

CURRENT AFFAIRS

WEEKLY

WEEK - 1
February, 2020

MAINS

■ India Bans Import of Refined Palm Oil

ECONOMY

■ Ramsar Sites in India

ENVIRONMENT

■ Resolving the Bodo Issue

INTERNAL SECURITY

■ India Brazil Relations

INTERNATIONAL RELATIONS

■ 70 years of Constitution of India

POLITY

■ Coronavirus: China's mystery virus that has triggered worry

SCIENCE & TECHNOLOGY

PRELIMS

MISCELLANEOUS

- India's first Underwater Metro
- Lala Lajpat Rai
- National Girl Child Day
- Shamlat Land

- Remission of duties or taxes on export product

ECONOMY

- Nagardhan excavations: Why are findings important to understand Vakataka dynasty?

HISTORY

- Peace to prosperity
- The debate over UN's new rules for ships in the Arctic region

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- Abolition of Legislative Council
- Global Talent Competitive Index 2019
- Internet shutdowns
- What is anticipatory bail, for which SC has removed time limits?

POLITY

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- Polio comeback in a number of countries: Should India be worried?
- Polycrack Technology

SCIENCE & TECHNOLOGY

- India Human Development Survey

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The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

CURRENT AFFAIRS ANALYST

WEEK-1 (FEBRUARY, 2020)

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SECTION: A
(MAINS)

CURRENT AFFAIRS

INDIA BANS IMPORT OF REFINED PALM OIL

CONTEXT

- India has banned the imports of refined palm oil, a government notification said, as New Delhi tries to curb imports from Malaysia following criticism from Kuala Lumpur on India's actions in the Kashmir region and its new citizenship law-- The Citizenship (Amendment) Act, 2019.

◎ BACKGROUND

- India imports most of its refined palm oil from Malaysia and crude palm oil from Indonesia.
- Indonesia and Malaysia are the top two producers of palm oil, while India is the biggest importer of palm oil.
- Indonesia and Malaysia make up over 85% of global supply but there are 42 other countries that also produce palm oil.
- India has cut import duty on crude palm oil (CPO) and refined, bleached and deodorised (RBD) palm oil, and also moved RBD oil from the "free" to the "restricted" list of imports.
- While curbing oil imports was been under discussion since the Budget presented in 2019.
- Malaysia has also been sheltering since 2017 the Islamic preacher Zakir Naik, who is wanted by India on charges of money laundering, hate speech, and links to terror.

What Is Palm Oil?

- It's an edible vegetable oil that comes from the fruit of oil palm trees; the scientific name is *Elaeis guineensis*.
- Two types of oil can be produced; crude palm oil and palm kernel oil.
- Palm oil is in nearly everything – it's in close to 50% of the packaged products we find in the market.

- It's also odourless and colourless so doesn't alter the look or smell of food products.

What Is The Problem With Palm Oil?

- Palm oil has been and continues to be a major driver of deforestation of some of the world's most biodiverse forests, destroying the habitat of already endangered species like the Orangutan, pygmy elephant and Sumatran rhino.
- This forest loss coupled with conversion of carbon rich peat soils are throwing out millions of tonnes of greenhouse gases into the atmosphere and contributing to climate change.
- There also remains some exploitation of workers and child labour.
- These are serious issues that the whole palm oil sector needs to step up to address because it doesn't have to be this way.

Why Don't We Just Switch To An Alternative Vegetable Oil?

- Palm oil is an incredibly efficient crop, producing more oil per land area than any other equivalent vegetable oil crop.
- Globally, palm oil supplies 35% of the world's vegetable oil demand on just 10% of the land.
- To get the same amount of alternative oils like soybean or coconut oil you would need anything between 4 and 10 times more land, which would just shift the problem to other parts of the world and threaten other habitats and species.
- Furthermore, palm oil is an important crop for the GDP of emerging economies and there are millions of smallholder farmers who depend on producing palm oil for their livelihood.

◎ ANALYSIS

Why is Palm Oil everywhere? What makes it unique than other oils?

- Palm oil is extremely versatile oil that has many different properties and functions which makes it so useful and so widely used.
 - It is semi-solid at room temperature so can keep spreads spreadable
 - It is resistant to oxidation and so can give products a longer shelf-life
 - It's stable at high temperatures and so helps to give fried products a crispy and crunchy texture

Has India banned import of Malaysian palm oil because of political reasons?

- The import of RBD palm oil has been restricted, not banned and this is from all countries, not just Malaysia.
- Also, CPO can still be imported freely.
- Under the trade classification system that India follows, except for goods that can be imported only by state trading enterprises (such as Food Corporation of India), all goods whose import is not restricted or prohibited are traded freely.

- Normally, a special licence is required to import a restricted good.
- The government has neither specified what the restrictions entail nor issued any licences.

Why does India need so much palm oil?

- It is the cheapest edible oil available naturally.
- It stays relatively stable at high temperatures, and is therefore suitable for reuse and deep frying.
- It is the main ingredient in Vanaspati (hydrogenated vegetable oil).
- However, palm oil is not used in Indian homes. That, and the fact that CPO continues to be imported, makes it unlikely that the decision to restrict refined palm oil imports will impact food inflation immediately.

Will restricting imports of RBD palm oil help farmers?

- Restricting refined oil imports will not help farmers directly, as they are not involved in the process of refining.
- However, the restrictions have caused refined palm oil prices to increase.
- If prices continue to hold, farmers will get a better realisation for their crop.
- But the timeframe over which the changes in import policy will have an effect on domestic crop realisation is fairly long, given that palm trees take over four years to provide a yield.
- Also, if the demand is met entirely by importing and refining CPO, farmers will be left out of the picture.

How will Malaysia be affected?

- India has been Malaysia's top import market since 2014, according to industry data.
- Last year, India bought 4.4 million tonnes of palm oil from Malaysia, accounting for 24% of all Malaysian palm oil exports.
- The second biggest buyer of Malaysian palm oil, China, bought just 2.4 million tonnes last year, while the third largest buyer was Pakistan with 1.08 million tonnes, according to data from the Malaysian Palm Oil Council.
- Indonesia, the world's biggest producer of palm oil, boasts lower production costs and has a bigger share of the market in many palm oil-consuming countries. It has also historically offered palm oil at cheaper prices than Malaysia, although recently Malaysian export prices have slumped below Indonesian rates as Indian buyers retreated from the market.

Major Impacts due to Palm oil industry

- High scale deforestation to make room for palm plantations.
- Orangutan population has decreased by 50 percent as the result of habitat loss from forest clearing for palm plantations.
- There are only 6,300 Sumatran orangutans left. A major factor in these deaths being forest clearing for palm production.
- Clearing one hectare (about two square acres) of peat forest can release 6,000 tons of carbon dioxide.
- The palm oil industry is responsible for about 5,000 land and human rights conflicts.
- Only 35 percent of palm growers that are members of the Roundtable on Sustainable Palm Oil are actually certified by the RSPO. Meaning the other 65 percent pay to be "members," but have taken no action to adhere to the RSPO guidelines in their growing practices.
- Palm oil ranks among the U.S. Department of Labor's top four worst industries for forced and child labor.

Major Palm Oil producing countries

- **Indonesia**
 - Indonesia is by far the largest producer of palm oil, and this is supported by the ever-rising large palm growing areas in the country and export figures.
 - It is estimated that by 2020, the palm oil project in Indonesia will cover approximately 12 million hectares.
 - Indonesia was producing 35% of the world's palm oil in 2012, and India and China are the importers of Indonesia's palm oil.
- **Malaysia**
 - Currently, Malaysia is second in palm oil production after Indonesia with its overall production accounting for 39% of the global production, while its palm oil exports account for around 44%.
 - Malaysia possesses large plantations, and as of 2016, the country's total palm oil production amounted to 2.1 million metric tons.
 - Production of Palm oil in the country is categorized into three; private, smallholder, and joint venture.
 - However, the economic activity poses a serious environmental threat in the country by polluting water sources, leading to the loss of biodiversity, and deforestation.
 - Malaysia is the leading exporter of the palm oil with its primary importing countries being the

European Union, Pakistan, China, the US, and India.

◉ **Thailand**

- ▶ Thailand is the third top producer of palm oil in the world, and the majority of the producers in the country are the small-scale farmers, who are responsible for 76% of the country's output.
- ▶ The province of Surat Thani had the highest production of palm oil accounting for 26.59% of all the country's production.
- ▶ Most of the palm oil produced in Thailand is used locally, and a small portion is for export.
- ▶ Some of the challenges facing the palm oil production in the country include lack of

appropriate knowledge in managing palm oil, lack of finances, low quality of seedlings, and low rainfall.

Top Palm Oil Producing Countries in the World

Rank	Country	Production (in metric tons)
1.	Indonesia	36,000,000
2.	Malaysia	21,000,000
3.	Thailand	2,200,000
4.	Colombia	1,320,000
5.	Nigeria	970,000
6.	World	58,800,000

RAMSAR SITES IN INDIA

CONTEXT

- In the latest development, India has added 10 more wetlands to sites protected by the Ramsar Convention. With this, a total of 37 sites in the country have been recognised under the international treaty.

● ANALYSIS:

About the Convention:

- The Ramsar Convention is an international treaty for the conservation and wise use of wetlands.
- It is named after the Iranian city of Ramsar, on the Caspian Sea, where the treaty was signed on 2nd February 1971.
- Known officially as 'the Convention on Wetlands of International Importance especially as Waterfowl Habitat' (or, more recently, just 'the Convention on Wetlands'), it came into force in 1975.
- The aim of the Ramsar list is to develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits.
- The convention entered into force in India on 1 February 1982.

World Wetlands Day

- World Wetlands Day is celebrated every year on 2 February. The day marks the date of the adoption of the Convention on Wetlands in the Iranian city of Ramsar on the shores of the Caspian Sea in 1971.
- The 2020 theme for World Wetlands Day 'Wetlands and Biodiversity' is an opportunity to

highlight wetland biodiversity, its status, why it matters and to promote actions to reverse its loss.

What is Montreux Record?

- Montreux Record is a register of wetland sites on the Ramsar list, which are facing immediate challenges.
- The listed sites are threatened by changes that affect their ecosystem components, processes, benefits and services which characterise the said wetland at a given point in time.
- India's two wetlands find a place in the Montreux Record. They are:
 - Keoladeo National Park, in Rajasthan was designated a Ramsar site in 1981 and listed in the Montreux Record in 1990.
 - Loktak Lake in Manipur, was declared a Ramsar site in 1990, and indexed in the Montreux Record in 1993.

The new list:

- The 10 new ones are Nandur Madhameshwar, a first for Maharashtra; Keshopur-Miani, Beas Conservation Reserve and Nangal in Punjab; and Nawabganj, Parvati Agra, Saman, Samaspur, Sandi and Sarsai Nawar in Uttar Pradesh.
- The other Ramsar sites are in Rajasthan, Kerala, Odisha, Madhya Pradesh, Himachal Pradesh, Assam, West Bengal, Jammu and Kashmir, Andhra Pradesh, Manipur, Gujarat, Tamil Nadu and Tripura as given below:

S.No.	Name of Sites	State	S.No.	Name of Sites	State
1.	Asthamudi Wetland	Kerala	2.	Bhoj Wetlands	Madhya Pradesh
3.	Bhitarkanika Mangroves	Orissa	4.	Chandertal Wetland	Himachal Pradesh
5.	Chilka Lake	Orissa	6.	Deepor Beel	Assam
7.	East Calcutta Wetlands	West Bengal	8.	Hokera Wetland	Jammu and Kashmir
9.	Harike Lake	Punjab	10.	Kanjli Lake	Punjab
11.	Keoladeo Ghana NP	Rajasthan	12.	Kolleru Lake	Andhra Pradesh

13.	Loktak Lake	Manipur	14.	Nalsarovar Bird Sanctuary	Gujarat
15.	Point Calimere	Tamil Nadu	16.	Pong Dam Lake	Himachal Pradesh
17.	Renuka Wetland	Himachal Pradesh	18.	Ropar Lake	Punjab
19.	Rudrasagar Lake	Tripura	20.	Sambhar Lake	Rajasthan
21.	Sasthamkotta Lake	Kerala	22.	Surinsar-Mansar Lakes	Jammu and Kashmir
23.	Tsomoriri Lake	Jammu and Kashmir	24.	Vembanad Kol Wetland	Kerala
25.	Wular Lake	Jammu & Kashmir	26.	Sunderbans Wetland	West Bengal
27.	Upper Ganga River (Brijghat to Narora Stretch)	Uttar Pradesh			

- With this, a total of 37 sites in the country have been recognised under the international treaty.
- Wetlands declared as Ramsar sites are protected under strict guidelines.

The perks of being declared as 'Ramsar site':

Being declared as 'Ramsar Site' is beneficial for various reasons. The title will focus on:

- conservation and wise use of the wetland
- receive national and international cooperation for conservation and management
- receive Central funding
- boost in tourism
- employment generation for locals and bring economic benefits for surrounding areas due to increased tourism
- awareness creation for the conservation of other wetlands in the state

What are Wetlands?

- According to the Convention, wetlands include almost any habitat where water is key to the environment and its wildlife.
- Wetlands include swamps, marshes, billabongs, lakes, salt marshes, mudflats, mangroves, coral reefs, fens, peat bogs, or bodies of water - whether natural or artificial, permanent or temporary.
- Water within these areas can be static or flowing; fresh, brackish or saline; and can include inland rivers and coastal or marine water to a depth of six metres at low tide. There are even underground wetlands.
- Anywhere from estuaries, lakes and rivers to underground aquifers, mangroves, coral reefs and rice paddies count.

The spread of Wetlands in India:

- Indian Space Research Organisation (ISRO) has carried out a National Wetland Inventory and Assessment using Indian remote sensing satellites during 2006-2011 and subsequently brought out **national- and state-level wetland inventory atlases**.
- A total of 757,060 wetlands have been mapped in the country. The total wetland area estimated is 15.26 million hectares, which is around 4.63% of the geographical area of the country.

Significance of Wetlands:

- **Balancing ecosystem:** Wetlands provide a wide range of important resources and ecosystem benefits such as food, water, fibre, groundwater recharging, water purification, flood moderation, erosion control and climate regulation. They are also one of the major supplies of freshwater.
- **Biodiversity hotspot:** The wetlands support rich biodiversity and help stabilise water supplies, cleanse polluted waters, protect shorelines, and recharge groundwater aquifers.
- **Food basket:** Wetlands play an integral role in the ecology of the watershed. The combination of shallow water, high levels of nutrients and primary productivity are ideal for the development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish and insects.
- **A safe habitat:** They are multifunctional habitats—they nurture a great diversity of life. They are also important as feeding and breeding grounds for migratory birds.
- **Climate protection:** Wetlands store carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide. Thus wetlands help to moderate global climate conditions.

- **Flood protection:** Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater and floodwaters, which lowers flood heights and reduces erosion.

Challenges:

- **Exploitative developmental activities:** Wetlands in India are under threat due to urbanisation and land-use changes, municipal and industrial pollution and global climate change, which is an important determinant of loss and change in wetland ecosystems.
- Various factors such as infilling for agriculture and construction, pollution, overexploitation of resources, invasive species and climate change threaten their existence.
- **Lack of protection & recognition:** In India, forests have been historically protected since colonial times, while wetlands have been ignored from long. Over the years people who were traditionally involved in managing wetland sare no more there. Even in the way, wetland systems were considered by the government authorities has changed. All this together has impacted the wetlands and their future.
- **Disappearing at a fast rate:** It is estimated that wetlands are vanishing three times faster than forests and their rate of disappearance is increasing. For instance, 87% of wetlands have been lost since the 1700s and 35% have disappeared since the 1970s.

Wetland conservation rules in India:

- Recently, the Ministry of Environment has notified the new **Wetland Conservation Rules** that prohibit setting up or expansion of industries, and disposal of construction and demolition waste within the wetlands.
- The new Rules also prohibit the conversion for non-wetland uses including encroachment of any kind, besides setting up of any industry and expansion of existing industries within the notified wetlands.
- It prohibited:
 - ▶ manufacture, handling, storage or disposal of construction and demolition waste, covered under **the Construction and Demolition Waste Management Rules, 2016**
 - ▶ hazardous substances, electronic waste, covered under **the E-Waste (Management) Rules, 2016**
 - ▶ solid waste dumping and discharge of untreated wastes and effluent from industries, cities, towns, villages and other human settlements, within such bodies.
- No doubt, India has ignored its wetlands for long. But there is still some hope as in recent times, there has been a lot of focus on restoring their health. Though not all may get saved there is still a chance for some.

RESOLVING THE BODO ISSUE

CONTEXT

- The Ministry of Home Affairs (MHA), the Assam government and the Bodo groups signed an agreement to redraw and rename the Bodoland Territorial Area District (BTAD) in Assam, currently spread over four districts of Kokrajhar, Chirang, Baksa and Udalguri.

◎ BACKGROUND

- The demand for a separate state for the Bodos has been going on in Assam for close to five decades, with several Bodo underground and militant groups having raised it, leading to recurring agitations, protests and violence.
- This was the third Bodo accord to be signed in last 27 years when the violent movement for a separate Bodoland state claimed hundreds of lives, destruction of public and private properties.
 - ▶ **First Accord:** The first Bodo accord was signed with the All Bodo Students Union in 1993, leading to creation of a Bodoland Autonomous Council with limited political powers.
 - ▶ **Second Accord:** In 2003, the second Bodo accord was signed with the militant group Bodo Liberation Tigers, leading to formation of a Bodoland Territorial Council (BTC) with four districts of Assam- Kokrajhar, Chirang, Baksa and Udalguri-called Bodoland Territorial Area District (BTAD).
- In the 1990s more than 20,000 Muslims were displaced in Kokrajhar and Bongaigaon districts.
- In 1998, a bloody clash between Adivasi and Bodos led to the killings of 50 people and around 500 homes were burnt down.
- In 2014, around 80 people were killed during the conflict between Bodo forces and Adivasi people.

there will be representatives from ABSU and BTC.

- ▶ It will submit its recommendation within six months from the date of notification.

- **Bodo-Kachari Welfare Council:** The Government of Assam will establish a Bodo-Kachari Welfare Council as per existing procedure.

- **Associate official language:** The Assam government will also notify Bodo language as an associate official language in the state and will set up a separate directorate for Bodo medium schools.

- ▶ Although Bodo was included in the Eighth Schedule of the Constitution in 2004, it is yet to receive an official language status.

- ▶ Bodo with Devnagri script will now become Associate official language for the entire state of Assam.

- As per the agreement, villages dominated by Bodos that were presently outside the BTAD would be included and those with non-Bodo population would be excluded.

- **Tribal status:** Bodos living in the hills would be conferred a Scheduled Hill Tribe status.

- **Structural changes:** The name of BTAD will be changed to **Bodoland Territorial Region (BTR)** and it will have more executive, administrative, legislative and financial powers.

- ▶ However, the "memorandum of settlement" does not have any provisions for a separate state.

- ▶ Instead, it seeks to "augment area and powers" of the existing Bodoland Territorial Council and "streamline its functioning".

- ▶ The existing structure of the Bodoland Territorial Council (BTC) will be strengthened with more powers and its seats will be expanded from 40 to 60.

- **Central University:** A Central university in the name of Upendranth Brahma will be established within Bodoland area.

- **Institutions:** National Sports University; Institute of Livelihood management, Regional medical institute; tribal university, rural development centre, veterinary college, music and fine art college and

◎ ANALYSIS:

Key-takeaways from the Agreement:

- With this agreement, over 1500 armed cadres will abjure violence and join the mainstream.
- **Funding:** A Special Development Package Rs. 1500 crores over three years will be given by the Union Government to undertake specific projects for the development of Bodo areas.
- **Commission:** It proposes to set up a commission under Section 14 of the Sixth Schedule to the Constitution of India, which will recommend the inclusion or exclusion of tribal population residing in villages adjoining BTAD areas.
 - ▶ In this commission, besides State government

many more centres will be set up in the region to ensure progress.

Signatories to the Agreement:

- The Bodoland Territorial Council, All Bodo Students Union (ABSU), various factions of National Democratic Front of Bodoland (NDFB)- Gobindo Basumatary faction, Dharendra Bodo faction, Ranjan Daymari faction and Saoraigwra faction and the United Bodo Peoples Organization (UBPO) are party to the agreement with the Centre and the Assam.

Who are Bodos?

- The Bodo people are the largest tribe of Assam settled in the northern part of the Brahmaputra river valley.
- It is estimated that the Bodo tribe comprise 28 percent of Assam's population.
- Bodos are an ethnolinguistic community spread across north-east India but are concentrated in Assam.
- They speak the bodo language, a mixture of a dialect of Tibetan and Burmese, recognised as one of the twenty-two scheduled languages in the constitution of India.

What is the BTC?

- The Bodoland Territorial Council (BTC) is an autonomous body under the Sixth Schedule of the Constitution.
- BTC, currently has control over 30 subjects such as education, forests, horticulture but no jurisdiction over the police, revenue and general administration departments, which are controlled by the Assam government.
- The area under the jurisdiction of BTC, formed under the 2003 Accord, was called the **Bodo Territorial Autonomous District (BTAD)**.
- As per the accord, the BTAD was renamed Bodoland Territorial Region (BTR). BTAD comprises **Kokrajhar, Chirang, Baksa and Udalguri** districts, accounting for 11% of Assam's area and 10% of its population.

Sixth schedule of the Constitution:

- The Sixth Schedule of the Constitution of India (Articles 244(2) and 275(1)) provides for decentralized self-governance and dispute resolution through local customary laws in parts of the North East which are mainly tribal areas.
- It contains provisions as to the Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram.

Area Covered	Sixth Schedule				
	Assam		Tripura	Mizoram	Meghalaya
	(Tribal Area) North Cachar Hills District & Karbi Anglong District	(Tribal Area) Bodoland Territorial Areas District	(Tribal Area) Tripura State, except Shillong Municipal and Cantonment Area	(Tribal Area) Chakma District, Mara District & Lai District	(Tribal Area) Khasi Hills District, Jaintia Hills District & Garo Hills District
Jurisdiction	(Autonomous) District Council & (Autonomous) Regional Council	Bodoland Territorial Council	(Autonomous) District Council & (Autonomous) Regional Council		

Significance of the Agreement:

- The objective of the agreement is to increase the scope and powers of the BTC and to streamline its functioning; resolve issues related to Bodo people residing outside Bodoland Territorial Area Districts (BTAD); promote and protect Bodo's social, cultural, linguistic and ethnic identities; providing legislative protection for the land rights of tribals; ensure quick development of tribal areas and rehabilitate members of NDFB factions.
- It is expected to usher in a new dawn of peace, harmony and togetherness and that those

associated with armed resistance groups would now enter the mainstream and contribute to the nation's progress.

- The accord will lead to transformative results for Bodos as it successfully brings together leading stakeholders under one framework and would help Bodo people get access to development-oriented initiatives.
- This agreement will facilitate all-round development of the Bodo areas, their language and culture will be protected without compromising the territorial integrity of Assam.

INDIA BRAZIL RELATIONS

CONTEXT

- Jair Bolsonaro, president of Federative Republic of Brazil, visited to India as Indian Prime Minister Narendra Modi's chief guest for the 71st Republic Day.

◎ BACKGROUND:

- Brazilian President** was on a state visit to India during January 24-27, accompanied by ministers, members of parliament, and a large business delegation.
- This is the **third time a Brazilian president will be chief guest** at the Republic Day parade.
- This is also **Bolsonaro's first visit** to India.
- The last time a Brazilian head of state attended Republic Day was in **2004**.
- As part of this visit, **India-Brazil Business Forum** was held in New Delhi.
- Brazil is the **largest country in South America**. It has a population of 210 million and a \$1.8 trillion economy.

◎ ANALYSIS:

India-Brazil History

- Portugal's Pedro Alvares** was on his way to India and was blown off course, only to discover Brazil in 1500.
- He made Brazil a **stop-over to finally reach Goa**.
- This led to the **Portuguese association** between India and Brazil and exchange of varied agricultural crops and cattle in the colonial times.
- Brazil opposed India's move in 1961 to liberate Goa** from Portuguese rule.
- Ever since then the relationship between the two nations has been lukewarm.
- Trade relationship and diplomacy** eventually developed between the two.
- Diplomatic relations** were established between India and Brazil in **1948**.
- In **1967**, both countries condemned the idea of creating **Non-Proliferation Treaty (NPT)**.

Plurilateral fora

- Today, both nations are members of plurilateral fora such as **BRICS, IBSA, G-20**, and are members of multilateral bodies such as the **United Nations**.
- In 2015, representatives of the five states of BRICS, launched their **New Development Bank (NDB)**.

This was outlined in the **Fortaleza declaration in 2014**.

- In 2003, **India, Brazil and South Africa set up IBSA**, an important forum for dialogue among the three emerging countries.
- BRICS and IBSA are multilateral groupings that provide these two with a **"soft balancing"** strategy that resents the dominant views of the West.
- Both have campaigned for a **UN Security Council permanent seat** for each other.
- Brazil played a crucial role in **India-Mercosur Preferential Trade Agreement (PTA)** that improved India's access to the large South American market.
- CELAC**, has marked a new phase in international relations between **India and Latin America**.
- Ultimately both nations are considered as **emerging powers with great power aspirations**.

Foreign policy

- Like India, Brazil also intends to preserve **autonomy in its foreign policy**.
- The Brazilian foreign policy of **reciprocal multilateralism** is in concurrence with India's policy of **strategic autonomy**.

Differences between India and Brazil

- While **India** has a history dating back thousands of years, **anciently settled** and a cradle of civilization. **Brazil** on the other hand is a much **younger country**.
- The two countries share little in common ethnically or religiously.
- Other than in Goa, there is no common language: **Goan Portuguese**
- Even in sports, i.e., **Soccer and cricket**, they are very different.
- Earlier, **Brazil had approached the WTO against India** for extending support to Indian sugarcane growers.

Commonalities between India and Brazil

- Both countries are vigorous **democracies**.
- Political landscape is full of **many political parties**.

- The press in both countries is robust, free and quite feisty.
- **States are politically influential** and economically powerful, and commercial success often requires engagement at both the national and state levels.
- Both countries are **rich in human resources**.
- Both economies are driven by **expanding middle classes** clamouring for improved public services.
- Consumers in both are value-conscious, demanding durability and affordability.
- Both countries face **similar challenges in their development curve**.
- Both countries are multipolarism-oriented and want to give voice to the **'global south'**.

Dovetailing interests:

- Brazil — whose ties with neighbouring Argentina has deteriorated — looks to upgrade its trade partnership with India and tap its **rapidly growing market**.
- New Delhi on the other hand is keen to exploit possibilities in resource-rich Latin America. And given that India is energy hungry, it can tap the **oil resources of the region**.

Trade

- Brazil is one of the most important trading partners of India in the entire **LAC (Latin America and Caribbean) region**.
- Bilateral trade between India and Brazil is currently worth **\$8.2 billion**.
- **India to Brazil:** Indian exports to Brazil account for \$3.8 billion, which includes agro-chemicals, synthetic yarns, auto parts, nuclear reactors, boilers, pharmaceuticals and petroleum products.
- **Brazil to India:** Brazilian exports to India include crude oil, gold, vegetable oil, sugar, soya oil, and bulk mineral and ores.
- The actual commerce between the nations is minuscule. **Total trade value between the two nations has barely grown** since 2004; \$1.5 billion to \$8.2 billion.
- Meanwhile, Brazil's **trade with China has ballooned** from \$4 billion to over \$100 billion in the same period.
- There is a **lot of potential for trade** to grow between the two nations.
- India-Brazil has now set a **target of \$15 billion trade by 2022**.

Bilateral investment treaty

- **15 MoUs** were signed during the visit of the President of Brazil.

- MoUs of cooperation were signed on **investments, trade facilitation, social security, agriculture, defence and double taxation**.
- For benefit of India business and tourism between two countries, **visa free travel** was given to Indians.
- India and Brazil signed 15 agreements to cement cooperation in areas ranging from **energy and trade** and **investment to cyber security and information technology**.
- **Brazilian investments in India** are mainly in automobiles, IT, mining, energy and biofuel.
- **India has invested in Brazil's** IT, pharmaceutical, energy, agri-business, mining and engineering.
- The **Social Security Agreement (SSA)** signed between Brazil and India in 2017, will allow investments in each other's **pension funds**.

Defence

- Brazil and India signed a bilateral **'Defence Cooperation Agreement' in 2003** that calls for cooperation in defence related matters, especially in the field of Research and Development, acquisition and logistic support.
- Under the framework of the agreement, a **'Joint Defence Committee (JDC)'** has been set-up that meets at regular interval.

Soft power

- The first classical Indian art form to come to Brazil was **Bharatanatyam; Odissi, Kathak and Kuchipudi** followed.
- India's services in wellness sector like **Yoga and Ayurveda** is expected to grow as Brazil has a strong community of Yoga and Ayurveda practitioners.
- Brazil has an **association of Ayurveda (ABRA)**, a non-profit association with offices in 9 states of Brazil and members all over Brazil.
- The **third International Congress on Ayurveda** was held from 12 to 15 March 2018 in Rio de Janeiro.

Animal husbandry

- **Animal husbandry** was another area that was identified for cooperation.
- There is **common genetic heritage in cattle** in India and Brazil.
- Both have agreed to **collaborate in assisted reproductive technology** that is expected to help increase dairy production in India.
- A **Centre of Excellence in Cattle Genomics** will be set up in India with Brazilian assistance.

Curbing terrorism

- Both countries identified **terrorism and climate change** as two such subjects where the share similar opinions.

Energy

- India is one of the world's biggest oil importers**, and needs to diversify its energy needs from the Gulf.
- Iraq remains its top supplier** but in recent times India has started importing more crude from the US (a 72% jump in first five months of 2019).
- The **instability in Gulf, US-Iran confrontation and threats of secondary sanctions** from the US may drive India further away from middle-east.
- This is where Brazil, one of world's top 10 oil exporters, can be a **big opportunity for India**.

Potential between India and Brazil

- Agribusiness** is the most immediate and obvious opportunity. Complementary growing seasons and

sizeable internal markets make the two countries ideally suited for partnerships in agriculture.

- The year-round sugar crushing in both countries can be leveraged to become one of the largest **global sugar producers**.
- Promoting Brazilian **ethanol exports** to India will help Indian farmers implement a more efficient ethanol programme that reduces reliance on subsidies and helps improve urban India's air quality.
- Opportunities are abound in **clean energy**. Each could benefit from a cross-fertilization of investment in solar power.

◎ CONCLUSION

The decade long bilateral strategic partnership between India and Brazil is based on a common global vision, shared democratic values, and a commitment to foster economic growth with social inclusion for the welfare of the people of both countries.

70 YEARS OF CONSTITUTION OF INDIA

CONTEXT

- Constitution of India came into effect on 26 January 1950. This Republic Day marked the 70th anniversary of it. Also, during the many student-led protests against Citizenship Amendment Bill (CAB), Indian Constitution has been a recurring theme.

◎ BACKGROUND

- It's been nearly 70 years after the Constitution of India first came into effect on 26 January 1950.
- **CAB protests:** Recently, protesters against Citizenship Amendment Bill (CAB) have in defiance, been reading out preamble of the Constitution; because they believe that fundamental Constitutional principles are being weakened by the ruling government.
- **Article 370:** Due to abrogation of Article 370, Jammu and Kashmir will also acknowledge and celebrate the "Constitution Day".
- **Fact check:** Constitution of India lies at the foundation of the world's largest democracy.
 - India's constitution is the longest handwritten document in the world.
 - It has imbibed in it goodness of constitutions of many countries.
- **Among the few that survived:** Constitutions in the post-colonial countries, which gained independence after World War II, have been particularly fragile.
 - Pakistan, for example, has had three different Constitutions and large periods of rule without any Constitution.
 - Among the 12 Asian countries that gained independence soon after World War II and drafted Constitutions, only three Constitutions have survived—India, Taiwan and South Korea.
- **Detailed discussions:** Indian Constitution's endurance is attributed to its design and the care with which it was crafted.
 - Since even before independence (1946), an elected constituent assembly of nearly 300 members spent four years debating and defining every aspect of the Constitution—from the idea of India itself to the finer intricacies of federalism.
 - There were a total of 11 sessions of the Constituent Assembly.

◎ ANALYSIS:

History

- **Drafting Committee:** Drafting Committee was elected by the Constituent Assembly on 29th August 1947.
 - It held its first meeting on 30th August.
 - Since August 30th it sat for 141 days.
 - The first Draft Constitution contained 315 Articles and 8 Schedules.
 - In its final form, the Draft Constitution contains 395 Articles and 8 Schedules.
- **Amendments:** The Constitution of India has gone through more than 100 Constitutional amendments.
 - Now the Constitution comprises 466 Articles and 13 Schedules.

Endurance

- **Longevity:** The longevity of India's Constitution is remarkable, especially when compared with the global experience of national Constitutions.
 - On an average, Constitutions around the world have lasted only 17 years since 1789.

The final product

- **Lengthy:** India's Constitution is a 146,385-worded document. It is longer than any other Constitution in the world.
- **Not the most comprehensive:** According to Comparative Constitutions Project (CCP), there are 70 major topics that Constitutions around the world typically cover. No Constitution covers all 70 topics, but some Constitutions come close.
 - The Constitutions of Kenya and Zimbabwe, for instance, cover more than 80% of these topics.
 - India's Constitution is sparser (covering 60% of topics), but in line with the global average in coverage (58%).

Parliamentary vs. Presidential

- **Separation of powers:** A central function of the Constitution is to separate and delegate between the three branches of governance: legislature, executive and judiciary.
 - The way Constitutions do this ultimately defines a country's politics, society and even economics.

- **Parliamentary system:** Framers of the constitution believed that given India's diversity, the country needed a strong government. They felt only a parliamentary system could provide this.
 - ▶ Hence, India adopted a system where the elected legislature is responsible for enacting laws, the executive serves as the administrative head of the government, and an independent judiciary is responsible for upholding laws.
- **Success of parliamentary democracy:** Parliamentary form of democracy tends to be associated with better economic performance and better growth-promoting policies compared to Constitutions which establish presidential systems.
- **Extent of power:** According to CCP, India's legislature has less power than the average across the 190 countries, but its executive has more power and judiciary has greater independence than global averages.

Rights for citizens

- **Rights for citizens:** Another basic purpose of any Constitution is the rights it enshrines for citizens. For this, the Indian framers drew inspiration from American and French Constitutions.
 - ▶ As per CCP data, American Constitution grants 35 rights, the Indian Constitution grants 44. This is still less than the global average of 50 rights.
- **Later additions:** Few constitutional rights, such as the right to education, only came after Constitutional amendments.

Duties vs. Rights

- **Two sides of the same coin:** Mahatma Gandhi said that the true source of rights is duty. If we all discharge our duties, right will not be far to seek.
 - ▶ The President said that rights and duties are two sides of the same coin.
 - ▶ Our Constitution provides the fundamental right to 'freedom of speech and expression' and it also enjoins upon citizens the duty to safeguard public property and to abjure violence.
- **Fundamental duties:** By incorporating the provisions relating to Fundamental Duties into the Constitution, Parliament made it abundantly clear that while being alert about their rights, citizens should also be conscious of their duties.

Flexibility

- **Flexibility** in amending the Constitution is considered to be one of the biggest factors for the Indian Constitution's endurance.

- **Amendments:** To ensure that the Constitution remains relevant over time, the makers of the Constitution also incorporated provisions allowing future generations to make necessary amendments as may be deemed necessary.
 - ▶ Since its inception, the Indian Constitution has been amended 103 times, with the most recent amendment coming in August 2019 (the reorganization of Jammu and Kashmir).
 - ▶ In contrast, the American Constitution was last amended in 1992 for only the 27th time.
 - ▶ The Supreme Court's ruling in Kesavananda Bharati case, held that basic doctrine of the Constitution cannot be altered.
- **Dynamism:** Dynamism of our Constitution is reflective in the relationship and synergy between the Union and States. Move towards 'Co-operative Federalism' is an example of this.

Art in the constitution

- **Calligraphy:** The original copy of the Constitution was carved out of his own hands by the then-famous Calligrapher (calligrapher) Prem Bihari Narayan Raizada.
 - ▶ Raizada wrote the constitution in italic style, in which he did not make a single error.
 - ▶ Raizada did not take a single penny to write the constitution.
 - ▶ He only requested to write his name on every page, and his grandfather's name (from whom he had inherited his calligraphy skills) on the last page. His request was accepted.
 - ▶ Several students of Santiniketan worked on the borders that frame each page. Among them were Nand Lal Bose and his disciples.
 - ▶ The constitution was written in both Hindi and English languages.
- **Bose's illustrations:** Bose harnessed a variety of Indian art traditions, including myths and actual history. Illustrations include:
 - ▶ Land of forest, desert, sea and mountain start with the seal of a Harappan bull.
 - ▶ The forested hermitages of the rishis.
 - ▶ Ram, Sita and Lakshman.
 - ▶ The great dilemma of what is righteous action is typified Arjun and Krishna.
 - ▶ Division of the relics of Buddha from the life of Ashok.
 - ▶ Only one female heroine- Rani Lakshmbai of Jhansi.
 - ▶ Many styles of Indian art: the wall paintings of Ajanta, Bagh and the book illustrations of Rajasthan, the Mughal, Deccani and Pahari

traditions, the sculptures of Konark, Bharhut, Amaravati, Mahabalipuram and the Chola south.

- **Farman style:** Constitution as an artefact belongs to a long historical tradition where the most precious manuscripts, 'farmaans' and orders of any kingdom were written by hand and endorsed by the signatures of its ruler.
 - The calligraphy was done in the traditional way, as used to be the case with Mughal and Sultanate manuscripts.
 - It was framed in the hashi'a (borders) style.
- **Showcase:** Original copies are kept in a glass showcase filled with helium gas in the Parliament House Library.
 - The Showcase was developed jointly by the National Physical Laboratory and the Getty Conservation Institute of America.
- **Manuscript:** The manuscript of the constitution was written on a sheet of microbial anti-parchment that survived for a thousand years.
 - Its size is 45.7 cm × 58.4 cm.
 - The manuscript consisted of 234 pages, weighing 13 kg.

- Constitution was printed by the Survey of India in Dehradun.
- The English version of the constitution is 21,17,369 words in total.
- **Final copy:** The date of 26 January 1950 was deliberately chosen to implement the constitution, as Purna Swaraj was announced on this day in 1930.
 - 284 members of the Constituent Assembly signed the constitution on 24 November 1949 in the Constitution Hall. There were 15 women members among them.

◎ CONCLUSION

Indian Constitution has also shown remarkable resilience by surviving various assaults on it, especially during the Emergency. The pictures in Indian constitution are based on a history of Indian art from the Harappan civilization up to independence in 1947. Each interprets a specific style from a historical epoch linking the nation with its artistic history. The illustrations must be read not as stills, but as the message they want to impart.

CORONAVIRUS: CHINA'S MYSTERY VIRUS THAT HAS TRIGGERED WORRY

CONTEXT

- A top Chinese scientist has confirmed that the mysterious coronavirus (a type of virus named after its spiky, solar corona-like appearance under an electron microscope) that had killed at least six individuals and infected another 291 in China, can spread between human beings.

◎ BACKGROUND

- It is also called the Wuhan Virus.
- The first cases emerged in Wuhan in central China's Hubei province.
- A large number of patients with unexplained pneumonia were observed.
- A coronavirus is a kind of common virus that causes an infection in your nose, sinuses, or upper throat. Most coronaviruses are not dangerous.
- Often a coronavirus causes upper respiratory infection symptoms like a stuffy nose, cough, and sore throat.
- The coronavirus can also cause middle ear infections in children.
- Coronavirus can infect both animals and humans.

Human Coronavirus Types

- Coronaviruses are named for the crown-like spikes on their surface.
- There are four main sub-groupings of coronaviruses, known as alpha, beta, gamma, and delta.
- Coronaviruses are a large family of viruses that can cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS).
- Major types
 - **Middle East respiratory syndrome coronavirus (MERS-CoV):** caused by a novel coronavirus that was first identified in Saudi Arabia in 2012. MERS-CoV is a zoonotic virus, which means it is a virus that is transmitted between animals and people. Studies have shown that humans are infected through direct or indirect contact with infected dromedary camels. MERS-CoV has been identified in dromedaries in several countries in the Middle East, Africa and South Asia.
 - **SARS (Severe Acute Respiratory Syndrome):** SARS-CoV is thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats, that spread to other animals (civet cats) and first infected humans in the Guangdong province of southern China in 2002.

What are the symptoms of coronavirus infection?

- Common signs include fever, cough, and shortness of breath. Serious infections can lead to pneumonia, kidney failure, and death.
- Human-to-human transmission has now been confirmed.
- Animals are the outbreak's likely primary source.
- Direct contact with farm or wild animals should be avoided.

Why is there concern around the world?

- People see a similarity with the SARS outbreak that infected over 8,000 people and killed around 775 in more than 35 countries worldwide in 2002-03.
- The source of the virus was traced back to a colony of horseshoe bats living in remote cave in Yunnan province. The virus was carried by civet cats which are sold in markets in China.

Global economic and financial market impact

- The outbreak has sent shivers through world financial markets, with investors drawing comparisons to the 2003 SARS (Severe Acute Respiratory Syndrome) outbreak in order to assess its potential economic impact.
- Expected annual losses from pandemic risk to be about \$500 billion — or 0.6% of global income — per year, accounting for both lost income and the intrinsic cost of elevated mortality.
- Another study by the Commission on a Global Health Risk Framework for the Future estimated that pandemic disease events would cost the global economy over \$6 trillion in the 21st century — over \$60 billion per year.
- Despite the disruption to the wider economy, virus outbreaks have tended to benefit pharmaceutical stocks, while tourism and travel-related stocks — hotels, airlines and luxury and consumer goods — tend to get punished.
- During the SARS outbreak, retail sales figures in China showed a marked drop-off as consumer spending took a hit.

Why China has emerged as the epicentre of global outbreaks of disease

- With a population of nearly 1.4 billion and 50% of the world's livestock, China's ecology poses a risk for emerging, re-emerging, and novel diseases that could threaten China and the rest of the world.
- The reason could lie in the busy food markets dotting cities across the country — where fruits, vegetables, hairy crabs and butchered meat are often sold next to bamboo rats, snakes, turtles, and palm civets.
- The Chinese taste for exotic meats, and the high population density of cities create the conditions for the spread of zoonotic infections.
- Wherever there is close mixing of humans and animals, especially the unregulated handling of blood and other body products, as happens for example in China's animal markets, there are greater chances of transmission of a virus from animals to humans, and its mutation to adapt to the human body.
- Ebola outbreak in Africa where wild chimpanzees had the disease. It came into humans after these were killed and consumed. Animal markets are breeding grounds because there is free interchange of pathogens between species and mutations.

What is India's disease outbreak investigation protocol?

- The National Health Portal of India lists a 10-step procedure to investigate an outbreak, including preparing for fieldwork, establishing the existence of an outbreak, verifying diagnosis, defining and identifying cases, and communicating findings.
- Three Indians have been kept under observation.
- Other countries with confirmed cases of 2019-nCoV include Japan, South Korea, Vietnam,

Singapore, Australia, Thailand, Nepal, France, the United States, Malaysia and Canada.

Novel coronavirus cases now 4,500, half as many as SARS cases in 2003

- The novel coronavirus outbreak has led to comparisons being drawn to the SARS (severe acute respiratory syndrome) outbreak of 2003, also caused by a coronavirus.
- According to the WHO, a total of 8,098 people worldwide became sick with SARS during that outbreak.
- Of the 8,098 SARS cases, 774 died. In comparison, of the 4,593 infected by the novel coronavirus so far, 106 have died.

COUNTRY-WISE COUNT OUTSIDE CHINA	
Country	Confirmed cases
Japan	6
South Korea	4
Viet Nam	2
Singapore	7
Australia	5
Malaysia	4
Cambodia	1
Thailand	14
Nepal	1
Sri Lanka	1
US	5
Canada	2
France	3
Germany	1
Total	56

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REMISSION OF DUTIES OR TAXES ON EXPORT PRODUCT

◎ CONTEXT

- Recently, government launched a new scheme called **Remission of Duties and Taxes on Export Product (RoDTEP)**.

◎ ABOUT

- Remission of Duties and Taxes on Export Product (RoDTEP):** RoDTEP is a Rs 50,000-crore exports programme which is supposed to **replace Merchandise Exports From India Scheme (MEIS)**.
- Operation delayed:** The operation of RoDTEP was recently delayed. MEIS would remain in force till March 31, 2020.
 - RoDTEP was first set to roll-out from 1st January 2020, but recently its roll-out was delayed to next fiscal.
 - This delay was done at the behest of **exporters' request to grant them more time** to prepare for a transition from MEIS to the new scheme, given the **operational challenges**.
 - The next **foreign trade policy** will contain the broad contours of RoDTEP.

MEIS was WTO-incompatible

- MEIS** was introduced in the Foreign Trade Policy (FTP) 2015-20 w.e.f. 1st April 2015.
- Objective:** Its objective was to offset infrastructural inefficiencies and associated costs involved in exporting goods which are manufactured in India, including products manufactured by the MSME Sector.
- WTO-incompatible:** World Trade Organisation (WTO) panel had determined that India's export subsidies are inconsistent with WTO requirements.
 - The ruling of WTO's **Disputes Settlement Body (DSB)** in favour of US against India's export "subsidies" is still pending.
 - US claims that India offers **illegal export subsidies** and thousands of Indian companies benefit from it.
- India's argument:** India rejects claims made by the US
 - The entire allocation or potential revenue forgone on account of various such schemes (including MEIS) **doesn't qualify as export subsidies**.
 - They are meant to only soften the blow of costly input imports that exporters have been forced to bear due to a **complicated tax structure**.
 - Exports are in sync with the best global practices.

RoDTEP scheme

- Reimburse input taxes and duties:** RoDTEP is expected to adequately incentivize exporters by reducing duties paid on exports and will initiate the refund of various taxes to exporters.
- WTO compliant:** The new scheme is supposed to reimburse all taxes and duties paid on inputs consumed in exports in sync with the WTO norms.
 - The MEIS, exporters have persistently complained, doesn't offset all the taxes, so the new scheme will be beneficial to them when it's implemented.
- Automatic refund-route:** The new scheme will have a fully automated route for Input Tax Credit (ITC) in the GST to help increase exports in India.
- Avoid double taxation:** ITC is provided to set off tax paid on the purchase of raw materials, consumables, goods or services that were used in the manufacturing of goods

or services. This helps in avoiding double taxation and the cascading effect of taxes

- **Attempt to reverse export fall:** It is expected to adequately incentivize exporters by reducing duties paid on exports and will initiate the refund of various taxes to exporters. Measures in the new scheme include:
 - Easier priority-sector lending norms for exports
 - Greater insurance cover under ECGC
 - Lower premium for MSMEs to avail of such cover
- **Costly to the government:** Since potential revenue forgone in the current MEIS is around Rs 40,000 crore a year, RoDTEP is expected to cost the government an additional Rs 10,000 crore annually.

Additional benefits of MEIS and RoDTEP

- Both MEIS and RoDTEP seek to free up working capital of exporters.
- An electronic refund module will be set up to automatically refund input tax credits.
- The move will increase bank credit to exporters under the Export Credit Insurance Scheme.
- Exporters will receive a higher insurance cover from banks that offer capital loans

NAGARDHAN EXCAVATIONS: WHY ARE FINDINGS IMPORTANT TO UNDERSTAND VAKATAKA DYNASTY?

◎ CONTEXT

- Recent archaeological excavations at Nagardhan in Ramtek taluka, near Nagpur, have provided concrete evidence on the life, religious affiliations and trade practices of the Vakataka dynasty that ruled parts of Central and South India between the third and fifth centuries.

◎ ABOUT

- After a 1,500 year-old sealing was excavated for the first time; a new study in Numismatic Digest has tried to understand the Vakataka rule under Queen Prabhavati Gupta.
- Nagardhan is a large village in Nagpur district, about 6 km south of Ramtek taluka headquarters.
- Archaeological remains were found on a surface spread over a 1 km × 1.5 km area.
- A Koteswar temple dating back to the 15th-16th centuries stands on the banks of a stream.
- The existing village sits on top of the ancient habitation.
- The Nagardhan Fort stands south of present-day Nagardhan village.
- This was constructed during the Gond Raja period and later renovated and re-used by the Bhosales of Nagpur during the late 18th and 19th centuries.
- The area surrounding the fort is under cultivation and has archaeological remains.

Why is the excavation important?

- Very little was known about the Vakatakas, the Shaivite rulers of Central India between the third and fifth centuries.
- All that was known about the dynasty, believed to hail from the Vidarbha region, was largely through some literature and copperplates.
- There were assumptions that the excavated site of Nagardhan is the same as Nandhivardhan, the capital city of the eastern branch of the Vakatakas.

- It was after archaeological evidence from here that Nagardhan was understood to have served as a capital of the Vakataka kingdom.
- Besides, the scholars have traced archaeological evidence revealing the dynasty's religious affiliations — the types of houses and palaces of the rulers, coins and sealings circulated during their reign, and their trade practices.

What is the significance of these finds?

- It is the first time clay sealings have been excavated from Nagardhan.
- The oval-shaped sealing belongs to the period when Prabhavatigupta was the queen of the Vakataka dynasty.
- It bears her name in the Brahmi script, along with the depiction of a conch.
- The 6.40-gram sealing, this is 1,500 years old, measures 35.71 mm by 24.20 mm, with a thickness of 9.50mm.
- The presence of the conch is a sign of the Vaishnava affiliation that the Guptas held.
- The sealing was traced on top of a mega wall that researchers now think could have been part of a royal structure at the capital city of the kingdom.
- So far, no archaeological evidence had emerged about the types of houses or palatial structures of the Vakataka people or rulers.
- These are strong indicators of Vaishnava signatures on the royal seals of the Vakatakas, reiterate that Queen Prabhavatigupta was indeed a powerful woman ruler.
- Since the Vakataka people traded with Iran and beyond through the Mediterranean Sea, scholars suggest that these sealings could have been used as an official royal permission issued from the capital city.
- Besides, these were used on documents that sought mandatory royal permissions.

What else has been excavated from Nagardhan so far?

- Earlier results from the excavations here had traced evidence in the form of ceramics, ear studs of glass, antiquities, bowls and pots, a votive shrine and tank, an iron chisel, a stone depicting a deer, and terracotta bangles.
- Some terracotta objects even depicted images of gods, animals and humans, along with amulets, scotches, wheels, skin rubbers and spindle whorls.
- An intact idol of Lord Ganesha, which had no ornaments adorned, too was found from the site.
- This confirmed that the elephant god was a commonly worshipped deity in those times.
- On the means of living of the Vakataka people, researchers found animal rearing to be one of the main occupations.
- Remains of seven species of domestic animals — cattle, goat, sheep, pig, cat, horse and fowl — were traced in an earlier study by the team.

PEACE TO PROSPERITY

◎ CONTEXT

- **US President, Donald Trump, launched with Israeli PM, Benjamin Netanyahu, a peace plan for advancing Israeli-Palestinian peace negotiations.**

◎ ABOUT

- **Peace to Prosperity:** A vision to improve the lives of the Palestinian and Israeli people, commonly known as the Trump peace plan, is a proposal by the Trump administration bearing the stated **intention of resolving the Israeli-Palestinian conflict.**
- Donald Trump formally unveiled the plan in a White House press conference alongside Israeli Prime Minister Benjamin Netanyahu on January 28, 2020.

- Palestinian representatives were not invited.
- The plan was **authored by a team led by Trump's son-in-law**, Senior Advisor to the President of the United States, **Jared Kushner**.
- Both the West Bank settlers' Yesha Council and the Palestinian leadership rejected the plan.
 - Yesha Council rejected the plan because it envisaged a Palestinian state.
 - While Palestinian leadership rejected the plan arguing that it is too biased in favour of Israel.
- **The plan is divided into two parts**, an **economic portion** and a **political portion**.
 - On June 22, 2019, the Trump administration released the economic portion of the plan, titled "Peace to Prosperity".
 - The political portion was released in late January 2020.
- According to White House, the vision is **security-focused**, and provides both **self-determination and significant economic opportunity for Palestinians**.
 - It also provides positive benefits to the Hashemite Kingdom of Jordan, the Arab Republic of Egypt and countries throughout the region.

Background (as per the Peace Plan)

- **Israelis and Palestinians** have both suffered greatly from their long-standing and seemingly interminable conflict.
- Palestinians have aspirations that have not been realized, including **self-determination**, improvement of their standard of living, social betterment, and a respected place in the region, as well as among the nations of the world.
- The State of Israel has made peace with two of its neighbours.
 - It made peace with the **Arab Republic of Egypt in 1979**
 - It made peace with the **Hashemite Kingdom of Jordan in 1994**.
- In 1993, the State of Israel and the Palestine Liberation Organization reached the first of several interim agreements, known collectively as the **Oslo Accords**.
- One of the most significant understandings within those agreements provided for security **cooperation between the Israel Defense Forces (the "IDF") and the Palestinian Authority Security Forces (the "PASF")**.

Details of the Peace Plan

- **Israeli sovereignty over settlements:** According to the proposal, Israeli government would **immediately annex the Jordan Valley and West Bank settlements**, while committing not to create new settlements in areas left to the Palestinians for at least four years.
 - While Trump administration clarified that no such immediate green light had been given.
 - No decision would take place before new elections and a new government had been formed.
- Would give Palestinians all the power to govern themselves but not the powers to threaten Israel.
- This necessarily entails limitations of certain sovereign powers in the Palestinian areas (henceforth referred to as the **"Palestinian State"**) such as:
 - maintenance of Israeli security responsibility
 - Israeli control of the airspace west of the Jordan River.
- This Vision creates a **realistic Two-State solution** in which a secure and prosperous State of Palestine is living peacefully alongside a secure and prosperous State of Israel in a secure and prosperous region.

- **Opportunities for regional cooperation:** If implemented, this Vision can lead to **direct flights** between the State of Israel and its neighbours, the **transport of people and commerce** and the unlocking of opportunities for millions of people to visit religious sites sacred to their faiths.
- **Status on State of Palestine:** The Trump plan proposes a State of Palestine with a capital on the outskirts of East Jerusalem.
 - The plan is offering the Palestinians a state, a future State of Palestine, which will be not established up to four years into the execution of the plan.
 - The plan would be conditional on Palestinians taking steps to become self-governing.
 - However, the sovereignty the State of Palestine would possess is disputed.

Palestinian argument

- Palestinians fear that the plan seeks to use **economic incentives to bribe them** into accepting Israeli occupation, in what could be an Israeli aim to annex the majority of the West Bank and most of the Jordan Valley, a strategic and fertile strip of territory.

THE DEBATE OVER UN'S NEW RULES FOR SHIPS IN THE ARCTIC REGION

◎ CONTEXT

- The International Maritime Organization (IMO), the shipping agency of the United Nations, has banned ships from using fuels with sulphur content above 0.5 per cent, compared with 3.5 per cent previously.

◎ ABOUT

- Environmental activists called for a ban on the use of new low sulphur marine fuel in the Arctic region
- Green groups have cited new research which shows that blends of very low-sulfur fuel oil (VLSFO) contribute to highly polluting black carbon emissions in the environment.
- The International Maritime Organization (IMO), the shipping agency of the United Nations, issued new rules aiming to reduce sulphur emissions, due to which ships are opting for newer blends of fuels.

What do the new IMO rules say?

- The IMO has banned ships from using fuels with sulphur content above 0.5 per cent, compared with 3.5 per cent previously.
- Sulphur oxides (SOx), which are formed after combustion in engines, are known to cause respiratory symptoms and lung disease, while also leading to acid rain.
- The new regulations, called IMO 2020, have been regarded as the biggest shake up for the oil and shipping industries in decades. It affects more than 50,000 merchant ships worldwide.
- The new limits are monitored and enforced by national authorities of countries that are members of the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI.
- Under the new policy, only ships fitted with sulphur-cleaning devices, known as scrubbers, are allowed to continue burning high-sulphur fuel.
- Alternatively, they can opt for cleaner fuels, such as marine gasoil (MGO) and very low-sulphur fuel oil (VLSFO).

The cleaner fuel options

- Of the two cleaner fuels, ship-owners were expected to opt for MGO, which is made exclusively from distillates, and has low sulphur content.

- However, many are reportedly choosing VLSFO, which has better calorific properties and other technical advantages.
- There are complaints against VLSFO as well, as testing companies have claimed that high sediment formation due to the fuel's use could damage vessel engines.
- A paper by Germany and Finland finds that VLSFO, with 0.5 per cent sulphur content, can contain a large percentage of aromatic compounds, thus having a direct impact on black carbon emissions.
- Black carbon, which is produced due to the incomplete combustion of carbon-based fuels, contributes to climate change.
- The Clean Arctic Alliance, which has called for the ban, has said that an increase in black carbon emissions would accelerate the melting of Arctic sea ice and impact the earth's climate.
- It has called for a shift to distillate fuels, like MGO.

ABOLITION OF LEGISLATIVE COUNCIL

◎ CONTEXT

- Andhra Pradesh has become the latest State to favour the alteration of the status quo regarding the Upper House, in an Assembly resolution for its Legislative Council's abolition.

◎ ABOUT

- **India's bicameral system:**
- India has a bicameral system i.e. two Houses of Parliament:
 - the upper House (Rajya Sabha)
 - the lower House in (Lok Sabha)
- The Constitution of India (Article 168 & Article 169) provides for the bicameral legislature in certain States.
 - Under Article 168, states can have either one or two Houses of the legislature.
 - Article 169 leaves the choice of having a Vidhan Parishad to individual states.
- At the state level, the equivalent of the Rajya Sabha is the Legislative Council (Vidhan Parishad) and that of Lok Sabha is the Legislative Assembly (Vidhan Sabha).

Who decides on the bicameral system?

- The Constitution of India does not force a bicameral legislature on states. It allows states the option of having a second House.
- The State Assembly has to pass a resolution for the creation of the Council by a majority of its total membership.
- Thereafter, the Parliament (under Article 169) has the power to create or abolish the Legislative Council on the basis of a resolution adopted by the special majority in the Assembly of the concerned State.

How many states have abolished the Legislative Council?

- A second house—a state legislative council (Vidhan Parishad), with unelected members—has always been a point of contention throughout history.
- Assam was the first state to abolish its state legislative council. The state passed a resolution for the same in 1947.
- After Assam, West Bengal had abolished its legislative council in 1969 and Punjab abolished it in 1970.
- The Andhra Pradesh legislative council, with 58 members, was first abolished in 1985. It was revived in March 2007.

- As of today, five states have Legislative Councils: **Telangana, Bihar, Maharashtra, Karnataka** and **Uttar Pradesh**.
- Jammu and Kashmir had a Council until the state was bifurcated into the Union Territories of J&K and Ladakh.

The need of second house:

In Favour:

- At state level, the second house of the legislature assumes significance for two main reasons:
 - The second house acts as a check on hasty actions by the popular elected House.
 - It ensures individuals who might not be cut out for the rough-and-tumble of direct elections too are able to contribute to the legislative process.

Against:

- The idea of Legislative Councils is centred on three broad arguments:
 - They can be used to park leaders who have not been able to win an election.
 - They can be used to delay progressive legislation.
 - They would strain state finances.

The reason behind the decision:

- Since the bifurcation of Andhra Pradesh in 2014, the Council has had 58 members.
- The Legislative Council is dominated by the opposition party with 32 members.
- The ruling party has only nine members. With the numbers not expected to change for at least two more years, the government can have a tough time carrying out Legislative business.
- The state government is already facing the heat with the Council trying to put spokes in its plan to create three capitals and pursue a decentralised development model for the State.

GLOBAL TALENT COMPETITIVE INDEX 2019

◎ CONTEXT

- India has moved up eight places to the 72nd position in the 2020 Global Talent Competitiveness Index that measures and ranks countries based on their ability to grow, attract and retain talent.

◎ ABOUT

- Launched for the first time in 2013, the Global Talent Competitiveness Index (GTCI) is an annual benchmarking report that measures the ability of countries to compete for talent.
- It provides a wealth of data and analysis that helps decision makers develop talent strategies, overcome talent mismatches and become more competitive in the global marketplace.
- This new GTCI report focuses on Global Talent in the Age of Artificial Intelligence.
- The index includes 70 variables and covers 132 countries.
- The six metrics used to decide a country's rank are - enable, attract, grow, retain, vocational skills and global knowledge skills.

Global findings of the Index:

- Switzerland topped the list of 132 countries, followed by the US and Singapore.

- The Index was topped by Switzerland, the US and Singapore.
- Top 10 league table: Other countries in the top 10 include Sweden at the 4th position, Denmark (5th), the Netherlands (6th), Finland (7th), Luxembourg (8th), Norway (9th) and Australia (10th).
- In the BRICS grouping, China was ranked 42nd, Russia (48th), South Africa (70th) and Brazil at 80th position.
- The report said the gap between high income, talent-rich nations and the rest of the world is widening. More than half of the population in the developing world lack basic digital skills.

On India's position:

- India has secured 72nd place in the index while last year the country was ranked at 80th position.
- Although more could be done to improve the country's educational system (68th in Formal Education), India's key strength relates to growing (44th) talent, primarily by virtue of the possibilities for Lifelong Learning (40th) and Access to Growth Opportunities (39th).
- Its highest-ranked sub-pillar, however, is Employability (28th), but the ability to match labour market demand and supply stands in contrast to the country's poor Mid-Level Skills (113th), which result in a mediocre score in Vocational and Technical Skills (76th).
- India's greatest challenge is to address its weak ability to attract (92nd) and retain (95th) talent.
- With regard to the former pillar, there is a need to strengthen the role of minorities and women in order to raise the level of Internal Openness (104th).
- As for the latter pillar, India's low scores in the indicators that relate to quality of life (Lifestyle, 115th) fall well short of its more positive showing in Sustainability (53rd).
- India's biggest challenge is to improve its ability to attract and retain talent.
- There is a need to address its poor level of Internal Openness in particular with respect to weak gender equality and low tolerances towards minorities and immigrants and its disappointing showing in lifestyle indicators.

Significance of the Index:

- The index addresses the growing need to better understand the 'sweet spot' where people and technology will cooperate, how rapid digitalisation will impact business and talent, and the skills needed for individuals to thrive in the workplace of the future.
- GTCI help decision-makers across governments, business, and civil society to understand the challenges and opportunities that technological developments present.

INTERNET SHUTDOWNS

◎ CONTEXT

- **The Supreme Court gave a landmark judgement on the internet shutdown in Kashmir. The court ruled indefinite internet shutdown in Kashmir unwarranted and amounting to abuse of power.**

◎ ABOUT

- **Internet shutdown in Kashmir:** The government had imposed a communications lockdown in Jammu & Kashmir since August 2019.
 - The shutdown which lasted **more than 150 days** is the longest such outage in any democracy.
 - The shutdown was aimed to control unrest after abrogating **Article 370** of the Constitution.

- Mobile phone connections were also cut, but have been restored in most places.
- **Other cases of internet shutdown:** The Centre has frequently used internet shutdowns as a tool to quell dissent in troubled parts of the country.
 - Internet was curbed in parts of the National capital and in areas of Assam and Uttar Pradesh as protests raged against a new citizenship law.
 - There have been at least 381 documented instances of internet shutdown in India in the last nine years; 319 of those cases have occurred since 2017.
 - In matter of internet shutdown, India is deemed third worst-hit after Iraq and Sudan.
- **Challenging government decision:** Government's decision was challenged by Journalist Anuradha Bhasin and politician Ghulam Nabi Azad.
 - Finally, a 130-page judgment was delivered in this regard by Justice N.V. Ramana, R. Subhash Reddy and B.R. Gavai.

Government's argument

- **Necessary:** The Centre had justified internet restrictions after abrogation of provisions of Article 370.
 - Government shut down internet as a preventive step to secure lives of citizens.
- **Peace maintained through the transition phase:** According to the government it is due to the preventive steps taken that neither a single life was lost nor a single bullet fired, while J&K transitioned from being a state to Union Territory.
- **Border infiltration:** Internet shut down was necessary to prevent terrorists sponsored by Pakistan from fuelling unrest and violence in Kashmir.
 - The current wave of militancy in Kashmir is being fuelled by terrorist groups recruiting young Kashmiris via internet and social media.

Supreme Court ruling

- **Impermissible:** The Supreme Court ruled that indefinite internet ban in Jammu & Kashmir is impermissible.
- **Abuse of power:** Repeated use of section 144 of CrPC amounts to 'abuse of power'.
 - Reasons have to be given for imposing Section 144 and magistrate should balance rights of individual with state interest when issuing such orders.
- **Orders to be put in public domain:** The bench ordered the Jammu and Kashmir administration to put in public domain all orders that can then be challenged in a court of law.
- **Constitutionally protected right:** The court ruled that right to access internet is constitutionally protected and internet can be shut down only in exceptional circumstances.
 - The value of liberty is important and not negotiable.
 - The access to internet being a fundamental right is a means of getting information.
 - People have a right to know, as a part of Article 19(1)(a).
- **No repetitive use of Section 144:** The court argued against government's repetitive use of Section 144, holding that there needs to be an emergency for invocation of the provision, and mere expression of disagreement cannot be a ground.
- **Violation of telecom rules:** An indefinite suspension of the internet was a violation of the country's telecoms rules.
 - Indefinite suspension is against Temporary Suspension of Telecom Services (Public Emergency or Public Service) Rules, 2017.
 - Principle of proportionality must be adhered to and must not extend beyond necessary duration.

- **Slow technological pace:** With greater mobility of technology and artificial intelligence, there has to be a catch up with technology as well. Curbing internet amounts to slowing the pace of technological development.
- **Freedom of press:** The Right of freedom of press was seen as a way for people to gain information from the press. Press and people are intertwined for purpose of information.
- **Right to Information:** Any order under Article 144, must be transparent for people to know and with a possibility of a challenge to those orders.
- **Subject to Judicial review:** The judgement asks larger questions pertaining to the exercise of statutory powers such as Section 144.
 - The judgement is not questioning the right of the government but the extent to which the government can shut down internet. It has also made a shutdown subject to judicial review.
 - The judgement does not transgress into the domain of executive.
 - There is a mandamus for court to review government's actions.

List of statutes concerning the judgement

- Code of Criminal Procedure Code, 1973
- Indian Penal Code, 1860
- Indian Telegraph Act, 1885
- Temporary Suspension of Telecom Services, (Public Emergency or Public Safety) Rules, 2017
- Information Technology Act, 2000
- Right to Information Act, 2005

Criticism for internet shutdown

- The internet blackout and restrictions on movement has severely **disrupted the lives** of millions.
- It has impacted everything, from **college admissions** to **businesses filing tax returns**.
- The unavailability of internet has also **severely impacted businesses**.
- According to ICRIER, internet shutdown had **cost the Indian economy about \$3.04 billion**.
- According to Cellular Operator Association of India (COAI), **mobile carriers lost about \$8 million a day** for shutdown in any of the 22 circles where they operate in the country.

◎ CONCLUSION

- The judgement is very seminal, progressive, and also not unaware of the societal interests. It strikes a very careful balance between rights and liberty on one hand and the need to protect citizens on the other, through the state. Supremacy of the Constitution and value of human beings was upheld through this judgement.

WHAT IS ANTICIPATORY BAIL, FOR WHICH SC HAS REMOVED TIME LIMITS?

◎ CONTEXT

- The Supreme Court ruled that no time restriction should ordinarily be fixed for anticipatory bail and that it can continue even until the end of the trial.

◎ ABOUT

- The protection granted under **Section 438** of the Code of Criminal Procedure (CrPc) "should not invariably be limited to a fixed period", a five-judge Constitution bench headed by Justice Arun Mishra said.

What is anticipatory bail?

- Black's Law Dictionary describes 'bail' as procuring "the release of a person from legal custody, by undertaking that he shall appear at the time and place designated and submit himself to the jurisdiction and judgement of the court."
- In the 1973 case Supt. and Remembrancer of Legal Affairs v. Amiya Kumar Roy Choudhry, the Calcutta High Court explained the principle behind giving bail: "The law of bails... has to dovetail two conflicting demands, namely, on one hand, the requirements of the society for being shielded from the hazards of being exposed to the misadventures of a person alleged to have committed a crime; and on the other, the fundamental canon of criminal jurisprudence viz. the presumption of innocence of an accused till he is found guilty."
- As opposed to ordinary bail, which is granted to a person who is under arrest, in anticipatory bail, a person is directed to be released on bail even before arrest made.
- Section 438 of the Code of Criminal Procedure, 1973, lays down the law on anticipatory bail. Sub-section (1) of the provision reads: "When any person has reason to believe that he may be arrested on an accusation of having committed a non-bailable offence, he may apply to the High Court or the Court of Session for a direction under this section; and that Court may, if it thinks fit, direct that in the event of such arrest, he shall be released on bail."
- The provision empowers only the Sessions Court and High Court to grant anticipatory bail.

Rationale behind anticipatory bail

- Anticipatory bail became part of the new CrPC in 1973 (when the latter replaced the older Code of 1898), after the 41st Law Commission Report of 1969 recommended the inclusion of the provision.
- The necessity for granting anticipatory bail arises mainly because sometimes influential persons try to implicate their rivals in false cases for the purpose of disgracing them or for other purposes by getting them detained in jail for some days... Apart from false cases, where there are reasonable grounds for holding that a person accused of an offence is not likely to abscond, or otherwise misuse his liberty while on bail, there seems no justification to require him first to submit to custody, remain in prison for some days and then apply for bail.
- In the 1980, Gurbaksh Singh Sibbia vs State of Punjab case, a five-judge Supreme Court bench led by then Chief Justice Y V Chandrachud ruled that S. 438 (1) is to be interpreted in the light of Article 21 of the Constitution (protection of life and personal liberty).
- It may perhaps be right to describe the power (of anticipatory bail) as of an extraordinary character... But this does not justify the conclusion that the power must be exercised in exceptional cases only, because it is of an extra-ordinary character.

Conditions while granting anticipatory bail

- While granting anticipatory bail, the Sessions Court or High Court can impose the conditions laid down in sub-section (2).
 - A condition that the person shall make himself available for interrogation by a police officer as and when required.
 - A condition that the person shall not, directly or indirectly, make any inducement, threat or promise to any person acquainted with the facts of the case so as to dissuade him from disclosing such facts to the Court or to any police officer.
 - A condition that the person shall not leave India without the previous permission of the Court.

- Such other condition as may be imposed under sub-section (3) of section 437, as if the bail were granted under that section.

ACCRETION BURST EVENT

◎ CONTEXT

- In a latest development, astronomers have found that the funnelling of matter into a forming star happens at different rates over time. Sometimes the forming star swallows up a huge amount of matter, resulting in a burst of activities in the massive star. This is called an accretion burst event.

Key-highlights of the findings:

- The international group of scientists, for the first time in history has been able to trace by masers and examine the subluminal propagation of a thermal radiation 'heatwave' emanating from an accreting high-mass protostar of the high-mass protostar **G358-MM1**.
- The object is eight times the mass of the sun; located at a distance of about 22,000 light years from Earth.
- High-mass stars radically rebuild their surroundings and thus redetermine the structure and evolution of galaxies. One of the modern hypotheses is that high-mass protostars grow due to episodic accretion (an increase in mass due to the influx of matter from the surrounding objects).
- Large fragments of the surrounding matter fall on the star, dying in bright flashes.

What is Accretion Burst Event?

- Accretion burst event is incredibly rare. Till now, only three such events have been observed, out of all the billions of massive stars in the Milky Way.
- After the first detection of an accretion burst, in 2016, astronomers from around the world agreed in 2017 to coordinate their efforts to observe more.
 - Reported bursts have to be validated and followed up with more observations, and this takes a joint, global effort – which led to the formation of the **Maser Monitoring Organisation (M2O)**.
- In January 2019, astronomers at Ibaraki University in Japan noticed that one such massive protostar, **G358-MM1**, showed signs of new activity. The masers associated with the object brightened significantly over a short period of time.
 - Follow-up observations with the Australian Long Baseline Array revealed something astronomers are witnessing for the first time – a blast of heat-wave coming from the source and travelling through the surroundings of the forming big star.
 - Blasts can last for about two weeks to a few months.

What is Maser?

- A maser (microwave amplification by stimulated emission of radiation) is the microwave (radio frequency) equivalent of laser.
- Masers are observed using radio telescopes and most of them are observed at centimetre wavelength. They are very compact.
- A maser flare can be a sign of an extraordinary event such as the formation of a star.
- Since 2017, radio telescopes in Japan, Poland, Italy, China, Russia, Australia, New Zealand and South Africa (HartRAO, in the country's Gauteng province) have been working together to detect a flare stimulated by a burst in the funnelling of materials into a massive star.

Formation of Stars:

- Stars are giant, luminous spheres of plasma. There are billions of them — including our own sun, in the Milky Way Galaxy.

- Stars are born within the clouds of dust and scattered throughout most galaxies. A familiar example of such as a dust cloud is the Orion Nebula.
- Turbulence deep within these clouds gives rise to knots with sufficient mass that the gas and dust can begin to collapse under its own gravitational attraction.
- As the cloud collapses, the material at the center begins to heat up.
- Known as a protostar, it is this hot core at the heart of the collapsing cloud that will one day become a star.
- As the cloud collapses, a dense, hot core forms and begins gathering dust and gas. Not all of this material ends up as part of a star, the remaining dust can become planets, asteroids, or comets or may remain as dust.

Significance of the findings:

- The recent findings will help the astronomers to develop and test theories to explain how high-mass stars gain their mass.
- Furthermore, these findings promote the advantages of maser observations in understanding high-mass-star formation.

BIOROCK OR MINERAL ACCRETION TECHNOLOGY

© CONTEXT

- The Zoological Survey of India (ZSI), with help from Gujarat's forest department, is attempting for the first time a process to restore coral reefs using biorock or mineral accretion technology.

Locating the biorock:

- Biorock is the name given to the substance formed by electro accumulation of minerals dissolved in seawater on steel structures that are lowered onto the sea bed and are connected to a power source, in this case solar panels that float on the surface.
- A biorock structure has been installed one nautical mile off the Mithapur coast in the Gulf of Kachchh.
- The location for installing the biorock had been chosen keeping in mind the high tidal amplitude in the Gulf of Kachchh.
- The low tide depth where the biorock has been installed is four metres, and at high tide it is about eight metres.

About the technology:

- Mineral Accretion Technology is a coral reef restoration technology that utilizes low voltage electricity to improve the health and growth rates of corals and other marine organisms.
- The technology works by passing a small amount of electrical current through electrodes in the water.
- When a positively charged anode and negatively charged cathode are placed on the sea floor, with an electric current flowing between them, calcium ions combine with carbonate ions and adhere to the structure (cathode).
- This results in calcium carbonate formation. Coral larvae adhere to the CaCO_3 and grow quickly.
- Fragments of broken corals are tied to the biorock structure, where they are able to grow at least four to six times faster than their actual growth as they need not spend their energy in building their own calcium carbonate skeletons.

What are Coral Reefs?

- Coral reefs are the large number underwater structures composed of the skeleton of the colonial marine invertebrates known as 'coral'.
- Each individual coral animal is called a '**polyp**'. Most of them live in groups of thousands of genetically identified polyps that form a '**colony**', which is created by a process called **budding**, where the original polyp grows copies of itself.
- Coral are invertebrates belonging to group of **Cnidarians**. They are generally classified into two groups:
 - **Hard or hermatypic corals:** They extract calcium carbonate from seawater to create a hard, durable exoskeleton that protects their bodies.
 - **Soft corals:** They are flexible organisms and resembles trees and plants.

Threat to Coral Reefs:

- **Ocean warming:** Corals cannot survive in high water temperature. Global warming has already led to increased levels of coral bleaching.
- **Pollution:** Pollution arising from urban and industrial waste, sewage, agrochemicals, and oil pollution are poisoning reefs increases the level of nitrogen in seawater, causing an overgrowth of algae, which smothers reefs by cutting off their sunlight.
- **Destructive Fishing Practices:** Destructive fishing practices such as cyanide fishing, dynamite fishing, bottom trawling, and muro-ami, bottom-trawling are some greatest threats to cold-water coral reefs.
- **Overfishing:** Overfishing adversely affects the ecological balance of the coral reef, disturbing the food chain.
- **Sedimentation:** Furthermore, erosion caused by construction, mining is leading to increased sediment in rivers, which ends up in the ocean. In addition to this, the destruction of mangrove forests, which generally trap large amounts of sediment, is exacerbating the problem.

Significance of the initiative:

- **Sustainability:** The initiative of coral restoration using biorock technology could potentially help to sustain the earlier successes.
- **Strengthening corals:** The technology helps corals, including the highly sensitive branching corals, to counter the threats posed by global warming.

DHANUSH, INDIA'S FIRST INDIGENOUS LONG-RANGE ARTILLERY GUN

◎ **CONTEXT**◎ **ABOUT**

- The Dhanush gun system was showcased for the first time at the 71st Republic Day parade.
- Dhanush, the 155 mm/45-calibre gun system is a towed Howitzer designed indigenously by the Ordnance Factory Board (OFB).
- It is the first long-range artillery gun to be produced in India and has been billed as a success of the government's **Make in India** initiative.
- **Hitting range:** The gun has a maximum range of 36.5 km and has the capability of automatic alignment and positioning.
- It is equipped with:
 - an inertial navigation-based sighting system
 - an auto-laying facility
 - an onboard ballistic computation

- an advanced day and night direct firing system
- Apart from the above, the gun is also fitted with an inertial navigation system with global positioning system- (GPS) based gun recording and auto-playing, an enhanced tactical computer for onboard ballistic computations, an onboard muzzle velocity recording, an automated gun sighting system equipped with the camera, thermal imaging and laser range finder.
- **Joint effort:** It is a joint effort by the OFB, the Army, Defence Research and Development Organisation (DRDO), Directorate General Quality Assurance, PSUs Bharat Electronics Limited, SAIL, and private firms.

Desi-Bofors:

- Dhanush is an improved version of the FH-77B 155 mm/39-calibre field howitzers that were originally produced by AB Bofors of Sweden, which is now BAE Systems.
- It is compatible with all **North Atlantic Treaty Organization (NATO)** 155 mm ammunition system.
- Referred to as 'desi Bofors', Dhanush is the first long-range artillery gun to be produced under the 'Make in India' initiative.
- A comparison chart of Technical features of Dhanush is as given below:

Feature	155mm FH77B BOFORS	DHANUSH
Gun Recording	Collimator & Director	Inertial Navigation System Based
Gun Laying	Manual	Auto Laying
MV Recording	Off Board	On Board
Ballistic Calculations	At Battery Command Post	On Board
Gun Computer	Not Available	Enhanced Tactical Computer
Hydraulics	Original	Modified for Auto Laying
Gun Laying	Mechanical-Hydraulics	Electronics-Hydraulics
Sighting	Panoramic / Day / Night	CCD Camera/TI/1RF
Communication	Radio Based	Compatible with SHAKTI and STAR V

Significance of Dhanush for India:

- **Difficult terrain:** Dhanush's lightweight (13 tonnes), makes it easy to mobilize in hilly terrain and remote areas.
- **Operational in all climatic conditions:** Being a versatile weapon, it can operate in all climatic conditions.
- **Enhancing the Army's power:** It is the first long-range artillery gun to be produced in the country. It will significantly enhance the Army's firepower.

Other important display:

- Other than Dhanush artillery, the **Anti-Satellite (ASAT) missile** also made an appearance for the first time.
 - With space becoming a vital dimension of any country's economic and military superiority, A-SAT (Anti-Satellite) weapons play a critical role in providing the necessary strategic deterrence.
 - In March last year, the Defence Research Development Organisation (DRDO) launched '**Mission Shakti**', India's first A-SAT mission and demonstrated its anti-satellite technology.
- The **K9 Vajra**, another indigenous gun system inducted in the Indian Army, was also seen at the parade this year.

- The short-span bridging system and the **Sarvatra Bridge system** was also displayed.
- Heavylift helicopter **Chinook** and attack helicopter **Apache**, both recently inducted in the Indian Air Force (IAF), also made a debut in the parade.
 - The Chinooks can airlift diverse loads in remote locations.
 - The Apache, on the other hand, is a versatile helicopter capable of firing air to air and air to ground missiles, rockets and front gun aided through fire control radar which can unleash havoc on the adversary.

NASA'S SPITZER SPACE TELESCOPE

◎ CONTEXT

- **NASA is ending its Spitzer Space Telescope mission, which observed the universe in infrared for 16 years.**

◎ ABOUT

- The **Spitzer Space Telescope (SST)**, formerly known as 'Space Infrared Telescope Facility' (SIRTF), is an **infrared space telescope**.
 - It was launched in 2003.
 - It retired on 30 January 2020.
- **Naming of the telescope:** Unlike most telescopes that are named after famous deceased astronomers, the new name for SIRTF was obtained from a contest open to the general public.
 - Keeping with NASA tradition, the telescope was renamed after its successful demonstration of operation.
- **Mission plan:** The planned mission period was to be 2.5 years, with an extendable period depending upon exhaustion of **on-board liquid helium supply**.
 - Spitzer was launched from Cape Canaveral SLC-17B aboard a Delta II 7920H rocket.
- **Shut down:** NASA is shutting down SIRTF; which was its long-lasting space observatories.
 - The telescope had been wandering through space for nearly two decades.
 - NASA has run out of money to fund the spacecraft.
 - In 2018 it had cost roughly \$12 million to operate the telescope.
 - In 2017, NASA made an unsuccessful attempt to search for private organizations to take over Spitzer.
- **Infrared Science Archive (IRSA):** All Spitzer data, from both the primary and warm phases, are archived at the Infrared Science Archive (IRSA).

Lyman Spitzer

- Earlier, the telescope was named in honour of **astronomer Lyman Spitzer**, who had promoted the concept of space telescopes in the 1940s.
 - He has been cited for his pioneering contributions to rocketry and astronomy.
- **Extra-terrestrial observatory:** In 1946 Spitzer described the advantages of an extra-terrestrial observatory, and how it could be realized with available or upcoming technology.

Functioning

- **Helium supply:** Liquid helium is needed to cool the telescope to very low temperatures.

- Low temperatures are needed in order to operate; otherwise most of the instruments will not be usable.
- **Orbit path:** It follows a heliocentric instead of geocentric orbit, trailing and drifting away from Earth's orbit at approximately 0.1 astronomical units per year (a so-called "earth-trailing" orbit).
- **Earth-trailing orbit:** The spacecraft is in more or less the same orbit as Earth, lagging behind the planet as it travels around the Sun.
 - Spitzer gets farther and farther from Earth each year and doesn't warm up from the heat coming off our planet.
 - That way it stays nice and cool.
 - For an extra layer of coolness, Spitzer is launched to space with a special liquid helium coolant, which helped to keep the spacecraft and its instruments at a frigid temperature of -459 degrees Fahrenheit (or -273 degrees Celsius).
- **Low temperatures:** Anything that emits a lot of heat also emits a lot of infrared light, which means there are plenty of sources that can come up in observations.
 - Earth's atmosphere is a source of infrared light, which makes it difficult to observe the Universe in infrared from the ground.
 - If the telescope gets too warm, the infrared light it emits can also be a source of confusion.
 - Hence, cold telescopes like Spitzer in space.
- **Primary mirror:** The primary mirror is 85 centimetres (33 in) in diameter, f/12, made of beryllium and was cooled to 5.5 K (-268 °C; -450 °F).
- **Three instruments:** The satellite contains three instruments that allow it to perform astronomical imaging.
 - Photometry from 3.6 to 160 micrometers.
 - Spectroscopy from 5.2 to 38 micrometers.
 - Spectrophotometry from 5 to 100 micrometers.
- **Infrared visibility:** Spitzer's charge has been to observe infrared light, a type of light that humans can't see, but can sense as heat.
 - Objects that are faint and super cold can still be seen by the infrared light that they produce, so Spitzer can show us things that might otherwise seem invisible.

Achievements of SIRT

- Spitzer took images of some of the **coldest and most ancient objects** in the Universe.
- It proven to be a remarkable tool for learning more about the **cosmos**.
- Helped discover **newly forming stars**, new rings of Saturn, and even an **entire solar system** around 40 light-years away.
- The telescope revealed a **new ring around the planet Saturn**.
- **Old stars and galaxies** were Spitzer's specialty, as well as **extra cold objects** that may be cold by human standards, but are actually warmer than the backdrop of our extra cold Universe.
- Spitzer could spot baby stars in the middle of forming, which are too faint to see but observable in infrared.
- The **North America Nebula** seen in visible and infrared light was taken from Spitzer Image.
- Despite being offline, Spitzer could still help scientists make **more discoveries in the future**.
- The entire archive of observations made by the telescope will be available to anyone who wants to use it.

- It's possible that **even more great finds** are hiding in these records.

Spitzer Warm Mission

- Spitzer operated in its "cold mission" for 5.5 years, well beyond the 2.5 years that NASA had hoped.
- But eventually, the spacecraft ran out of the liquid helium coolant, which prompted Spitzer's warm mission.
- The telescope warmed up, but it didn't warm up very much.
- It wasn't able to observe as much as it could before.
- Its biggest find during its warm phase: the discovery of an entire solar system of seven Earth-sized planets, orbiting a star called TRAPPIST-1.

TRAPPIST-1 Star

TRAPPIST-1 is a planetary system, located 12 parsecs away from the Solar system (39 light years), and is 12 times less massive than the Sun and only slightly larger than the planet Jupiter. There are at least seven rocky planets orbiting the star.

NASA observatories

- Spitzer is one of four space telescopes operated by NASA known as the Great Observatories.
 - Compton Gamma Ray Observatory
 - Chandra X-ray Observatory
 - Hubble Space Telescope.
 - Spitzer Space Telescope
- Combined, the four telescopes were meant to observe the Universe in as many wavelengths of light as possible — ranging from the visible light that we can see, to the kinds of light our eyes cannot register.
- **James Webb Space Telescope:** NASA's next great space observatory, the James Webb Space Telescope is in making.
 - Designed to study the Universe in infrared, the James Webb will be the most powerful space telescope ever made.
 - It will be able see back in time to the beginning of the Universe.

POLIO COMEBACK IN A NUMBER OF COUNTRIES: SHOULD INDIA BE WORRIED?

◎ CONTEXT

- In the last one year or so, polio has made a comeback in countries such as the Philippines, Malaysia, Ghana, Myanmar, China, Cameroon, Indonesia and Iran, mostly as vaccine-derived polio infection.

◎ ABOUT

- **The Polio disease**
 - Polio, or poliomyelitis, is a disabling and life-threatening disease caused by the poliovirus.
 - The virus spreads from person to person and can infect a person's spinal cord; causing paralysis (can't move parts of the body).
 - It can spread easily from person to person.
 - The World Health Organisation (WHO) aim is to eradicate polio completely and, if this

happens, it will be only the third disease to have been beaten in this way, after smallpox and rinderpest.

- Nigeria, Pakistan, and Afghanistan are the only three countries in which polio has not successfully been stopped.

Symptoms

- Most people who get infected with poliovirus will not have any visible symptoms.
- About 1 out of 4 people with poliovirus infection will have flu-like symptoms.
- It may include
 - Sore throat
 - Fever
 - Tiredness
 - Nausea
 - Headache
 - Stomach pain
- A smaller proportion of people with poliovirus infection will develop other, more serious symptoms that affect the brain and spinal cord.

- **Paresthesia** (feeling of pins and needles in the legs)
- **Meningitis** (infection of the covering of the spinal cord and/or brain) occurs in about 1 out of 25 people with poliovirus infection
- **Paralysis** (can't move parts of the body) or weakness in the arms, legs, or both, occurs in about 1 out of 200 people with poliovirus infection

Transmission

- Poliovirus is very contagious and spreads through person-to-person contact.
- It lives in an infected person's throat and intestines.
- Contact with the feces (poop) of an infected person.
- Droplets from a sneeze or cough of an infected person.

Vaccine

- There are two vaccines available to fight polio:
 - inactivated poliovirus (IPV)
 - oral polio vaccine (OPV)
- IPV consists of a series of injections that start 2 months after birth and continue until the child is 4 to 6 years old. The vaccine is made from inactive poliovirus. It is very safe and effective and cannot cause polio.
- OPV is created from a weakened form of poliovirus. It is low cost, easy to administer, and gives an excellent level of immunity. However, in very rare cases, OPV has been known to revert to a dangerous form of poliovirus, which is able to cause paralysis.

Which are the countries that have seen polio outbreaks in recent months?

- In December, 2019, the Ministry of Health in Malaysia announced the country's first case of polio since 1992.
- In September last year, the Philippines had declared an outbreak of polio.
- Both caused by vaccine-derived poliovirus type 2.

- Last month, the CDC published a list of Asian countries where polio outbreaks have been reported. These are Afghanistan, Burma (Myanmar), China, Indonesia, Malaysia, Pakistan, Papua New Guinea and the Philippines. Except for Afghanistan and Pakistan, all these countries are new entrants into the list.

Where does India stand?

- In January 2014, India was declared polio-free after three years on zero cases, an achievement that is widely believed to have been spurred by the successful pulse polio campaign in which all children were administered polio drops.
- Lessons from the programme were later incorporated in Mission Indradhanush to bump up India's immunisation campaign, and with great success.
- India introduced the injectable polio vaccine in the Universal Immunisation Programme. This was to reduce chances of vaccine-derived polio infection, which continues to happen in the country.

Polio-free V/S Eradication

- There are three variants of the polio virus, numbered 1 to 3.
- For a country to be declared polio-free, wild transmission of all three kinds has to be stopped.
- For eradication, cases of both wild and vaccine-derived polio infection to be reduced to zero.

POLYCRACK TECHNOLOGY

◎ CONTEXT

- **Indian Railways has commissioned the country's first governmental waste to energy plant in Mancheswar Carriage Repair workshop at Bhubaneswar in East Coast Railway.**

◎ ABOUT

- **The Waste-To-Energy Plant:**
 - This Waste to Energy Plant, a patented technology called **POLYCRACK**, is first-of-its-kind in Indian Railways in India.
 - While this is the first such plant over railways, it is the fourth in the country. The first plant is a small one with capacity of 50 kg/day set up by Infosys at Bangalore in 2011.
 - The second one is at Moti Bagh, Delhi in 2014 with a capacity of 50 kg per day. The third one set up at Hindalco in 2019 with 50 kg capacity per batch.
 - It is world's first patented heterogeneous catalytic process which converts multiple feed stocks into hydrocarbon liquid fuels, gas, carbon and water.
- **Important features:** Polycrack has the following advantages over the conventional approach of treating solid waste:
 - Pre-segregation of waste is not required to reform the waste. Waste as collected can be directly fed into Polycrack.
 - It has high tolerance to moisture hence drying of waste is not required.
 - Waste is processed and reformed within 24 hours.
 - It is an enclosed unit hence the working environment is dust free.
 - Excellent air quality surrounding the plant.
 - Biological decomposition is not allowed as the Waste is treated as it is received.
 - The foot print of the plant is small hence the area required for installing the plant is less when compared with conventional method of processing.
 - All constituents are converted into valuable energy thereby making it Zero Discharge Process.

- Gas generated in the process is re-used to provide energy to the system thereby making it self-reliant and also bring down the operating cost.
- There is no atmospheric emission during the process unlike other conventional methods except for combustion gases which have pollutants less than the prescribed norms the world over.
- Operates around 450 degrees, making it a low temperature process when compared with other options.
- Safe and efficient system with built-in safety features enables even an unskilled user to operate the machine with ease.
- Low capital cost and low operating cost.
- Fully automated system requires minimum man power.

How the waste will be processed?

- Polycrack Plant can be fed with all types of Plastic, Petroleum sludge, Un-segregated MSW (Municipal Solid Waste) with moisture up to 50%, E-Waste, Automobile fluff, Organic waste including bamboo, garden waste etc., and Jatropha fruit and palm bunch.
- Waste generated from Mancheswar Carriage Repair Workshop, Coaching Depot and Bhubaneswar Railway Station will be feeder material for this plant.
- The process is a closed loop system and does not emit any hazardous pollutants into the atmosphere.
- The combustible, non-condensed gases are re-used for providing energy to the entire system and thus, the only emission comes from the combustion of gaseous fuels.
- The emissions from the combustion are found to be much less than prescribed environmental norms.
- This process will produce energy in the form of Light Diesel Oil which is used to light furnaces.

INDIA HUMAN DEVELOPMENT SURVEY

◎ CONTEXT

- A new study by the India Human Development Survey (IHDS) suggests consumption growth may have moderated in recent years but may not have declined.

◎ ABOUT

- **NSS report:** Leaked portions National Sample Survey (NSS) on consumption expenditure suggested that consumption declined in real terms between 2011-12 and 2017-18.
 - The results were held back by the National Statistical Office (NSO).
 - NSO claims that there were serious data quality issues with the 2017-18 survey.
- **IHDS report:** A study by researchers from the National Council of Applied Economic Research (NCAER) and the University of Maryland show findings contrary to NSS.
 - Consumption spending has grown between 2011-12 and 2017.
 - Yet, the pace of growth is significantly lower (in real per capita terms) compared to the growth between 2004-05 and 2011-12.

IHDS study

- **Assessment of living standards:** IHDS provides an independent assessment of changes in living standards for a panel of 4828 households across Rajasthan, Bihar and Uttarakhand.
- **Per capita incomes grew:** Per capita incomes grew by 3.5% per annum between 2011-12 and 2017.
 - The same households experienced per capita income growth of 7.2% per annum between 2004-5 and 2011-12.

- **Per capita consumption expenditure grew:** Per capita consumption expenditure grew by 2.7% per annum over the same period.
 - The same households experienced and per capita consumption growth of 4% per annum between 2004-5 and 2011-12.
- **Increase in ownership of vehicles:** There is a consistent increase in ownership of vehicles over the two time-periods.
 - While ownership of cars and motorcycles rose 11 percentage points to 22 percent between 2004-05 and 2011-12, the same figure went up 10 percentage points between 2011-12 and 2017

Consumption spending

- Whether consumption spending has grown fast, grown slowly, or actually declined has huge **implications for economic policy-making**.
 - And in the absence of data, it is difficult to design a sound economic policy.
- **The spurt in consumption may not indicate a boom though.** This could well be due to catch up consumption for items families were unable to buy during the cash crunch created by demonetization.
 - Or it could be purchases taking place to avert paying Goods and Services Tax (GST).

Demonetisation impact

- **Demonetisation shock:** One of the challenges facing the interpretation of consumption data stems from short-term shock caused by demonetization.
- **Cash crunch:** The demonetization of high-value currency notes, implemented in November 2016, led to a tremendous cash crunch.
- **Low purchasing power:** It adversely affected the purchasing power of consumers and incomes of small businesses and informal workers.
- **Temporary in nature:** The cash crunch affected how much money households could spend, but it was temporary in nature.
 - Families made adjustments by reducing discretionary expenditure without affecting expenditure on food, health and education.

Caution

- **Small sample:** IHDS study is based on a relatively small sample of 4828 households across three states interviewed in 2004-5, 2011-12, and 2017.
- **No subsequent interviews:** Only 81% of the households initially interviewed in 2004-5 could be contacted for subsequent interviews.
- **More urban households lost:** While the sample was randomly drawn in 2004-5, more urban households were lost than rural households, making this a selective sample.
- **Small coverage:** Unlike NSS which collects detailed data on over 500 consumption items, the IHDS groups these items into 52 categories providing a somewhat rough estimate of consumption expenditure.

◎ CONCLUSION

- IHDS study indicates that India's growth story may not have collapsed altogether.
- Consumption has also witnessed a similar slowdown but it has not declined in absolute terms.
- The boom phase of 7-8% growth in household incomes was over by 2011-12 and has moderated since then.
- The study suggests modest growth, and highlights the need to ensure credible survey data to guide public policies.

MISCELLANEOUS

CURRENT AFFAIRS

INDIA'S FIRST UNDERWATER METRO

- Kolkata Metro Rail Corporation has nearly completed the country's first underwater metro project.
- The length of river crossing is 520 metres and the internal diameter of each tunnel is 5.55 metres. With this it will become the first underwater transportation tunnel in the country.
- The 520 m twin tunnel has been built 30 m below the riverbed, and it is estimated that those commuting from Howrah to Mahakaran metro station will need around a minute as the train is expected to pass this tunnel at a speed of 80km/hour.
- The underwater train will connect the Howrah and Mahakarn Railway Stations.

LALA LAJPAT RAI

- Lala Lajpat Rai's 155th birth anniversary celebrated on January 28, 2020.
- Born in Punjab on January 28 1865, Lala Lajpat Rai was a part of the famous 'Lal-Bal-Pal' trio. Bal Gangadhar Tilak and Bipin Chandra Pal were the other members.
- The United States of America: A Hindu's Impression, Arya Samaj, Young India, England's debt to India are some of the books written by the freedom fighter.
- In 1928, Rai led the non-violent march against the Simon Commission, set up by the British rulers. The slogan "Simon, go back!" became famous during the Independence movement
- In 1921, Rai founded the Servants of the People Society, which was a non-profit welfare organization, in Lahore.
- The society was shifted to Delhi after 1947. The organisation has many branches in India and is now known as Lok Sevak Mandal.

NATIONAL GIRL CHILD DAY

- Started by the Ministry of Women and Child Development and the Government of India in 2008, the National Girl Child Day is celebrated on January 24.
- The idea behind marking the day is to raise awareness about discrimination girls face, the support they need and equal access to education, and good health.

SHAMLAT LAND

- The state government of Punjab has recently approved an amendment to the Village Common Land (Regulation) Rules, 1964, allowing panchayats to sell shamlat land to industrial houses, entrepreneurs, businessmen, and companies for setting up micro, small and medium industrial units.
- Shamlat is one of three categories of common land in Punjab villages. 'Shamlat' land is owned by the village panchayat. Of the other two categories:
- 'Jumla mushtraka malkan' is land in a common pool made with villagers' personal contributions, and is managed by the panchayat.
- 'Gau charan', too belongs to the panchayat, and is for cattle grazing.
- Over time, however, all such lands have come to be known as shamlat land. Shamlat land is mainly used for cultivation, and is allotted for this through an open auction that is conducted by the Rural Development and Panchayat Department every year.
