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# CURRENT AFFAIRS

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## THE HINDU

### GS 2 : Polity, Governance, International Relations

#### 1. How and when MPs are suspended

Twelve Opposition members of the Rajya Sabha were suspended for the entire winter session for unprecedented acts of misconduct, unruly and violent behavior and intentional attacks on security personnel.

#### Decorum of the Parliament

- Freedom of speech is one of the most important privileges enjoyed by Members of Parliament.
- This freedom is circumscribed, however, by the necessity of maintaining order and decorum when debate is taking place.
- Thus discipline, decorum and dignity of Parliament are of paramount importance for the efficient functioning and success of parliamentary institutions.
- All over the world concerns have been expressed about the decline of discipline, decorum and dignity of legislative bodies.

#### Maintaining the Decorum

- MPs are required to adhere to certain rules of parliamentary etiquette.
- For example the Lok Sabha rulebook specifies that MPs are not to interrupt the speech of others, maintain silence and not obstruct proceedings by hissing or making running commentaries during debates.
- Newer forms of protest led to these rules being updated in 1989.
- Now, members should not shout slogans, display placards, tear up documents in protest, and play a cassette or a tape recorder in the House.
- Rajya Sabha has similar rules. To conduct the proceedings smoothly, the rulebook also gives certain, similar powers to the presiding officers of both Houses.

#### Power of Suspension

- The presiding officer of each House can direct an MP to withdraw from the legislative chamber for grossly disorderly conduct.
- The MP then has to remain absent from the proceedings of the House for the remainder of the day.

- The presiding officers can also “name” an MP for “persistently and wilfully obstructing the business” of the House.
- In such a case, usually, the **Parliamentary Affairs Minister** moves a motion for suspending the offending MP from the service of the House.
- The suspension can last until the end of the session.

### **Why are such disruptions frequent in the Parliament?**

- The reluctance and procrastination of the treasury benches to face discussions is the main cause for disorder in Parliament.
- In most cases, disorders in the House arise out of a sense of frustration felt by members due to lack of opportunities to make his point.
- They are perhaps easier to deal with. What is more difficult to tackle is planned parliamentary offences and deliberate disturbances for publicity or for political motives.

### **Way forward**

- Debate is central to democracy, and therefore there should be more debate and fewer disruptions.
- The majority party is responsible for governing and should take other parties into confidence.
- The Opposition should play a constructive role in Parliament and be allowed to put forward its views and express itself in a dignified manner.
- The presiding officers must help the Opposition in raising issues uncomfortable to the government.

## **2. Challenges before trade unions**

The article highlights the challenges before trade unions in comparison to the repeal of the farm laws.

### **Details:**

#### **Significant factors responsible for the farmers’ victory (repeal of farm laws):**

- Staying power, unwavering solidarity, political legitimacy, social prominence, and the ability to inflict harm on opponents all play a role in achieving favourable outcomes for the agitators in industrial or social confrontations.

- All of these circumstances characterised the farmers' agitation.
- The demonstrations had political validity since the administration approved the three laws without consulting farmers' organisations and without referring the measures to the Parliamentary Standing Committee (PSC).

### **Problems with the Codes**

1. The Labour Codes were approved with little debate and discussion because the Opposition parties boycotted the Lok Sabha at the time.
2. Contrary to the government's assertions, trade unions, particularly the Bharatiya Mazdoor Sangh (BMS), chastised the Central government for failing to have proper discussions with them on the Codes.
3. The lack of meaningful interaction runs counter to the Tripartite Consultation (International Labour Standards) Convention of 1976, which India adopted in February 1978.
4. Many sections in the Labour Codes rob workers of hard-won labour rights.
5. The drafting is poor and incomplete, and it is an insult to the country's collective legal and industrial relations intelligence.
6. The government made adjustments to significant disputed sections (hire and fire, contract labour) that were not supported by strong empirical data.
7. The government has watered down beneficial clauses (such as standing orders and inspections) and made issues overly complicated (industrial tribunal, minimum wages).
8. The act of keeping existing thresholds even after many decades (provident fund, medical insurance) and the act of liberalising thresholds pertaining to significant legal features (contract labour, hiring and fire, standing orders) will exacerbate informalization of the workforce.
9. Many substantive and procedural provisions have been left to the rule-making procedures, resulting in significant divergences as states construct various regulations on the same issue. These will cause havoc in the management of labour relations.

### **Why strikes are unsuccessful in comparison to Farmers' Agitation?**

1. The Central Trade Unions (CTUs) are split by their political allegiance. Again, hundreds of enterprise-based unions with little political awareness do not necessarily back the CTUs' agitations.
2. The alleged strikes resulted in symbolic actions of nominal discussions with the CTUs by the administrations of the United Progressive Alliance or the National Democratic Alliance. The reform mandate was never dead.
3. Though the CTUs have long been successful in preventing national labour law reforms, significant legislative and inspection reforms have occurred at the regional level. Furthermore, with the government's covert assistance,

firms have been able to gain labour flexibility that was previously unavailable to them under official legislation. As a result, even if the Labour Codes are abolished, they will have less impact.

4. Despite the fact that there are around 400 million unorganised and informal employees, they are dispersed and not organised in a cohesive manner to mount major political opposition and demand labour market security.
5. Industrial workers, unlike farmers, cannot organise longer and larger strikes because they would lose their employment and pay.
6. Global financial institutions such as the World Bank and the International Monetary Fund support and even advocate for a broader labour reform agenda that includes privatisation, flexible labour markets, and so on.

### **Conclusion:**

In light of these facts, unions must devise agitational techniques to harm the government's and economy's political image and prospects. They can also utilise the option of legally contesting the Codes, as has been done in the case of gig workers. The delay in adopting the Codes as a result of severe economic conditions or maybe owing to political causes might be a temporary consolation, if it exists at all.

### **3. National Court of Appeal**

The Chief Justice of India N.V. Ramana has urged the Government to seriously consider Attorney General K.K.Venugopal's suggestion to restructure the judiciary to include **four National Courts of Appeals**.

- He remarked that the judicial structure has remained stagnant since Independence and with four appellate courts, pendency will be remarkably reduced.

### **About the National Court of Appeal:**

The National Court Appeal with regional benches in Chennai, Mumbai and Kolkata is meant to act as final court of justice in dealing with appeals from the decisions of the High Courts and tribunals within their region in civil, criminal, labour and revenue matters.

- In such a scenario, a much-relieved Supreme Court of India situated in Delhi would only hear matters of constitutional law and public law.

### Why NCA is a good idea?

1. A National Court of Appeals makes sense, with the Supreme Court being burdened with cases of all kinds.
2. It will make geographical sense to have different benches to hear appeals. As of now, all appeals have to be heard in New Delhi, inconvenient for cases originating in other parts of the country.
3. A court of appeal can work as an excellent mechanism to sieve cases. If there are areas of law that are particularly unsettled and need clarification, the court of appeal can club them together and send these forward to the Supreme Court. Not only can a number of individual cases be disposed of but areas of law can also be settled and a clear precedent set.
4. If the Supreme Court only deals with crucial cases, the process will become streamlined and will save a lot of time and expense, for both litigants and the courts.

### Why is it a bad idea- arguments against?

1. It will not reduce the litigation. Apex courts are not clogged but subordinate courts are.
2. It will merely add another layer of adjudication.
3. It is constitutionally impossible because hearing of appeals is a basic structure (which will be affected).
4. It would be a boon only for advocates.
5. This suggestion would require an amendment in **Article 130 of the Constitution** which is impermissible as this would change the constitution of the Supreme Court completely
6. Stand of the Government.
7. NCA will add one more level of adjudication and will not help decrease litigation. It will only end up being a boon to advocates. It will mean more hardship to the litigant.

### What else can be done?

- Efforts should be to strengthen subordinate judiciary (high courts) so that proper justice can be dispensed with.
- The Supreme Court should discourage the usage of the High Court as a mere stepping-stone towards the end of judicial hierarchy.

#### 4. Per capita out-of-pocket health expenditure sees decline: report

- Fifth edition of the **National Health Accounts (NHA) estimates for India for 2017-18** has been released by Health Secretary.
  - The NHA report is produced by National Health Systems Resource Centre.

#### Details:

##### Reduced Out-of-pocket expenditure:

- **Out-of-pocket expenditure (OOPE) as a share of total health expenditure** and the per capita OOPE has come down.
  - As a share of total health expenditure, the OOPE has come down to 48.8% in 2017-18 from 64.2% in 2013-14.
- The decrease in OOPE can be attributed to the **increase in utilisation and reduction in cost of services in Government health facilities** and also the **increase in social security expenditure on health** in the form of health insurance programme and medical reimbursements made to Government employees.

##### Increased government expenditure on health:

- The report notes an **increase in the share of Government health expenditure in the total GDP of the country**. It has increased from 1.15% in 2013-14 to **35% in 2017-18**. This has helped increase the per capita Government health expenditure as well.
- Additionally, the share of Government Health Expenditure in total health expenditure has also increased over time. From being 28.6% in 2013-14, it has now increased to 40.8% in 2017-18.

## **GS 3 : Economy, Science and Technology, Environment**

### **5. What is a Tundra Satellite?**

Russia has successfully placed into orbit a military satellite believed to be part of the Kremlin's early warning anti-missile system. This launch could be delivering a Tundra satellite.

#### **Tundra Satellite**

- The Tundra or EKS (Edinaya Kosmicheskaya Sistema) series of satellites is the next generation of Russian early-warning satellites.
- The development of the EKS started in 2000.
- These satellites carry a secure emergency communications payload to be used in case of a nuclear war.
- They are launched on Soyuz-2-1b Fregat boosters into Molniya-orbits, inclined highly elliptical 12 h orbits.

#### **What are Tundra Orbits?**

- A Tundra orbit is a highly elliptical geosynchronous orbit with a high inclination (approximately  $63.4^\circ$ ), an orbital period of one sidereal day.
- A satellite placed in this orbit spends most of its time over a chosen area of the Earth, a phenomenon known as apogee dwell.
- It makes satellites particularly well suited for communications satellites serving high latitude regions.
- The ground track of a satellite in a Tundra orbit is a closed figure 8 with a smaller loop over either the northern or southern hemisphere.
- This differentiates them from Molniya orbits designed to service high-latitude regions, which have the same inclination but half the period and do not hover over a single region.

### **6. Drug trafficking in Afghanistan:**

Drugs have been a major source of revenue for the Taliban. With the collapse of Afghanistan's economy, the Taliban will rely heavily on drug money to maintain control over their cadres.



According to the latest **World Drug Report** of the United Nations Office on Drugs and Crime:

1. **Afghanistan** reported a 37% increase in the extent of land used for illicit cultivation of opium poppy during 2020 compared with the previous year.
2. The country accounted for 85% of the global opium production last year.
3. Despite the improved capabilities of the Afghan specialised units over the years, drug seizures and arrests had minimal impact on the opium-poppy cultivation.
4. Afghanistan is also turning out to be a major source for methamphetamine.

### **World Drug Report 2021:**

1. Around 275 million people used drugs globally in the last year. Over 36 million people suffered from drug use disorders.
2. Rise in the use of cannabis during the pandemic has been reported by most countries.
3. Non-medical use of pharmaceutical drugs has also been observed in the same period.
4. The latest global estimates say, about **5.5 per cent of the population between 15 and 64 years have used drugs at least once in the past year.**
5. Over 11 million people globally are estimated to inject drugs – half of them have Hepatitis C.
6. **Opioids** continue to account for the largest burden of disease-linked to drug abuse.

### **Indian Government has taken several policy and other initiatives to deal with drug trafficking problem:**

1. The '**Nasha Mukh Bharat Abhiyaan**' or a '**Drugs-Free India Campaign**' was flagged off on 15th August 2020 across 272 districts of the country found to be most vulnerable based on the data available from various sources.
2. Ministry of Social Justice & Empowerment has begun implementation of a **National Action Plan for Drug Demand Reduction (NAPDDR) for 2018-2025.**
3. The government has constituted **Narco-Coordination Centre (NCORD)** in November, 2016.
4. The government has constituted a fund called "**National Fund for Control of Drug Abuse**" to meet the expenditure incurred in connection with combating

illicit traffic in Narcotic Drugs; rehabilitating addicts, and educating public against drug abuse, etc.

## 7. Regulation, not ban: on cryptocurrencies

Government is set to introduce legislation that would, if passed, officially forbid Crypto-currencies.

- This is being done two years after drafting a Bill to ban cryptocurrencies.
- Eight years ago the RBI had issued its first advisory cautioning holders of virtual currencies about the potential financial and security risks

**What were the key factors which has made government to legislate on prohibiting such currencies?**

- Its concerns appear to be the risks associated with cryptocurrencies, including their potential use for money-laundering and financing of illegal activities.
- The risks investors and consumers face in dealing with these so-called currencies, given that they are neither ‘a store of value nor are they a medium of exchange’, and the threat they pose to financial stability are some of the key factors influencing government decision of banning cryptocurrency.
- PM had in a video address to the Sydney Dialogue earlier this month said: “It is important that all democratic nations work together on cryptocurrency and ensure it does not end up in wrong hands.
- No country across the world treats virtual currencies as legal tender

**Why the present stance of prohibition a challenging one?**

- There has been an **exponential jump in investment** in virtual currencies, especially after the Supreme Court last year struck down an RBI notification that banned financial entities from facilitating customer transactions related to virtual currencies.
- Industry estimates now peg cryptocurrency holdings in India at about **₹40,000 crore**, held by about **15 million investors**, and advertising trends show an upsurge in ads promoting brands associated with investment in virtual currencies.
- Earlier this year **El Salvador** – admittedly a small and heavily indebted nation – officially declared ‘**bitcoin**’ as **legal tender**, much has changed in the adoption of private virtual currencies worldwide.
- The **pandemic has fastened the global embrace** of all things digital and investment in the technologies enabling cryptocurrencies including blockchain, appear to be no different.

## How is Crypto currency regulation in other parts of world?

- Canada, Japan and Thailand permit the use of virtual currencies as a payment method, with some jurisdictions regulating them as a digital asset, and others as a commodity.
- Canada and the U.S. closely monitor virtual currency activity to ensure they do not run afoul of laws on financial crimes, with the former also earning tax revenue on transactions.

## Way Forward

- All things given, India should avoid the temptation to join China in prohibiting virtual currencies and instead **aim to tightly regulate their trading** through monitored exchanges and earn revenue.
- Simultaneously, it should expedite the RBI's pilot of the **Central Bank Digital Currency** so as to offer an alternative to cryptocurrencies.

**THE INDIAN EXPRESS**

**GS 2 : Polity, Governance, International Relations**

### 1. Dual Command System of Policing

The Dual Command System of Policing is being implemented in Bhopal and Indore.

#### 'Dual Command' System?

- Under the dual command system, the District Magistrate and the Superintendent of Police (SP) share powers and responsibilities in a district.
- Under this structure, the DM is entrusted with issuing arrest warrants, licenses while the SP has powers and responsibilities to investigate crime and make arrests.
- The system is designed to ensure a lower concentration of power and making the police more accountable to the DM at the district level.

## How does the commissionerate system empower the police?

- Under the police commissionerate system, the powers of both policing and magistracy are concentrated with the commissioner, who is directly accountable to the state government and the state police chief.
- The commissioner of police under the commissionerate system exercises the powers and duties of a District Magistrate.
- These powers are also available to any officer under the commissioner who is not below the rank of an Assistant Commissioner of Police.
- The police are also empowered to conduct externment proceedings and issue written orders to remove a person from their jurisdiction of the commissionerate for a maximum of two years.

## Need for such system

Various committees constituted to suggest police reforms have recommended implementation of a police commissioner system.

- **Rapidly urbanized cities:** This is for cities which have witnessed rapid urbanization and have a population of more than 10 lakhs.
- **Better accountability:** In the 6th report of the National Police Commission, it noted that as compared to police in districts, police in commissionerate in small areas had a better account of themselves.
- **Complex security threats:** It further pointed out that in urban areas, the changing dynamism and growing complexities of security threats required a swift and prompt response.
- **Quick responsivity:** Usually in large urban areas, law and order situations develop rapidly, requiring a speed and effective operational response from the police.
- **Avoiding delayed action:** In districts where the SPs and DMs do not have an understanding, orders to swiftly act are rarely issued in time which aggravates the situation.

## Issues with the system

- **Power-sharing:** There needs to be some clarity on what powers will be taken away from the revenue officers, collectors, SDMs and how it will impact the society before implementing it.

## 2. NIPUN Bharat Scheme

Detailed guidelines for the NIPUN Bharat Scheme have been developed which includes the codification of development goals and learning outcomes for age 3 to 9 years and Lakshya or Targets for Foundational Literacy and Numeracy starting from Balvatikato Grade III.

- The Department of School Education and Literacy launched the National Mission on Foundational Literacy and Numeracy called National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN Bharat) under the aegis of Centrally Sponsored Scheme of Samagra Shiksha.
- The mission aims to achieve **universal foundational literacy and numeracy in primary** classes.
- The Mission Guidelines lays down priorities and actionable agendas for States and UTs to achieve the goal of proficiency in foundational literacy and numeracy for every child by **grade 3**.

As per the NIPUN Bharat implementation guidelines, assessment during the foundational learning can be broadly categorized into two major areas, namely:

- **School Based Assessment (SBA)** through qualitative observation based on performance of the child in a multitude of experiences and activities. Various tools and techniques like anecdotal records, checklist, portfolio, and interactions (through a holistic 360-degree assessment with teacher, peers, family and friends) have been recommended to be used for assessment. Thus, the teachers at the foundational stage need to observe children as they play, work on their task, perform or interact among themselves, to assess children's interests and learning.
- **Large-scale standardised assessment** for assessment of the processes and functioning of the educational systems (such as NAS, SAS, and Third-Party Assessments). The assessment tools commonly used in conducting large scale assessment studies are multiple choice questions (MCQ) and constructed responses are usually avoided to bring in objectivity in the process. These assessments are a mechanism to gauge how well learning is happening in their state, districts, and blocks. In this regard, the National Achievement Survey (NAS) 2021 has been carried out for assessing learning outcome of children in Grade III.
- A specialized **National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA 3.0)** for the foundational literacy and numeracy covering about 25 lakh teachers at the primary level across all states and UTs has been launched in September, 2021.

### 3. Revising EWS Reservation Limit

The Union Government has decided to revisit the criteria set out for eligibility for its 10% reservation under the economically weaker sections (EWS) category within a month. The main criterion is a family income ceiling of ₹8 lakh.

- The decision came after the Supreme Court closely questioned it on how it arrived at the income figure, while considering a challenge to the implementation of 27% reservation for the OBCs and 10% for the EWS under the **all-India quota for medical admissions**.

#### How was EWS reservation introduced?

- The 10% reservation was introduced through the 103rd Constitution Amendment and enforced in January 2019.
- It added **Clause (6) to Article 15** to empower the Government to introduce special provisions for the EWS among citizens except those in the classes that already enjoy reservation.
- It allows reservation in **educational institutions, both public and private**, whether aided or unaided, excluding those run by minority institutions, up to a maximum of 10%.
- It also added **Clause (6) to Article 16 to facilitate reservation in employment**. The new clauses make it clear that the EWS reservation will be in addition to the existing reservation.
- The Constitution initially allowed special provisions only for the socially and educationally backward classes.
- When the previous Congress Government tried to introduce a 10% quota for the poorer among the general category during 19902, the Supreme Court struck it down in Indira Sahwnet Judgement, saying there is no provision in the Constitution for **reservation on the basis of an economic criterion**.
- Through this amendment, the Government **introduced the concept of 'economic backwardness' for a new class of affirmative action programmes** for those not covered by or eligible for the community-based quotas.

#### What are the criteria to identify the section?

- The main criterion is that those above an annual income limit of ₹8 lakh are excluded (income from all sources such as salary, business, agriculture and profession for the financial year prior to the application) of the family (applicants, their parents, siblings and minor children).
- Possession of any of these assets, too, can take a person outside the EWS pool:

- five or more acres of agricultural land
- A residential flat of 1,000 sq.ft. and above
- A residential plot of 100 square yards and above in notified municipalities
- A residential plot of 200 square yards and above in other areas.

### What are the court's questions about the criteria?

- The court has been intrigued by the income limit being fixed at ₹8 lakh per year, as it is the same figure for excluding the '**creamy layer**' from **OBC reservation benefits**.
- A crucial difference is that those in the general category, to whom the EWS quota is applicable, **do not suffer from social or educational backwardness**, unlike those classified as the OBC.
- Therefore, the question the court has raised is that when the OBC category is socially and educationally backward and, therefore, has additional impediments to overcome, "would it be arbitrary to provide the same income limit both for the OBC and EWS categories."
- In line with the Supreme Court's known position that any reservation or norms for exclusion **should be based on relevant data**, the Bench wants to know whether the criteria for the EWS were arrived at based on any study.
  - For instance, whether the **per capita income or GDP in all States**, or the difference in purchasing power in the **rural and urban areas**, were taken into account while a single income limit was formulated for the whole country.
- There are other questions as to whether any exercise was undertaken to derive the exceptions such as why the flat criterion does not differentiate between **metropolitan and non-metropolitan areas**.

### What is the current status of the EWS quota?

- The reservation for the EWS is being implemented by the Union Government for the second year now.
- Recruitment test results show that the category has a **lower cut-off mark** than the OBC, a point that has upset the traditional beneficiaries of reservation based on caste.
- The explanation is that **only a small number of people are currently applying** under the EWS category – one has to get an income certificate from the revenue authorities – and therefore the cut-off is low.
- However, when the number picks up over time, the cut-off marks are expected to rise.
- The EWS quota remains a controversy as its critics say it **reduces the size of the open category**, besides **breaching the 50% limit** on the total reservation.

## **GS 3 : Economy, Science and Technology, Environment**

### **4. Africa's Great Green Wall (GGW) Program**

Africa's Great Green Wall (GGW) program to combat desertification in the Sahel region is an important contribution towards combating climate change, Food and Agriculture Organization (FAO) said in a study.

#### **About GGW Program**

- The Great Green Wall project is conceived by 11 countries located along the southern border of the Sahara and their international partners, is aimed at limiting the desertification of the Sahel zone.
- Led by the African Union, the initiative aims to transform the lives of millions of people by creating a mosaic of green and productive landscapes across North Africa.
- The initial idea of the GGW was to develop a line of trees from east to the west bordering the Saharan Desert.
- Its vision has evolved into that of a mosaic of interventions addressing the challenges facing the people in the Sahel and the Sahara.

#### **Why was such project incepted?**

- The project is a response to the combined effect of natural resources degradation and drought in rural areas.
- It aimed to restore 100 million hectares of degraded land by 2030; only four million hectares had been restored between 2007 and 2019.
- It is a partnership that supports communities working towards sustainable management and use of forests, rangelands and other natural resources.
- It seeks to help communities mitigate and adapt to climate change, as well as improve food security.

### **5. Internet through LEO satellites:**

OneWeb is considering options to remove one of its broadband satellites from low Earth orbit after it failed following a software issue last year.



- So far, OneWeb has deployed 358 satellites at 1,200 kilometers through 11 launches.

### **Background:**

OneWeb has a partnership formed earlier this year with debris-removal startup Astroscale under **ESA's Sunrise program**.

### **About OneWeb's LEO internet programme:**

**OneWeb is a Low Earth Orbit (LEO) satellite communications operator.**

- Using LEO satellites OneWeb seeks to offer connectivity across **the UK, Alaska, Northern Europe, Greenland, the Arctic Seas and Canada**. The company expects the service to be switched on before the end of the year.
- It calls this programme the '**Five to 50**' service of offering internet connectivity to **all regions north of 50 degrees latitude**.

### **What are the benefits of LEO satellites based internet?**

1. LEO satellites are positioned around 500km-2000km from earth, compared to stationary orbit satellites which are approximately 36,000km away.
2. As LEO satellites orbit closer to the earth, they are able to provide stronger signals and faster speeds than traditional fixed-satellite systems.
3. Because signals travel faster through space than through fibre-optic cables, they also have the potential to rival if not exceed existing ground-based networks.

### **Challenges:**

LEO satellites travel at a speed of 27,000 kph and complete a full circuit of the planet in 90-120 minutes. As a result, **individual satellites can only make direct contact with a land transmitter for a short period of time** thus requiring massive LEO satellite fleets and consequently, a significant capital investment.

### **Criticisms of LEO satellites:**

1. **The balance of power has shifted from countries to companies** since most of these are private companies run projects. As a result, there are questions related to who regulates these companies, especially given the myriad of nations that contribute to individual projects.
2. **Complicated regulatory framework:**
3. Stakeholders in these companies are from various countries. Thus it becomes challenging to receive requisite licences to operate in each country.
4. Satellites can sometimes be seen in the night skies which creates **difficulties for astronomers** as the satellites reflect sunlight to earth, leaving streaks across images.
5. Satellites travelling at a lower orbit can also **interrupt the frequency of those orbiting above them.**
6. Those objects, colloquially referred to as **'space junk,'** have the potential to damage spacecraft or collide with other satellites.

#### **Potential:**

LEO satellite broadband is preferable in areas that cannot be reached by fibre and spectrum services. The target market will therefore be rural populations and military units operating away from urban areas.

#### **Are there any other similar projects?**

OneWeb's chief competitor is **Starlink**, a venture led by Elon Musk's SpaceX. Starlink currently has 1,385 satellites in orbit and has already started beta testing in North America and initiating pre-orders in countries like India.

#### **6. NASA's Perseverance rover**

NASA's **Perseverance Mars Rover** has made a video of the 13th flight of the **Ingenuity Mars Helicopter** sent by the agency.

#### **About Perseverance Rover:**

It was launched in 2020 aboard a United Launch Alliance Atlas V.

### Why is this mission significant?

1. It carried a unique instrument, **MOXIE or Mars Oxygen ISRU Experiment**: which for the first time manufactured molecular oxygen on Mars using carbon dioxide from the carbon-dioxide-rich atmosphere (ISRU means In Situ Resource Utilization: or the use of local resources to meet human needs or requirements of the spacecraft).
2. It carried **Ingenuity**, the first ever helicopter to fly on Mars.
3. It is **the planned first step to bring back rock samples from Mars** for analysis in sophisticated laboratories on Earth: with the goal of looking for biosignatures: or signatures of present or past life.

### These are some of the key mission objectives:

1. Look for signs of ancient microbial life.
2. Collect Martian rock and dust samples for later return to Earth.
3. Deliver an experimental helicopter.
4. Study the climate and geology of Mars.
5. Demonstrate technology for future Mars missions.

### What is the reason for the near-term interest in Mars?

1. Mars is located in the very near backyard (about 200 million km away).
2. It is a planet that humans can aspire to visit or to stay for a longer duration.
3. Mars had flowing water and an atmosphere in the distant past: and perhaps conditions to support life.
4. It also has implications for commercial travel.

## 7. Indian Bio-Jet Fuel Technology

CSIR-IIP Dehradun's home-grown technology to produce bio-jet fuel has been formally approved for use on military aircraft of the Indian Air Force (IAF).

### Key Takeaways

- Biojet fuel is prepared from "non-edible tree borne oil" and is procured from various tribal areas of India.

- This fuel is made from Jatropha oil sourced from Chattisgarh Biodiesel Development Authority (CBDA) and then **processed at CSIR-IIP**, Dehradun.
- Generally, it is made from vegetable oils, sugars, animal fats and even waste biomass, and can be used in existing aviation jet engines without modification.
- **Jatropha oil** is suitable for conversion to jet fuel. This biojet fuel has received wide acceptance from the airline industry.
- Currently, **Aviation Sector contributes to 2% of global greenhouse gas emissions**. Commercial biofuel flights will help Indian Airlines in achieving the International Air Transport Association (IATA) target for fuel efficiency and carbon emission.
- The technology, developed by the Indian Institute of Petroleum (CSIR-IIP), a constituent laboratory of the Council of Scientific and Industrial Research, has undergone evaluation tests and trials over the last three years.
- Earlier on 26 January 2019, an AN-32 aircraft, filled with blended bio-jet fuel, had flown over Raj Path at New Delhi during the Republic Day celebration

### What are Biofuels?

- Biofuels are fuels manufactured from biomass.
- Biomass resources are the biodegradable fraction of products, wastes and residues from agriculture, forestry and related industries as well as the biodegradable fraction of industrial and municipal wastes.
- Categorisation of Biofuels
  - **First Generation:** Produced from food crops like maize, corn, sugar cane, rapeseed, palm, and soybean into ethanol and biodiesel, using a similar process to that used in beer and wine-making.
  - **Second Generation:** Produced from non-food crops and organic agricultural waste, which contain cellulose.
  - **Third Generation:** Derived from algae. Also known as green hydrocarbons
  - **Fourth Generation:** Produce sustainable energy as well as capture and store CO<sub>2</sub> by converting biomass materials, which have absorbed CO<sub>2</sub> while growing, into fuel.

### Prelims Practice Questions

1. Which of the following best describes Project Swadesh:

- A It is a database launched for managing neurological disorders.
- B It is a campaign launched for promoting education and employment in India to prevent brain drain.
- C It is a science and technology workshop launched for Overseas Citizens of India (OCI).
- D It is a scheme launched for the elderly to provide tourism facilities within India.

Answer :A

Explanation

- Recently, the **Department of Biotechnology (DBT)-National Brain Research Centre (DBT-NBRC) has developed Project SWADESH, for managing Neurological disorders.**
  - It is the **first large-scale multimodal neuroimaging database** designed specifically for the Indian population with big-data architecture and analytics for various disease categories under one platform.
  - It proposes a big-data architecture that manages and analyzes six modules, namely **neurodegenerative** [AD, Mild Cognitive Impairment (MCI), and **Parkinson's disease (PD)**], **neuropsychiatric** (schizophrenia and bipolar disorder), **neurodevelopmental** (autism and epilepsy), **Covid-19-related disorders, other disorders, and healthy subjects.**
- **Hence, option A is correct.**

2. Which one of the following National Parks lies completely in the temperate alpine zone?

- a. Manas National Park
- b. Namdapha National Park
- c. Neora Valley National Park
- d. Valley of Flowers National Park

Answer: d

Explanation:

- Valley of Flowers National Park is situated in the state of Uttarakhand. It is situated at an altitude of about 3352 to 3658 metres above sea level and so lies completely in the temperate alpine zone.

**3. Consider the following statements regarding the SAFAR (System of Air Quality and Weather Forecast and Research)?**

1. The initiative is introduced by the Ministry of Environment, Forest and Climate Change.
2. It monitors weather parameters like temperature, UV radiation, and solar radiation.

Which of the statements given above is/are correct?

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

Answer :B

Explanation

- **SAFAR (System of Air Quality and Weather Forecast and Research)** is a national initiative introduced by the **Ministry of Earth Sciences (MoES)** to measure the air quality of a metropolitan city, by measuring the overall pollution level and the location-specific air quality of the city. **Hence, statement 1 is not correct.**
  - The system is indigenously developed by the Indian Institute of Tropical Meteorology (IITM), Pune and is operationalized by the India Meteorological Department (IMD).
  - It is an integral part of **India's first Air Quality Early Warning System** operational in Delhi.
- It monitors all weather parameters like **temperature, rainfall, humidity, wind speed, and wind direction, UV radiation, and solar radiation. Hence, statement 2 is correct.**
- The **World Meteorological Organization** has recognized SAFAR as a prototype activity on the basis of the high-quality control and standards maintained in its implementation.
- **Pollutants Monitored:**
  - **PM2.5, PM10, Ozone, Carbon Monoxide (CO), Nitrogen Oxides (NOx), Sulfur Dioxide (SO2), Benzene, Toluene, Xylene, and Mercury.**

**4. The famous Yelagiri Hills lie in which of the following states?**

- a. Tamil Nadu
- b. Kerala
- c. Karnataka
- d. Telangana

**Answer: a**

**Explanation:**

- Yelagiri is a hill station in the Indian state of Tamil Nadu. It is situated in the district of Vellore close to city Krishnagiri. Yelagiri has plenty of spectacular green valleys, rose-gardens, and orchards and is fast emerging as a popular tourist destination.

**5. Consider the following statements with regards to the Minimum Support Price:**

1. It was first introduced in 1965 to encourage farmers to grow foodgrains.
2. At present, it covers 23 crops.
3. No MSP is offered for pulses in India.

**Choose the correct statements:**

- a. 1 & 2 only
- b. 2 & 3 only
- c. 1 & 3 only
- d. All of the above

**Answer: a**

**Explanation:**

- The MSP system was introduced in 1965 to encourage farmers to grow foodgrains.
- It was initially declared for paddy and wheat, but later extended to 23 crops, including 7 cereals (paddy, wheat, maize, sorghum, pearl millet, barley and ragi); 5 pulses (gram, tur, moong, urad, lentil); 7 oilseeds (groundnut,

rapeseed-mustard, soyabean, seasmum, sunflower, safflower, nigerseed); and 4 commercial crops (copra, sugarcane, cotton and raw jute).

**6. Which of the following thematic areas are included in the BRICS Innovation Cooperation Action Plan (2021-24)?**

1. Antimicrobial Resistance (AMR)
2. Big Data Analytics
3. Food Industry
4. Nanophotonics

Select the correct answer using the code given below:

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

Answer :D

Explanation

- BRICS member countries have agreed to a **Science, Technology and Innovation (STI)-led BRICS Innovation Cooperation Action Plan (2021-24)** proposed by India during the 12<sup>th</sup> meeting of the grouping's science & technology steering committee.
  - It will **facilitate sharing of experiences** of each other's innovation ecosystem and networking of innovators and entrepreneurs.
- **Thematic areas included:**
  - Transient Astronomical Events and Deep Survey Science, **Antimicrobial Resistance (AMR), Big Data Analytics**, Innovation and Entrepreneurship on Photonic, **Nanophotonics**, and Metamaterials for Addressing Biomedicine, Agriculture, **Food Industry**, Energy Harvesting Issues etc. **Hence, option D is correct.**
- In accordance with the plan BRICS Ministers and their representatives endorsed the **BRICS Science, Technology and Innovation Calendar of Activities 2020-2021.**



## **Mains Practice Questions**

**1Q. Indian constitution is federal in nature, but unitary in soul. Examine (150 words)**

### **Approach**

- Write the meaning of federal and unitary system of government in the introduction
- Describe the federal and unitary characteristics of Indian constitution.
- Examine how the centre government is more powerful than states.

**2Q. Discuss the advantages of river linking projects and its possible impact on the environment. (150 words)**

### **Approach**

- Introduce by explaining about the river interlinking project.
- Discuss advantages of the project.
- Enumerate possible impacts of the project on the environment.