prime Minister of India as well as those who have previously held the post.
- Proximate security is defined as "protection provided from close quarters, during a journey by road, rail, aircraft, watercraft, or on foot, or any other means of transport and shall include the places of functions, engagements, residence or halt and shall comprise ring round teams, isolation cordons, the sterile zone around, and the rostrum and access

control to the person or members of his immediate family”

THE HINDU

Vikrant/STOBAR

- Commissioning of the country's first indigenously built aircraft carrier Vikrant will enhance peace, security, and stability in the Indian Ocean and Indo-Pacific Region.



- India received its first indigenously built aircraft carrier INS Vikrant from the its manufacturer, Cochin Shipyard
- NS Vikrant is set to operate MiG-29K fighter jets, Kamov-31 helicopters and MH-60R multi-role helicopters.
- Vikrant has been built with a high degree of automation for machinery operation, ship navigation and survivability and has been designed to accommodate an assortment of fixed wing and rotary aircraft,".
- It has been a big boost to India's quest towards 'Aatma Nirbhar

Bharat' (self-reliant India) with the warship ready to set sail soon.

- The warship would serve to bolster India's position in the Indian Ocean Region (IOR) and its quest for a blue water Navy.

STOBAR

- STOBAR ("short take-off but arrested recovery" or "short take-off, barrier-arrested recovery") is a system used for the launch and recovery of aircraft from the deck of an aircraft carrier, combining elements of "short take-off and vertical landing" (STOVL) with "catapult-assisted take-off but arrested recovery
- Compared to CATOBAR, STOBAR is less expensive to develop. It is easier to operate than a CATOBAR configuration, which requires large number of operators to launch the aircraft. Lack of any moving parts in ski-jump makes it less expensive to maintain the launch system.
- It does not require any additional system to generate force required to launch the aircraft, unlike CATOBAR where an external force is needed to be generated either from steam catapult or electromagnetic aircraft launch system (EMALS) to launch the aircraft.



THE HINDU

Right of Way Rule

- The Central Government has notified the Indian Telegraph Right of Way (Amendment) Rules, 2021.
- The rule aims to incorporate the provisions related to nominal one-time compensation and uniform procedure for the establishment of Overground Telegraph Line in the Indian Telegraph Right of Way Rules, 2016.
- Compensation: The amount of one-time compensation for the establishment of an over ground telegraph line will be a maximum one thousand rupees per kilometre.
- Right of Way (RoW): These amendments will ease RoW-related permission procedures for the establishment and augmentation of digital communications infrastructure across the country.
- Earlier, the RoW Rules had covered only underground Optical fibre (OFC) and mobile towers.

- Fees: There will be no fee other than Administrative fee and Restoration charges for establishing, maintaining, transferring or shifting the underground and over ground telegraph infrastructure.
- The salient features of the amendments are as follows:

Expansion of telecom infrastructure:

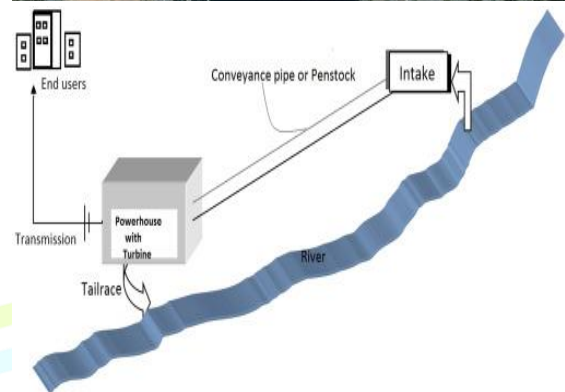
- To facilitate faster 5G roll-out, RoW application procedures for small cell has now been simplified. Telecom licensees will be able to use street infrastructure to deploy telecom equipment at a nominal cost of Rs. 150/annum in rural areas and Rs. 300/annum in urban areas.
- To facilitate faster fiberisation, street infrastructure may be utilized at a nominal cost of Rs. 100/annum to install overground optical fibre.
- The amendments create distinction between 'poles' and 'mobile towers'. Overground infrastructure of height up to 8 meters shall be treated as poles and will need minimal regulatory permissions for deployment.

THE HINDU



Vishnugad Hydropower Plant

- An independent panel of the World Bank is considering a plea by residents of Haat village, Chamoli district, Uttarakhand to investigate environmental damage from the under-construction Vishnugad Pipalkoti Hydro Electric Project (VPHEP) in the district
- The Tapovan Vishnugad Hydropower Plant is a 520 MW run-of-river hydroelectric project being constructed on Dhauliganga River in Chamoli District of Uttarakhand, India.
- The plant is expected to generate over 2.5 TWh of electricity annually.
- Run-of-river hydro projects use the natural downward flow of rivers and micro turbine generators to capture the kinetic energy carried by water.
- Typically water is taken from the river at a high point and diverted to a channel, pipeline, or pressurized pipeline



- The 444-MW VPHEP is being built by the Tehri Hydropower Development Corporation (THDC), a partially State-owned enterprise.
- The project is primarily funded by the World Bank and was sanctioned in 2011.
- It is proposed to be completed in June 2023.
- About 40% of the funds for the \$792 million project (₹64,000 crore approx.) has already been disbursed.

THE HINDU

Zorawar



- Indian Army is prioritising the procurement of the indigenous Indian light tank named ‘Zorawar’, for deployment in the mountain
- “It will have equal firepower as the present tank, including missile firing. The power to weight ratio will make it very agile,”
- Indian Light Tank Zorawar has been designed to operate in high-altitude areas, marginal terrains to the island territories and will be “highly transportable for rapid deployment to meet any operational situation”.

THE HINDU

Disqualification under RPA 1951



What RoPA'1950 & 1951 entail?

RoPA'1950	RoPA'1951
<ul style="list-style-type: none"> • Qualification of voters • Preparation of electoral rolls • Delimitation of constituencies • Allocation of seats in the Parliament and state legislature 	<ul style="list-style-type: none"> • The actual conduct of elections in India • Administrative machinery for conducting elections • Qualification and disqualification of MPs/MLAs • Election offences and disputes • Registration of political parties

Grounds for disqualification

The Legislature, in the Representation of the People Act of 1951, is “absolutely specific” on the grounds to disqualify. These grounds are:

SECTION 8: Conviction for certain offences

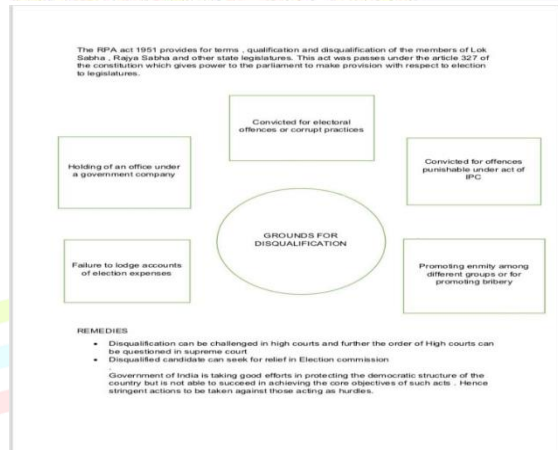
SECTION 9A: When there is subsisting contract between the person and the government

SECTION 10: Disqualification for office under government company

SECTION 10A: Failure to lodge account of election expenses

Apart from these disqualifications, there are no other disqualifications and, as is noticeable, there can be no other ground

— CJI DIPAK MISRA



- Section 9 in the Representation of the People Act, 1951
- Disqualification for dismissal for corruption or disloyalty.
- A person who having held an office under the Government of India or under the Government of any State has been dismissed for corruption or for disloyalty to the State shall be disqualified for a period of five years from the date of such dismissal.
- For the purposes of sub-section (1), a certificate issued by the Election Commission to the effect that a person having held office under the Government of India or under the Government of a State, has or has

not been dismissed for corruption or for disloyalty to the State shall be conclusive proof of that fact: Provided that no certificate to the effect that a person has been dismissed for corruption or for disloyalty to the State shall be issued unless an opportunity of being heard has been given to the said person.

- What is Section 9A of The Representation of the People Act, 1951, which might lead to CM Hemant Soren's ouster?
- As per Section 9A in The Representation of the People Act, 1951, "a person shall be disqualified if, and for so long as, there subsists a contract entered into by him in the course of his trade or business with the appropriate Government for the supply of goods to, or for the execution of any works undertaken by, that Government."

THE HINDU

Puttaswamy case and data privacy

- Judgment in the case of Justice K.S. Puttaswamy (retd.) vs Union of India (2017).
- The judgment delivered on that date formally recognised the right to privacy as being a fundamental right

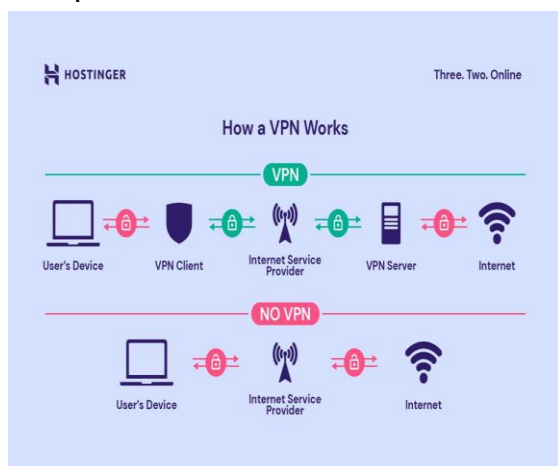
stemming from the right to life and personal liberty, guaranteed under Article 21 of the Indian Constitution.

- The Bench also held that while the right to privacy is intrinsic to an individual's ability to exercise bodily autonomy, it is still not an "absolute right" in and of itself, placing limitations in a manner similar to those placed on the right to free speech and expression.
- Data security breaches which result in the loss and theft of personal, sensitive data have not reduced in terms of measurable frequency or their impact
- Data concerning the scale and nature described here is used most often by some legitimate advertising agencies, unscrupulous telemarketing firms, and cyber criminals.
- The recent interventions by the Government which aim to restrict Indian nationals from subscribing to and accessing VPN services

What is a VPN?

- A commercial virtual private network is technology that allows you to create a private connection over a less private network by creating an encrypted tunnel between your computer and the internet. You can install a VPN just

like you would any other app or program on your smartphone or computer.



THE HINDU

AFSPA

WHAT IS ARMED FORCES SPECIAL POWERS ACT?

➤ Introduced in 1958, AFSPA confers on members of the armed forces special powers to rein in suspects in areas declared "disturbed" on account of insurgent activities or similar threats. It has been in force in Manipur since 1980, and the alleged excesses committed under it are the reasons why activist Irom Sharmila has been on a hunger strike since 2000.

WHAT ARE SPECIAL POWERS?

AFSPA allows any commissioned officer, warrant officer and non-commissioned officer – or any other



person of equivalent rank – to:

➤ Fire upon or use force against any person acting "in contravention of any law for the time being in force in the disturbed area"

➤ Arrest suspicious people without warrant

➤ Destroy any structure suspected to house an arms dump, shelter from which armed attacks are made or are likely to be made

➤ Conduct searches without warrants for evidence, to recover a wrongfully confined person or property or arms or explosives

➤ AFSPA bars prosecution or proceedings – except with Centre's nod – against personnel for action committed while exercising powers under the Act

reviewing the provisions of AFSPA submitted its report on June 6, 2005, with the recommendation that AFSPA be withdrawn.

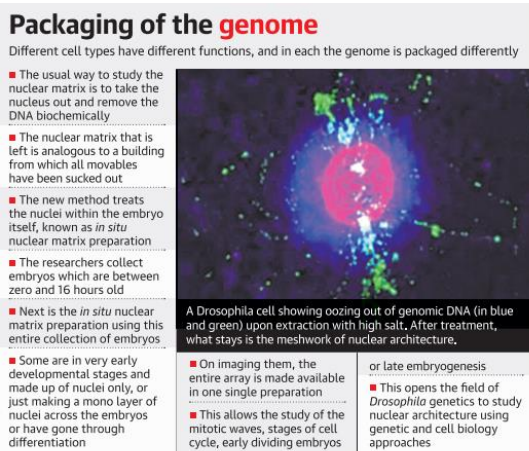
- It had suggested making amendments to the Unlawful Activities (Prevention) Act, 1967 (UAPA) to achieve the purpose of AFSPA.
- In 2016, a two-judge Bench of the Supreme Court of Justices Madan B. Lokur and U.U. Lalit passed a historic judgment on a plea by hundreds of families in Manipur for a probe by a Special Investigation Team into 1,528 cases of alleged fake encounters involving the Army and the police between 1979 and 2012.
- The Court held that "there is no concept of absolute immunity from trial by a criminal court.

THE HINDU

- AFSPA was first invoked in the then Naga Hills district of Assam in 1958.
- Justice Jeevan Reddy Committee, which recommended the repeal of the AFSPA, finally, national security concerns made the Commission's recommendations infructuous and the AFSPA continued as it was.
- The Justice B.P. Jeevan Reddy Commission that was tasked with

Nuclear matrix

- Every cell that makes up an organism contains a copy of its genome.
- This genome is packaged in special ways with the help of a structure known as the nuclear matrix.
- The nuclear matrix gives an organization and architecture to the nucleus.



THE HINDU

(DEET) and mosquitoes

- Mosquito repellents work on the principle of obfuscating the insect's sense of smell.
- The most common chemical in repellents, diethyltoluamide (DEET) for instance, confuses the mosquito's antennae that's sensitive to sweat and carbon dioxide from the human body.

- However, this and several other ingredients such as picaridin, IR3535, and eucalyptus oil are not fool proof.
- The reason for this, a study this month in the journal *Cell* reports, is that mosquitoes have evolved resilient backups in their olfactory system that make sure they can always smell our scents.
- 1-octen-3-ol, is a chemical secreted in human sweat that can be detected only by specific set of neurons in people and mosquitoes.
- In these insects, however, these neurons are also stimulated by amines, another type of chemical mosquitoes use to look for humans.

THE HINDU

Study of mars and earth evolution

- The rover Perseverance landed in the Jezero Crater, a spot chosen partly for the crater's history as a lake and as part of a rich river system.
- But what the rover found once on the ground was startling.
- Rather than the expected sedimentary rocks washed in by rivers and accumulated on the lake bottom many of the rocks are volcanic in nature.

- The rocks and lava the rover is examining on Mars are nearly 4 billion years old.
- Rocks that old exist on Earth but are incredibly weathered and beaten, thanks to Earth's active tectonic plates as well as the weathering effects of billions of years of wind, water, and life.
- On Mars, these rocks are pristine and much easier to analyse and study.
- Understanding the rocks on Mars, their evolution and history, and what they reveal about the history of planetary conditions on Mars helps researchers understand how life may have arisen on Mars and how that compares with early life and conditions on ancient Earth.
- Scientists can use conditions on early Mars to help extrapolate the environment and conditions on Earth at the same time when life was beginning to arise.
- What is more concerning is that these microbes are evolving faster than we can invent drugs to tackle them.
- Our stash of antimicrobials is drying up while more drug resistant 'superbugs' are evolving and taking over the world.
- Antimicrobial resistance (AMR) is a growing health crisis and tackling it needs a multi-pronged approach.
- We need newer, more effective antimicrobial drugs, improved access to life-saving antimicrobials across the globe; better diagnostics to identify drug-resistant infections and treat them with drugs that work, and robust surveillance systems to monitor the spread of drug resistant infections.
- India is projected to have 1.6 million multi-drug resistant infectious cases in 2040, which is significantly higher than any country.
- One way to prevent the reckless overuse of antimicrobials is to diagnose what's causing an infection early, which helps determine the right course of drugs
- Lack of funding in pharmaceutical research, clinical trial and supply chain challenges, and regulatory hurdles have slowed down new antibiotics development.

THE HINDU

Growing antibiotic resistance

- Our reckless use of antibiotics, including penicillin, has given rise to bacteria, viruses, fungi, and parasites that have become resistant to commonly used antimicrobials.

- In India, where 80% urban healthcare providers are private, resource-starved hospitals struggle to procure pricey antibiotics.
- Innovative pricing models, bulk procurement of such antibiotics and guaranteed purchase commitments from hospitals could not only reduce cost but also imbibe confidence in pharma companies that have invested in antibiotics research.
- The rollout of universal health coverage in India could improve access to antibiotics for more than 100 million families by reducing out-of-pocket spending for individuals while also easing procurement for the government with bulk orders.
- AMR is an emerging pandemic, and India is the AMR capital of the world a distinction that calls for swift action from policymakers and the scientific community.
- NASA's Orion spacecraft is built to take humans farther than they've ever gone before.
- Orion will serve as the exploration vehicle that will carry the crew to space, provide emergency abort capability, sustain the crew during the space travel, and provide safe re-entry from deep space return velocities.
- Orion will launch on NASA's new heavy-lift rocket, the Space Launch System.

THE HINDU

Herpes simplex virus

THE HINDU

Orion

- The most powerful rocket ever built will soon launch, carrying the Orion capsule that NASA hopes will soon transport astronauts back to the Moon
- DNA extracted from ancient human teeth indicates that herpes simplex virus 1 (HSV-1) the cold-sore virus was first seen in what is now Europe around 5,000 years ago.
- Changing cultural practices during the Bronze Age including the emergence of romantic kissing could have factored into HSV-1's meteoric rise.

About the herpes simplex virus (HSV)

- The herpes simplex virus (HSV) is categorized into 2 types: HSV-1 and HSV-2.

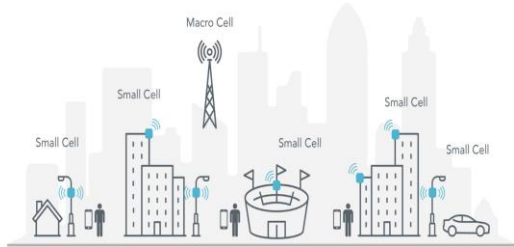
- HSV-1 is mainly transmitted by oral-to-oral contact, causing oral herpes (including symptoms known as cold sores), but it can also lead to genital herpes.
- HSV-2 is a sexually transmitted infection that causes genital herpes.
- An estimated 3.7 billion people under age 50 (67%) have HSV-1 infection globally.
- An estimated 491 million people aged 15–49 (13%) worldwide have HSV-2 infection.
- Most HSV infections are asymptomatic, but symptoms of herpes include painful blisters or ulcers that can recur over time.
- Infection with HSV-2 increases the risk of acquiring and transmitting HIV infection.

THE HINDU

Small cell and 5G

What is a small cell?

- A small cell is an umbrella term used to describe a miniature radio access point (AP) or wireless network base station with a low radio frequency (RF) power output, footprint and range.
- Small cells enhance cellular network coverage and capacity in areas such as densely populated city centers where use demands are the highest.



- To expedite the roll-out of 5G, telecom operators in the country will leverage street furniture such as poles, advertisement hoardings and bus shelters for deploying low-power base stations called ‘small cells’ that will help bring the network closer to the consumers.

“Small cells are needed for deploying 5G.

- Leveraging of existing street infrastructure will also save the hassle and investments needed for

erecting new poles along roadside, especially in highly populated areas.

- The Department of Telecom last week also notified the amended Right of Way Rules, which pave the way for the deployment of 5G small cells on existing street infrastructure, and expects these reforms to enable the launch of 5G services in the country by October, 2022.
- The amendments rationalisation of charges, introduction of a single window clearance system and doing away with the need for consent from a government authority for installing infrastructure over private property.
- To facilitate faster 5G roll-out, RoW application procedures for small cells have been simplified and telecom licensees will be able to use street infrastructure to deploy telecom equipment at a cost of ₹150 a year in rural areas and ₹300 in urban areas.

THE HINDU

Talc powder

- India is part of the “worldwide portfolio assessment and commercial decision to transition to an all corn-starch-based baby powder portfolio” of the

pharmaceutical giant Johnson and Johnson (J&J).

- In its statement, the company said that as a result of this transition, talc-based Johnson's baby powder would be discontinued globally in 2023.
- The company's decision to stop production comes following multiple lawsuits from women who claim that the product caused ovarian cancer, due to the alleged contamination of asbestos, a known carcinogen.
- "When talc is contaminated with asbestos, it is more likely to contain highly carcinogenic tremolite or anthophyllite.
- They are considered more carcinogenic than chrysotile, the most used type of asbestos.
- Prolonged breathing of asbestos increases the risk of multiple cancers, including lung and colon cancer.
- Infants and children below the age of five are five times more likely to get affected than a 30-year-old adult to develop mesothelioma, a type of cancer linked to asbestos if they are exposed to it at the same time.
- This is because a child's organs are more tender than an adult's.
- Talcum powders are harmful for both the mother and baby.

S. Subramaniam Balaji vs Tamil Nadu judgment of 2013

The story so far:

- On Friday, the Supreme Court referred to a three-judge Bench a series of petitions seeking a judicial direction that political parties who make "wild" promises of largesse should also reveal in their poll manifestos where they will get the money to pay for them.
- The reference is a shift from the court's own stand in the S. Subramaniam Balaji vs Tamil Nadu. According to a 2020 Statista survey across 25 two-thirds India, two-third respondents said they had a smartphone.
- Of these, half said they sent and received money digitally, and about 31% said they had a mobile app for banking.
- Nearly 14% said they used their mobile phones for banking-related purposes.
- Global cybersecurity firm Kaspersky warns of an increase in cyberattacks on Android and iOS devices in the Asia Pacific (APAC) region. Nadu judgment of 2013.

What happened?

- In the Balaji case judgment, a Division Bench of the Supreme Court

had held that making promises in election manifestos do not amount to a 'corrupt practice' under Section 123 of the Representation of People Act (RP).

- However, the Supreme Court is now worried that freebies promised by political parties to win elections could bleed the public exchequer dry.
- The Court said that parties who form the government riding the wave created by their pre-poll promises of "free gifts" are bleeding the State finances dry by actually trying to fulfil their outlandish promises using public money.
- The Supreme Court has therefore decided to revisit the Balaji verdict.

Why is the Court's move to review the Balaji judgment significant?

- In its order, the court foresees that "freebies may create a situation wherein the State government cannot provide basic amenities due to lack of funds and the State is pushed towards imminent bankruptcy".
- The court said it wants a transparent debate before the three-judge Bench on whether an "enforceable" judicial order can stop political parties from promising and distributing 'irrational freebies'.

- The case is unique as the Supreme Court is exploring whether judicial parameters can be set on a purely political act of promising freebies.

THE HINDU

Cyber threat to mobile banking

- One mobile banking trojan, called Anubis, has been targeting Android users since 2017.
- Roaming Mantis is another prolific malware targeting mobile banking users.
- Some countries are already making payment platform providers change their business model.
- China, for instance, has ordered its internet companies to offer their rival firm's link and payment services on their platforms.
- In India, a new law demands all licensed mobile payment platforms to be capable of providing interoperability between wallets.
- There is push from regulators to make payment platforms interoperable at a time when the demand for technical experts is a serious concern in the banking industry.

THE HINDU

Linking Aadhaar and voter id

The story so far:

- Reports have surfaced online of instances where block-level officers have asked individuals to link their Aadhaar with their Voter IDs, failing which their Voter IDs could be cancelled.
- This comes in the aftermath of the Election Commission's (EC) campaign to promote the linkage of Voter ID and Aadhaar that began on August 1.

Why does the government want this?

- The EC conducts regular exercises to maintain an updated and accurate record of the voter base.
- A part of this exercise is to weed out duplication of voters, such as migrant workers who may have been registered more than once on the electoral rolls in different constituencies or for persons registered multiple times within the same constituency.

Is the linking of an Aadhaar with one's Voter ID mandatory?

- In December 2021, Parliament passed the Election Laws (Amendment) Act, 2021 to amend the Representation of the People Act, 1950, inter alia.

- Section 23(4) was inserted in the Representation of the People Act, 1950.
- It states that the electoral registration officer may "for the purpose of establishing the identity of any person" or "for the purposes of authentication of entries in electoral roll of more than one constituency or more than once in the same constituency" for citizens already enrolled, require them to furnish their Aadhaar numbers.
- To reflect this amendment, in June 2022, the government notified changes to the Registration of Electors Rules, 1960.
- Rule 26B was added to provide that "every person whose name is listed in the roll may intimate his Aadhaar number to the registration officer".
- Although, the use of discretionary language throughout the amendments have been accompanied by assurances by both the government and the EC that linkage of the Aadhaar with Voter ID is optional, this does not seem to be reflected in Form 6B issued under the new Rule 26B.
- Form 6B provides the format in which Aadhaar information may be submitted to the electoral registration officer.

- Form 6B provides the voter to either submit their Aadhaar number or any other listed document.
- However, the option to submit other listed documents is exercisable only if the voter is “not able to furnish their Aadhaar number because they do not have an Aadhaar number.

Why is the mandatory linking of Aadhaar to the Voter ID an issue?

- The preference to use Aadhaar for verification and authentication, both by the state and private sector, stems from two reasons.
- First, at the end of 2021, 99.7% of the adult Indian population had an Aadhaar card.
- This coverage exceeds that of any other officially valid document such as driver’s license, ration cards, PAN cards etc that are mostly applied for specific purposes.
- Second, since Aadhaar allows for biometric authentication, Aadhaar-based authentication and verification are considered more reliable, quicker, and cost-efficient when compared to other IDs.
- But these reasons do not suffice the mandating of Aadhaar except in limited circumstances as per the Puttaswamy judgment.
- It needs to be considered whether such mandatory linkage of Aadhaar

with Voter ID would pass the test of being “necessary and proportionate” to the purpose of de-duplication which is sought to be achieved.

- In Puttaswamy, one of the questions that the Supreme Court explored was whether the mandatory linking of Aadhaar with bank accounts was constitutional or not.
- The Court observed that the mandatory linking of Aadhaar with bank accounts was not only for new bank accounts but also existing ones, failing which the individual will not be able to operate their bank account.
- The Court held that depriving a person of their right to property for non-linkage fell foul of the test of proportionality
- In Lal Babu Hussein (1995), the Supreme Court had held that the Right to vote cannot be disallowed by insisting only on four proofs of identity voters can rely on any other proof of identity and obtain the right to vote.

What are the operational difficulties?

- First, the preference to Aadhaar for the purposes of determining voters is puzzling as Aadhaar is only a proof of residence and not a proof of

citizenship. Therefore, verifying voter identity against this will only help in tackling duplication but will not remove voters who are not citizens of India from the electoral rolls.

- Second, the estimate of error rates in biometric based authentication differ widely.
- Lastly, civil society has highlighted that linking of the two databases of electoral rolls and Aadhaar could lead to the linkage of Aadhaar “demographic” information with voter ID information, and lead to violation of the right to privacy and surveillance measures by the state.

THE HINDU

Zaporizhzhia

- A team from the UN nuclear watchdog headed on Monday to Ukraine's Zaporizhzhia nuclear plant, troops in March but run by Ukrainian staff, Zaporizhzhia has been a hotspot in a conflict.
- Zaporizhzhia is a city in south-eastern Ukraine, situated on the banks of the Dnieper River.

THE HINDU

Politics vs Trade (Pakistan)

- On March 31, 2021 Pakistan's new Finance Minister Hammad Azhar, announced Pakistan's Economic Coordination Committee (ECC)'s decision to import cotton, yarn, and 5,00,000 metric tons of sugar from India.
- For the textile and sugar industries in Pakistan, importing from India is imperative, practical and is the most economic.
- According to the latest Pakistan Economic Survey, 2019-20, cotton and sugarcane production declined by 6.9% and 0.4%, respectively.
- The sugar industry in Pakistan is also in crisis.
- When compared to cotton, the sugar industry's problem stem from different issues the availability for

local consumption and the steep price increase

- As a result, importing sugar from India would be cheaper for the consumer market in Pakistan.
- However, Pakistan keeps emphasising on the Jammu and Kashmir issue to make any meaningful start in bilateral relations.
- This shows the supremacy of politics over trade and economy, even if the latter is beneficial to the importing country.
- For the Pakistan cabinet, the interests of its own business community and its export potential have become secondary.

THE HINDU

Bail Jurisprudence

- The jurisprudence of bail in post-independent India, is anchored on the bedrock of Article 21 of the Constitution which safeguards not only life but also liberty by commanding that liberty can be deprived only through the procedure established by law, which must be "just, fair and reasonable".
- The same procedural law which provides for arrest and incarceration, ensures that bail can be sought by an accused through a broad spectrum of provisions

ranging from pre-arrest bail to statutory bail.

- While the former envisaged under Section 438 of the Code of Criminal Procedure (CrPC) enables the accused to approach a Sessions court or High Court seeking a direction to release him on bail in case he is arrested on a non-bailable offence,
- The latter, as conceived under Section 167 of the CrPC, vests with the accused the right to be released if the investigation is not completed within ninety days or sixty days, as the case may be, depending on the severity of the alleged offence.
- Unless bail is granted to an accused who is presumed to be innocent in the eyes of the law until guilt is proven, he may not be able to take the necessary steps lawfully permissible to defend himself.
- A conjoint reading of Section 436 (bailable offences) and 437 (non-bailable offences) of the CrPC makes it clear that the wisdom of the legislature is to secure bail as the rule and jail as the exception.
- As declared by the Supreme Court, “the grant or denial is regulated, to a large extent, by the facts and circumstances of each particular case.
- But at the same time, right to bail is not to be denied merely because of

the sentiments of the community against the accused.

- The primary purposes of bail in a criminal case are to relieve the accused of imprisonment, to relieve the State of the burden of keeping him, pending the trial, and at the same time, to keep the accused constructively in the custody of the Court, whether before or after conviction, to assure that he will submit to the jurisdiction of the Court and be in attendance thereon whenever his presence is required.” (Sanjay Chandra vs CBI (2011)).
- The grant of regular bail is usually guided by what is referred to as the triple test the ascertainment of whether the accused is at flight risk; the possibility of tampering with the evidence and influencing witnesses.

THE HINDU

Fiscal federalism

- In recent times, three issues have emerged as major discussion points in India’s fiscal federalism, leading to back-and-forth exchanges between the Centre and States.
- First are a set of issues related to Goods and Services Tax (GST) such as the rate structure, inclusion, and exclusion of commodities, revenue sharing from GST, and associated compensation.

- Second, State-level expenditure patterns especially related to the welfare schemes of States.
- Third, the conception and the implementation of central schemes. Issues related to GST have a forum for discussions as they are usually the agenda for GST council meetings.
- However, other two matters are generally flagged by the Finance Ministry based upon reports and studies done by the Reserve Bank of India (RBI) and the Comptroller and Auditor General of India.
- A key issue of recent debates between the States and the Centre is the quantity and quality of public expenditure by the States.
- In this context, it is important to distinguish between two kinds of public expenditure.
- Mandatory spending is expenditure that is governed by formulas or criteria set forth, rather than by periodic appropriations.
- By contrast, discretionary spending is expenditure that is governed by annual or other periodic appropriations.
- While States demand more fiscal space for increasing discretionary spending, the Centre is pushing for more fiscal discipline by reducing the scope for discretionary spending and limiting States to focus on mandatory expenditure.
- In a federal system, States' fiscal stress gets spilled over to the Centre, leading to a situation of overall magnified fiscal slippages.
- As the economy is recovering from crisis, there exists a need to adhere to the path of fiscal correction both by the Centre and by the States, as a crisis demands more discretionary spending than normal times.
- Such additional expenditures need not be and cannot be sustained over longer periods.

THE HINDU

Fiscal consolidation

- Sustained increase in welfare expenditure by the States leads to fiscal expansion, which necessitates additional resource mobilisation.
- When efforts towards additional resource mobilisation yield limited success, as in the case of many States in India, the States resort to borrowings.
- Fiscal expansion financed through debt and the resultant debt accumulation have important impacts on the economy both in the short run as well as in the long run.
- While debt per se might not be bad, the utilization funds raised through borrowings is important, that is, if it is used for capital formation, it could contribute to the real income of

future generations and add to repayment capacity of the government as well.

- On the contrary, if use of borrowings is to finance only the current expenditure, it poses the risk of debt rising to unsustainable levels
- Given the prevailing macroeconomic environment, the debt-GSDP ratio is expected to increase further.
- This rising trend in debt-GSDP ratio needs to be seen in the context of revenue mobilisation efforts of the States.
- Overall, there is a decline in revenue receipts due to a fall in the State's' own tax revenue.
- With dwindling revenue receipts, many States had to opt for expenditure compression to adhere to the fiscal responsibility legislation target.

THE HINDU

Terrorism

- Two recent acts of terror in Russia and the U.S. carry ominous signs for India.
- The first one was the attempt to murder Salman Rushdie, the famous author of the controversial 'The Satanic Verses', at an event in Upstate New York
- A second incident took place in Moscow on August 20 when the 29-

year-old Darya Dugina, a nationalist and outspoken daughter of a conservative ideologue of Russia, Alexander Dugin who is a supporter of Vladimir Putin's invasion of Ukraine died in a car bomb explosion.

- The question is whether the American security establishment has slipped into complacency or whether it is simply impossible to protect a target because terrorists can melt away and integrate in the maze of ethnicities of the United States and emerge only to kill.
- The U.S. has seen erosion of several human rights and privacy in an attempt to identify fanatic "needles in a haystack" that pose a terror threat.
- The U.S. agencies sift through volumes of personal data of citizens and people around the world and deploy tools such as Artificial Intelligence (AI) to identify terrorists for their sympathisers.
- Infiltration of security agencies by terror groups has always been a nightmare for governments across the globe.
- In the last decade, technology, software, and tools for eavesdropping on all kinds of communication are deployed to tackle infiltration.

- But it is obvious they offer no guarantee of pre-emption and early detection.
- Only alert vigilance in physically defending critical infrastructure, buttressed by international collaboration can keep the determined terrorist at bay.

THE HINDU

GES
REPORTER

Brent crude vs WTI

- The price of Brent crude, the main international oil contract, fell more than 5% on Tuesday as new Chinese pandemic lockdowns revived recession concerns
- Brent Crude may refer to any or all of the components of the Brent Complex, a physically and financially traded oil market based around the North Sea of Northwest Europe
- In trading, Brent is one of the benchmarks for oil in the wider market.
- WTI usually refers to the WTI Crude Oil futures contract traded on the New York Mercantile Exchange (NYMEX).
- The WTI oil grade is also known as Texas light sweet, although oil produced from any location can be considered WTI if the oil meets the required qualifications.
- Spot and futures prices of WTI are used as a benchmark in oil pricing. This grade is described as light crude oil because of its somewhat low density, and sweet because of its low sulfur content
- WTI is lighter and sweeter, containing less sulfur than Brent, and considerably lighter and sweeter than Dubai or Oman.

World Bank report on pandemic

- The COVID-19 pandemic devastation seemed to have not deterred fraudulent business practices, with a company from Singapore trying to dispatch millions of substandard Chinese KN95 masks to India in 2021 by forging a third-party inspection certificate.
- The issue is sub judice, noted the latest discussion paper released on Tuesday by the World Bank titled “India COVID-19 procurement: challenges, innovations, and lessons”.
- India was not the only target of fraud.
- The report also pointed out that 200 million substandard, soiled and second-hand medical nitrile gloves were purchased by the U.S. from a Thailand-based company during the pandemic.
- The report says India managed to get many things right in its management of the pandemic including putting in place a central procurement agency (HLL Life care Ltd., finalized in February 2020).
- It added that an expert panel was also put in place to develop specifications for overalls, goggles, and N95 masks which supported the Health Ministry’s long-term market development and production of

Emergency Medical Equipment (EME) in India.

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THE HINDU

Special marriage act

- The story so far: The Supreme Court on Monday dismissed a writ petition challenging provisions of the Special Marriage Act (SMA), 1954 requiring couples to give a notice declaring their intent to marry 30 days before their marriage.

What does the petition seek?

What did the court say?

- The writ petition has called these provisions violative of the right to privacy guaranteed under Article 21 of the Constitution as they require

couples to give a notice of 30 days before the date of marriage inviting objections from the public.

- The writ petition filed said that the provisions contravene Article 14 on prohibition of discrimination on grounds of religion, race, caste, and sex as well as Article 15 on right to equality as these requirements are absent in personal laws.

What are the provisions that have been challenged?

- Section 5 of the SMA requires couples getting married under it to give a notice to the Marriage Officer 30 days before the date of marriage.
- The writ seeks striking down of provisions that follow in Section 6 to Section 10.
- Section 6 requires such a notice to be then entered into the Marriage Notice Book maintained by the Marriage Officer, which can be inspected by "any person desirous of inspecting the same."
- Section 7 provides the process for making an objection such as if either party has a living spouse, is incapable of giving consent due to "unsoundness of mind" or is suffering from mental disorder resulting in the person being unfit for marriage or procreation.

- Section 8 specifies the inquiry procedure to be followed after an objection has been submitted.
- These public notices have been used by anti-social elements to harass couples getting married.

THE HINDU

Iraq crisis

The story so far:

- Iraq's political crisis took a violent turn on Monday when at least 24 people were killed and about 200 injured in clashes between the supporters of influential Shia cleric Moqtada al-Sadr and the country's security personnel.
- Mr. Sadr's supporters breached the concrete walls of Baghdad's highly fortified Green Zone, stormed the Republican Palace of the government and fought the security personnel with mortars and grenades after Mr. Sadr announced that he was quitting politics amid a political deadlock.
- Iraq has failed to form a government after the October 2021 parliamentary elections in which Mr. Sadr's bloc won the most number of seats
- Iraq has failed to form a government after the October 2021 parliamentary elections in which Mr.

Sadr's bloc won the most number of seats.

- A bitter power struggle between the country's dominant Shia parties have since then plunged the country into a deepening crisis.

What triggered the political crisis?

- The Constitution requires a new Parliament to pick a President first, who then should ask the largest parliamentary bloc to nominate someone for the post of Prime Minister.
- The PM nominee should then form a government and get parliamentary approval.
- For the Presidential election to take place, two-thirds of the representatives should be present in the House.
- The subsequent Presidential votes failed to go through as the quorum was not met as different blocs boycotted parliament sessions once by the Sadrist Movement as the candidate Mr. Sadr supported, Hoshyar Zebari, was barred from running for presidency by the Supreme Court due to corruption charges, and twice by the Shia Coordination Framework, to stop Mr. Sadr's bid to form a majority government.

- Therefore, without a new President, a new government could not be formed.
- In protest against the rival parties' continued boycott of Parliament, Mr. Sadr, in June, asked all the 73 legislators of the Sadrist Movement to resign.
- According to Iraq's electoral laws, if a parliamentary seat becomes vacant, it will be filled by the candidate who receives the second-highest number of votes in their electoral district.
- The Coordination Framework took advantage of the resignation of the Sadrist lawmakers and got them replaced by those who finished second.
- In the new parliamentary make-up, the Coordination Framework became the largest bloc and they went ahead with plans to form their government. Mr. Sadr, now out of Parliament, called for protests in the streets.
- They demand the dissolution of Parliament, early elections and Constitutional amendments to clear blockades that stand in the way of Mr. Sadr forming a majority government.

THE HINDU

India and Sri Lanka

- India has provided assistance of nearly \$4 billion to its neighbour. However, there is a strong case for greater Indian engagement with Sri Lanka, which is still struggling to tackle the crisis.
 - Such engagement need not be confined to liberal loans; it could also include sharing technical expertise or knowledge, or helping the country upgrade skills in different areas of economic activity.
 - According to a cross-section of people in Sri Lanka, agriculture and allied activities are the priority areas where India can make a difference.
 - For instance, Sri Lanka imports a considerable quantity of milk powder.
 - On average, Colombo annually imports dairy products worth \$315 million.
 - Even though this accounts for about 1.5% of its total imports, Sri Lanka's
- What do Sadrists want?**
- Mr. Sadr since then, has called on his loyal supporters to apply pressure through protests.
 - The protestors stormed the Parliament building in the Baghdad's Green Zone several times.

self-sufficiency in dairy production would not only have saved precious foreign exchange, but also reduced despondency among the people during the peak of the crisis. India can help Sri Lanka develop its dairy sector.

- Given Sri Lanka's natural conditions, including an average annual rainfall of around 185 cm, its enormous potential in dairy development remains untapped.
- The poultry sector, which is also in a state of crisis, deserves special treatment because it is unable to come to terms with rising input costs and shortages in animal and veterinary medicines.
- The domestic production of maize, which is largely used as the primary ingredient in domestic poultry feed, is still insufficient to fulfill the demand. This has compelled feed producers to fall back on high-cost alternatives.
- In this area, through its host of agricultural universities, India can share its knowledge on ways to increase both production and productivity.
- Agricultural machinery is another area where Sri Lanka needs a helping hand.
- India's participation in energy projects will be desirable

- School education is another area where India's presence could be more felt.
- India can expand its scheme of establishing smart classrooms and modern computer labs to cover all those institutions teaching children of hill country Tamils
- India can arrange for greater numbers of Buddhist monks to visit places of religious importance here.
- Helping is in India's interest too
- Sri Lanka's political class and civil society, which would have observed closely the efficacy of the country's constructive engagement with India in recent months, should facilitate the success of the programme instead of allowing themselves to be carried away by the anti-India rhetoric of a few groups.

THE HINDU
