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GS 2 : Polity, Governance, International Relations

1. A road map for tolerance

Context:

- March 21 marks the **International Day for the Elimination of Racial Discrimination**.

Background:

Forms of racism:

- Current forms of racism and discrimination are **complex and often covert**.
- The anonymity of the Internet has allowed **racist stereotypes** and **inaccurate information to spread online**. At the onset of the pandemic, traffic to hate sites and specific posts against Asians grew by 200% in the U.S. In India and in Sri Lanka, social media groups and messaging platforms were used to call for social and economic boycotts of religious minorities, amid false information accusing them of spreading the virus.
- **Structural forms of discrimination**, including micro-aggressions and everyday indignities, remain widespread.
- The use of new technologies and artificial intelligence in security has raised the spectre of **'techno-racism'**.

Consequences of racism:

- Racial discrimination, beyond being a **breach of human rights**, has **harmful effects on human health and well-being**, and risks **wider disruptions to social cohesion**.
- Prejudiced attitudes and discriminatory acts, whether subtle or overt, **aggravate existing inequalities in societies**.
- A study published by The Lancet drew attention to the social dimension of the COVID-19 pandemic and the greater vulnerability of ethnic minorities, who have been disproportionately affected.
- The World Health Organization has cautioned on the dangers of profiling and stigmatising communities that can lead to fear and the subsequent concealment of cases and delays in detection.
- Racial discrimination deepens and fuels inequality in our societies.

UNESCO's role in anti-racism movement:

- UNESCO has been playing a critical role in the anti-racism movement through its actions against racism through **education, the sciences, culture, and communication**. It has been promoting intercultural dialogue and learning.
- UNESCO's headquarters in Paris recently hosted a **Global Forum against Racism and Discrimination**. The Forum gathered policymakers, academics, and partners to initiate a new multi-stakeholder partnership on anti-racism.

Way forward:

- The new manifestations of racism and discrimination call for renewed commitments to mobilise for equality.
- Racism will not be overcome with mere professions of good faith but must be combatted with **anti-racist action**.
- There is a need for a **multisectoral effort** to tackle the root causes of racism through anti-racist laws, policies and programmes.
- A global culture of tolerance, equality and anti-discrimination needs to be cultivated. There is the need to **eradicate harmful stereotypes and foster tolerance**.

Quote:

- Former UN Secretary-General Kofi Annan: "Our mission is to confront ignorance with knowledge, bigotry with tolerance, and isolation with the outstretched hand of generosity. Racism can, will, and must be defeated."

2. A good start

Context:

- The recent notification of the **National Policy for Rare Diseases, 2021**.

Background:

Rare diseases:

- Rare diseases are broadly defined as diseases that infrequently occur in a population, and **three markers** are used – **the total number of people with the disease, its prevalence, and the availability/non-availability of**

treatment options. WHO defines a rare disease as having a frequency of less than 6.5-10 per 10,000 people.

- As per an estimate, there are 7,000 known rare diseases with an estimated 300 million patients in the world; **70 million are in India.**
- Rare Diseases include inherited cancers, autoimmune disorders, congenital malformations, Hirschsprung's disease, Gaucher disease, cystic fibrosis, muscular dystrophies and Lysosomal Storage Disorders (LSDs).

Significance:

- The National Policy on Rare Diseases is a good step forward based on the following aspects.

Principle of inclusion:

- The National Policy for Rare Diseases 2021 is pegged on the principle of inclusion of every single citizen.
 - It is **binding on a welfare state to secure the wellbeing of every single citizen**, particularly those unable to help themselves, irrespective of whether they constitute a critical mass or not.

Financial support:

- The policy offers **financial support for the one-time treatment of up to Rs. 20 lakh and also introduces a crowdfunding mechanism.**
- Up until now, it was mainly patient support groups that used to work towards drumming up funding assistance for the treatment of rare diseases.

Early detection:

- The policy provides for early detection. Early detection is critical for management of the rare diseases.

Concerns:

- As per the Policy, **diseases such as LSD** for which definitive treatment is available, but costs are prohibitive, have been categorised lower and hence would qualify for **lower support from the government.**
- No funding has been allocated for the immediate and lifelong treatment needs, for therapies already approved by the Drugs Controller General of India.

Way forward:

Fund support:

- The Centre can set aside a substantial corpus to fund life-saving treatments, even as it rolls out the policy. **Fund support from the government is vital for the continual treatment of those with rare diseases.**
- The central government can extend the **cost-sharing agreements** that it has worked out with Kerala, Tamil Nadu and Karnataka, with other States too, which will help it reduce its costs by half.

Medical efforts:

- There is a need to **support the development of and commercialisation of drugs for treatment, and improve funding for research on rare diseases.**

3. 25,586 crore paid out under loan scheme

Context:

Banks have sanctioned more than 25,000 crore to over 1.14 lakh accounts under the Stand-Up India Scheme.

Stand Up India Scheme:

- The Stand-Up India scheme was launched by the government to promote entrepreneurship among women, Scheduled Castes (SC) & Scheduled Tribes (ST).
- The scheme was launched on 5th April 2016.
- As per the scheme, bank loans between ₹10 lakh and ₹1 crore are routed to at least one SC or ST borrower, and at least one woman borrower, by each branch of the scheduled commercial banks.

Details:

- Official data suggest that women-led enterprises have dominated the sanctions so far under the scheme.
- The scheme has now been extended till 2025

4. The Kerala Model at the crossroads

Context:

- The article evaluates the Kerala Model of economic development.

Background:

Kerala Model of economic development:

- The 'Kerala Model' is based on the **redistributive principle of growth** where there is a **marked emphasis on development over growth**. The state interventions which rely on widespread **participation of people** are aimed at improving the people's material conditions of living.

Concerns:

- Some economists have argued that the slow-growing State would not have the money to continue financing its welfare programmes.
 - Economic stagnation in the 1970s and 1980s led many observers to predict the collapse of the Kerala model.

Counter arguments:

Significant economic growth:

- As against the popular misconception that Kerala has not had much economic growth, the author argues that Kerala has witnessed observable growth.
- The author points out a significant growth in agricultural incomes, services sector, secondary sector (which includes manufacturing, construction, etc.). While Kerala's per capita income was almost 10% lower than the all-India figure in 1989-90, it was 65% higher than the all-India figure in 2019-20.

Social development:

- All along, Kerala's education and health indicators have continued to improve, and its social security programmes have continued to expand.
- **Kerala has registered impressive achievements in human development in the area of health and education.**

Investments in infrastructure:

- There have been major investments by the state in infrastructure development.

- Apart from schools and hospitals, KIIFB funding is being used to build economic infrastructure such as roads, bridges, industrial parks, the massive public sector Internet project K-FON, or the Kerala Fibre Optic Network, and TransGrid 2.0 – a project to improve the power transmission network in the State.

Kerala Infrastructure Investment Fund Board (KIIFB):

- Kerala has been investing in infrastructure development through the **Kerala Infrastructure Investment Fund Board (KIIFB)**. The KIIFB has been a major funding arm of the Kerala government.
- The KIIFB raised funds from the financial market and made them available to the government to finance infrastructure projects. Repayment of the loans is ensured by the government legally committing to pay a portion of its revenue from the motor vehicle tax and the petroleum cess to the KIIFB every year.

Better prepared:

- The real risks to the state's economy are likely to be associated with **shocks to the economy** – such as natural disasters (floods), pandemic-induced worldwide recession, job losses in the West Asian countries where a lot of Keralites work, or contractionary fiscal policy by the central government – which could adversely impact economic growth.
- Even then, Kerala will be better prepared to face the eventualities as it has better infrastructure, and a better-educated, more highly skilled and healthier workforce.

Conclusion:

- The **role of planning and social oversight in the economic development of the State holds significance** and it needs to expand further.

GS 3 : Economy, Science and Technology, Environment

5. Over 41 dead in Indonesia flash floods

Context:

According to Indonesia's disaster relief agency, landslips and flash floods from torrential rain in eastern Indonesia has killed at least 41 people and displaced thousands.

What are Flash Floods?

- A flash flood is a rapid flooding of low-lying areas: washes, rivers, dry lakes and depressions.
- It may be caused by heavy rain associated with a severe thunderstorm, hurricane, tropical storm, or meltwater from ice or snow flowing over ice sheets or snowfields.
- Flash floods may also occur after the collapse of a natural ice or debris dam, or a human structure such as a man-made dam.
- Flash Floods are highly localized events of short duration with a very high peak and usually have less than six hours between the occurrence of the rainfall and peak flood.

Concerns:

- Flash floods induce severe impacts in both the built and the natural environment. Especially within urban areas, the effects of flash floods can be catastrophic and show extensive diversity, ranging from damages in buildings and infrastructure to impacts on vegetation, human lives and livestock.
- There is a general lack of flash flood warning capabilities and capacities of the nations across the world.
- In 2020, India launched Flash Flood Guidance services for South Asian countries – India, Bangladesh, Bhutan, Nepal and Sri Lanka – to issue impact-based forecasting of floods, which are very sudden and of short duration, at watershed and also city level.
- The Flash Flood Guidance is a robust system designed to provide the necessary products in real-time to support the development of warnings for flash floods about 6- 12 hours in advance at the watershed level with a resolution of 4kmx4km for the Flash Flood prone South Asian countries.
- The guidance for flash floods in the form of threats (6 hours in advance) and risks (24 hours in advance) will be provided by the Regional Centre to the National Meteorological and Hydrological Services, National and State Disaster Management Authorities and all other stakeholders for taking necessary mitigation measures to reduce the loss of life and property.

6. Another batch of Rafale jets to fly in by mid-May

Context:

- India will receive another 8 to 9 Rafale jets from France by mid-May 2021 completing the first squadron of the fighters in the Indian Air Force (IAF).

What was the need of Rafale for India?

- The IAF has historically been one of the best-equipped forces in the region, but has seen its advantage, particularly quantitative, against China and Pakistan narrow dramatically over the past two-odd decades.
- The IAF is today faced with the **twin tasks of having to acquire technological superiority** over its two adversaries, as well as **mustering enough aircraft to head off any collusive misadventures**.
- So to withstand the pressure from Pakistan and China in case of breakout of war and to increase the number of Jets in operation this was a necessity.

Origin of Rafale

- Rafale is a French word meaning “gust of wind” and is a **French-origin Delta winged, twin-engine multirole fighter aircraft** manufactured and designed by Dassault Aviation.
- Rafale is a **Medium Multi-Role Combat Aircraft (MMRCA)** that is said to boost India’s air dominance exponentially, currently safeguarded by fighter jets like Russia made Sukhoi Su-30MKI and MiG 29, along with French Mirage-2000 and indigenously built HAL Tejas
- The initial bidders were Lockheed Martin’s F-16s, Boeing’s F/A-18s, Eurofighter Typhoon, Russia’s MiG-35, Sweden’s Saab’s Gripen and Dassault’s Rafale.
- All aircraft were tested by the IAF and after careful analysis on the bids, two of them – Eurofighter and Rafale – were shortlisted.
- Dassault bagged the contract to provide 126 fighter jets as it was the lowest bidder and the aircraft was said to be easy to maintain. After Rafale won the contract, the Indian side and Dassault started negotiations in 2012.

Specifications

- The Rafale is a modern fighter jet known for its agility, speed, weapon holding capacity and attack capability. The Dassault Rafale has a **delta wing design and is capable of g-forces** as high as 11g (in case of emergency). The Rafale is available in both single and dual seating cabin (India ordered 28 single and 8 dual seater Rafale).

- The Rafale is powered by two SNECMA M88 engines, each capable of providing up to 50 kilonewtons (11,000 pounds-force) of dry thrust and 75 kN (17,000 pounds-force) with afterburners. The engines push the Rafale to attain a high speed of 1.8 Mach (1912 kmph) and a range of more than 3700 km with 3 drop tanks.
- Dassault has also loaded the Rafale with a Martin-Baker Mark 16F “**zero-zero**” **ejection seat**, capable of operation at zero speed and zero altitude.
- In terms of weapons, the Rafale can be equipped with air-to-air missiles, air-to-ground missiles, and air-to-surface missiles along with Nuclear weapons. For avionics, the Rafale is also equipped with AESA radar, SPECTRA Electronic Warfare System and IRST System.
- The Rafale jets will come with various India-specific modifications, including Israeli helmet-mounted displays, radar warning receivers, low band jammers, 10-hour flight data recording, infra-red search and tracking systems among others.
- The Indian government is paying top dollar to Dassault to not only modify and certify the aircraft to an exacting specification but also to **stand by its reliability in service – something that has never been done with a fighter aircraft in Indian service to date.**

Countries that are operating Rafale

- The French Air Force first operational Rafale squadron, EC 1/7 “Provence”, was stationed at Saint-Dizier airbase in 2006.
- Along with the French Military including Air Force and Navy, countries like **Egypt and Qatar** are the current operators of the Rafale MMRCA

Where will they be deployed?

- The aircraft is capable of carrying a range of potent weapons and missiles and the first squadron of the aircraft will be positioned at **Ambala air force station**, considered one of the most strategically located bases of the IAF. The Indo-Pak border is around 220 km from there.
- The second squadron of Rafale will be stationed at **Hasimara base in West Bengal.**

Key Challenges

- Unfortunately, air power is an expensive business, and in a scenario **where manpower and running costs consume the lion’s share of the budget**, the principal impediment to a comprehensive renewal of the IAF is a financial one.

- As such, lower capital costs and lower sustainment costs have to go hand in hand – it is **simply not enough to argue that expensive western aircraft make up for their high upfront costs over lifetime sustainment.**
- Enter the **indigenous option – HAL’s Tejas Light Combat Aircraft.** Domestically produced and paid for mostly in rupees, it is not only fiscally attractive but also certainly good enough to replace the IAF’s ageing MiG-21 and MiG-27 fleet as it stands.
 - However, non-compliance with a 1980s Air Staff Requirement and low production rates continue to raise questions about the type’s future.
 - As reported by the Comptroller and Auditor General of India in May 2015, the Tejas Mark-I has over **53 shortfalls that reduce its operational capability.**
 - Tejas failed to meet operational requirements in various areas including the power to weight ratio, sustained turning rate, maximum speeds at low altitudes, AoA range, and weapon delivery profiles.
- Notwithstanding these concerns, the **IAF has committed to a large number of an upgraded evolution of the type incorporating a range of modern improvements** such as an active array radar as well as fixes to problems identified early on, such as lack of a self-protection jammer.
 - If this variant can be delivered cheaply and quickly, it will arrest the dramatic hollowing out of the IAF that is anticipated to take place around 2024-25, by which time some 100 aircraft could be withdrawn from service.

Budgetary support

- In the middle of the French import and the domestic LCA sits a fledgling tender for a third type of fighter – a **foreign design to be made in India under the controversial Chapter 7 of the 2016 Defence Procurement Procedure (DPP).**
- Where the **budgetary support for a programme of 114 modern fighters, and indeed the ability of the country to establish and sustain two fighter manufacturers, will come from is not clear.**
- Defence budgets have remained effectively flat for a long time, and with the **economy flagging, an increase in capital outlay is not likely.**
- Procurement funding will also necessarily have to compete with **funding for research and development** for upcoming domestic projects such as the redesigned LCA Mk.2 and fifth-generation Advanced Medium Combat Aircraft (AMCA).
- Finally, even if all near-term procurements proceed to plan, there is still a ‘ramp up’ period to contend with – the **training of air and ground crew, building of infrastructure and actually operationalising** new types will pose their own challenges that will slow the effective rate of force accretion.

In the neighbourhood

Meanwhile, the **Pakistan Air Force (PAF)** and **China's People's Liberation Army Air Force (PLAAF)** are not standing still.

- The **PAF** is saddled with a number of legacy issues that are similar to the IAF. However, with the **Sino-Pak JF-17** available cheaply and in numbers, along with access to a wide range of Chinese weaponry developed for the type, Pakistan is well placed to recapitalise a significant proportion of its air force with a relatively modern aircraft.
 - Development and production of the **JF-17 can be extended to replace the PAF's Mirage fleet** at short notice as well, if so required. And as **China ramps up its fifth-generation aircraft programmes** and unit costs drop, there is little doubt these platforms will also find their way to Pakistan.
- The **PLAAF's** growth has been well documented. And **in addition to a fourth and fifth generation** re-equipment programme, the service benefits from a large number of force multipliers, including tankers, surveillance and control aircraft, and long-range bombers.
 - While primarily oriented toward taking on the U.S. military in the Pacific and beyond, China's formidable **aerial arsenal cannot be ignored in New Delhi.**

Conclusion

- So as the IAF gets ready to welcome its new acquisitions, it should be clear about the challenges it faces at a time when India's strategic and operational environment is undergoing a dramatic transformation.
- Ad hocism should give way to strategic thinking if these challenges are to be effectively met.

7. PSU banks may have to take 2,000 crore hit

What's in News?

The public sector banks may have to bear a burden of ₹1,800 crore-₹2,000 crore arising out of a recent Supreme Court judgment on the waiver of compound interest on all loan accounts which opted for a moratorium during March-August 2020.

- The judgment covers loans above ₹2 crore as loans below this got blanket interest on interest waiver in November 2020.

- The compound interest support scheme for loan moratorium cost the government ₹5,500 crore during 2020-21 and the scheme covered all borrowers, including the prompt ones who did not opt for the moratorium.
- Also, the RBI had announced a moratorium on payment of instalments of term loans falling due between March 1 and May 31, 2020. It was later extended to August 31, 2020.
- Banks would provide compound interest waiver for the period a borrower had availed the moratorium.

THE INDIAN EXPRESS

GS 2 : Polity, Governance, International Relations

1. National Rare Disease Policy 2021

Why in News

Recently, the Ministry of Health and Family Welfare has approved the **National Rare Disease Policy 2021**.

- Earlier, the **Delhi High Court had directed the Centre** to set up a Rare Diseases Committee, a Rare Diseases Fund and to finalise and notify the National Health Policy for Rare Diseases on or before 31st March, 2021.

Key Points

- **Aim:**
 - To increase **focus on indigenous research and local production of medicines**.
 - To **lower the cost of treatment** of rare diseases.
 - To **screen and detect rare diseases early at early stages**, which will in turn help in their prevention.
- **Major Provisions of the Policy:**
 - **Categorization:**
 - The policy has categorised rare diseases in **three groups**:
 - **Group 1:** Disorders amenable to **one-time curative treatment**.
 - **Group 2:** Those requiring **long term or lifelong treatment**.

- **Group 3:** Diseases for which **definitive treatment is available** but challenges are to make optimal patient selection for benefit, very high cost and lifelong therapy.
- **Financial Support:**
 - Those who are suffering from rare diseases listed under Group 1 will have the financial support of up to Rs. 20 lakh under the umbrella scheme of **Rashtriya Arogya Nidhi**.
 - **Rashtriya Arogya Nidhi:** The Scheme provides for **financial assistance to patients, living below poverty line (BPL)** and who are suffering from major life threatening diseases, **to receive medical treatment at any of the super specialty Government hospitals / institutes**.
 - Beneficiaries for such financial assistance would not be limited to BPL families, but extended to about 40% of the population, who are eligible as per norms of **Pradhan Mantri Jan Arogya Yojana**, for their treatment in Government tertiary hospitals only.
- **Alternate Funding:**
 - This includes **voluntary crowdfunding treatment** by setting up a **digital platform** for voluntary individual contribution and corporate donors to voluntarily contribute to the treatment cost of patients of rare diseases.
- **Centres of Excellence:**
 - The policy aims to strengthen tertiary health care facilities for prevention and treatment of rare diseases through designating eight health facilities as '**Centres of Excellence**' and these will also be **provided one-time financial support of up to Rs. 5 crore** for upgradation of diagnostics facilities.
- **National Registry:**
 - A national **hospital-based registry of rare diseases will be created** to ensure adequate data and comprehensive definitions of such diseases are **available for those interested in research and development**.
- **Concerns Raised:**
 - **Lack of Sustainable Funding:**
 - Unlike conditions under Group 1 and Group 2, patients with Group 3 disorders require sustainable treatment support.
 - In the **absence of a sustainable funding support for Group 3 patients**, the precious lives of all patients, mostly children, are now at risk and at the mercy of crowdfunding.
 - **Lack of Drug Manufacturing:**
 - Where drugs are available, they are **prohibitively expensive, placing immense strain on resources**.

- Currently few pharmaceutical companies are manufacturing drugs for rare diseases globally and there are no domestic manufacturers in India except for those who make medical-grade food for those with metabolic disorders.

Rare Diseases

- There are 6,000-8,000 classified rare diseases, but less than 5% have therapies available to treat them.
- **Example: Lysosomal Storage Disorders (LSD)**, Pompe disease, cystic fibrosis, muscular dystrophy, spina bifida, haemophilia etc.
- About 95% rare diseases have no approved treatment and less than 1 in 10 patients receive disease-specific treatment.
- These diseases have differing definitions in various countries and range from those that are prevalent in 1 in 10,000 of the population to 6 per 10,000.
- However broadly, a 'rare disease' is defined as a health condition of low prevalence that affects a small number of people when compared with other prevalent diseases in the general population. Many cases of rare diseases may be serious, chronic and life-threatening.
- India has close to 50-100 million people affected by rare diseases or disorders, the policy report said almost 80% of these rare condition patients are children and a leading cause for most of them not reaching adulthood is due to the high morbidity and mortality rates of these life-threatening diseases.

GS 3 :Economy, Science and Technology,Environment

2. Why forest fires break out in the spring?

Uttarakhand has witnessed over 1,000 incidents of a forest fire over the last six months, including 45 in the last 24 hours alone.

Forest fires this year

- Since the start of 2021, there has been a series of forest fires in the Himachal Pradesh, Nagaland-Manipur border, Odisha, Madhya Pradesh, and Gujarat, including in wildlife sanctuaries.
- April-May is the season when forest fires take place in various parts of the country.

- But forest fires have been more frequent than usual in Uttarakhand and have also taken place during winter; dry soil caused by a weak monsoon is being seen as one of the causes.

How vulnerable are forests in Uttarakhand?

- Uttarakhand and Himachal Pradesh are the two states that witness the most frequent forest fires annually.
- In Uttarakhand, 24,303 sq km (over 45 per cent of the geographical area) is under forest cover.

What causes forest fires?

- Forest fires can be caused by a number of natural causes, but officials say many major fires in India are triggered mainly by human activities.
- Emerging studies link climate change to rising instances of fires globally, especially the massive fires of the Amazon forests in Brazil and in Australia in the last two years.
- Fires of longer duration, increasing intensity, higher frequency and highly inflammable nature are all being linked to climate change.
- In India, forest fires are most commonly reported during March and April, when the ground has large quantities of dry wood, logs, dead leaves, stumps, dry grass and weeds that can make forests easily go up in flames if there is a trigger.
- Under natural circumstances, extreme heat and dryness, friction created by rubbing of branches with each other also have been known to initiate fire.

Why Uttarakhand?

- In Uttarakhand, the lack of soil moisture too is being seen as a key factor. In two consecutive monsoon seasons (2019 and 2020), rainfall has been deficient by 18% and 20% of the seasonal average, respectively.
- But, forest officials say most fires are man-made, sometimes even deliberately caused.
- Even a small spark from a cigarette butt, or a carelessly discarded lit matchstick can set the fire going.
- For example, in Odisha, which saw a major fire last month in Simlipal forest, villagers are known to set dry leaves to fire in order to collect mahua flowers, which go into preparation of a local drink.

Why are forest fires difficult to control?

- The locality of the forest and access to it pose hurdles in initiating firefighting efforts.

- During peak season, shortage of staff is another challenge in dispatching firefighting teams.
- Timely mobilization of forest staff, fuel and equipment, depending on the type of fire, through the thick forests, remain challenges.
- As it is impossible to transport heavy vehicles loaded with water into the thick forests, a majority of fire dousing is initiated manually, using blowers and similar devices.
- But there have been incidents when forest fires were brought under control using helicopter services.
- Wind speed and direction play a critical role in bringing a forest fire under control. The fire often spreads in the direction of the winds and towards higher elevations.

What factors make forest fires a concern?

Forests play an important role in mitigation and adaptation to climate change.

- **Carbon emission:** They act as a sink, reservoir and source of carbon.
- **Livelihood loss:** In India, with 1.70 lakh villages in close proximity to forests (Census 2011), the livelihood of several crores of people is dependent on fuelwood, bamboo, fodder, and small timber.
- **Destruction of animals' habitat:** Heat generated during the fire destroys animal habitats. Soil quality decreases with the alteration in their compositions.
- **Soil degradation:** Soil moisture and fertility, too, is affected. Thus forests can shrink in size. The trees that survive fire often remain stunted and growth is severely affected.

Various efforts taken

- Since 2004, the FSI developed the Forest Fire Alert System to monitor forest fires in real-time.
- In its advanced version launched in January 2019, the system now uses satellite information gathered from NASA and ISRO.
- Real-time fire information from identified fire hotspots is gathered using MODIS sensors (1km by 1km grid) and electronically transmitted to FSI.
- This information is then relayed via email at state, district, circle, division, range, beat levels. Users of this system in the locality are issued SMS alerts.

3. Satellites and Light Pollution

Objects sent to space that orbit the Earth can increase the overall brightness of the night sky by 10 per cent above natural levels, showed a new study.

Light Pollution

- Light pollution is the presence of anthropogenic and artificial light in the night environment.
- It is exacerbated by excessive, misdirected or obtrusive use of light, but even carefully used light fundamentally alters natural conditions.
- Specific categories of light pollution include light trespass, over-illumination, glare, light clutter, and skyglow.
- A single offending light source often falls into more than one of these categories.

How does a satellite contribute?

- Large fleets of communication satellites that have been unleashed in space not just add to the light pollution but also collide and form more debris.
- Light from this piling debris cloaks astronomical bodies like 'the glowing clouds of stars in the Milky Way' from human sight.
- While telescopes and sensitive cameras often resolve space objects as discrete points of light, low-resolution detectors of light such as the human eye see only the combined effect of many such objects.
- Astronomers have complained that the growing number of artificial space objects choke the sky and disturb observations.

Impacts of light pollution

- As a major side-effect of urbanization, it is blamed for compromising health, disrupting ecosystems and spoiling aesthetic environments.
- Health effects of over-illumination or improper spectral composition of light may include increased headache, worker fatigue, medically defined stress and an increase in anxiety.
- Likewise, animal models have been studied demonstrating unavoidable light to produce adverse effect on mood and anxiety.
- For those who need to be awake at night, the light at night also has an acute effect on alertness and mood.

4. Places in news: Chenab Arch Bridge

A half-a-kilometre long arch, the defining feature of the world's highest railway bridge over river Chenab, is set to be completed today.

Chenab Arch Bridge

- The bridge is part of an ambitious 272-km rail link project and is being constructed by the Northern Railway at an estimated cost of ₹28,000 crores.

- The bridge will be able to withstand earthquakes with a magnitude of up to eight and high-intensity blasts.
- The bridge, which will include a 14-metre dual carriageway and a 1.2-metre-wide central verge, will have a design speed of around 100 kilometres per hour with a lifespan of 120 years.

Its inception

- The preparations of the rail link began in 2002 and the initial plan was to connect Kashmir's northernmost city Baramulla to New Delhi.
- Work on the bridge started again in July 2017 with the aim of completing the construction by the end of 2019 but due to contractual issues in 2018, it was delayed.
- Steel was specifically chosen for the construction of the bridge as it will make the project more economical.
- The metal will also be able to resist temperatures of minus 20 degree Celsius and wind speeds of above 200 kilometres per hour.

Significance

- A railway bridge like this, with this kind of geography, has not been made anywhere in the world, according to the Railways.
- It will symbolise the Kashmir rail link, to be ready for at least a century.
- In other words, a train from Kanyakumari can reach all the way to Kashmir uninterrupted.
- The cable crane that will do the job of completing the arch itself measures around 900 meters and is said to be the longest in the world, made especially for this project.

5. E-commerce policy is needed for speedy, inclusive growth

How pandemic contributed to the growth of e-commerce

- A celebrated McKinsey study has revealed that we have covered a '**decade in days**' in the adoption of digital during the pandemic.
- **Behavioural changes** have been witnessed in most areas like work, learning, health, travel, entertainment, etc.
- But the biggest surge has been in e-commerce, both in goods and services.

Significance of the sector for India

- E-commerce is **one of India's fastest-growing sectors**, for attracting FDI and creating jobs, and providing a pan-India market for lakhs of SMEs, and facilitating exports.
- India has a **vibrant retail sector**, bubbling with energy and a bright future.
- E-commerce can rope in lakhs of MSMEs in cross-border trade and multiply turnover and revenues enormously.
- Its role in facilitation of exports with linkages and **access to overseas markets** can also help inject **competitiveness** in our products and creating a lot of jobs and market opportunities, **adding to inclusive growth**.

Issues faced by the sector

- The digital interface during e-commerce processes with multiple agencies has resulted in a plethora of compliances.
- These compliances include **Income Tax Act 1961, Information Technology Act 2000, Consumer Protection Act 2019, FEMA Act 2000, Competition Act 2002, Companies Act 2013, Anti-Piracy Law, GSTN, DGFT, etc.**
- In addition, handling, generation and protection of humongous data is a major issue under **data protection laws**.
- At times, there are requirements of compliances with various local and state laws, and during exports, adherence to foreign laws, **many of which could be quite complex and rigorous**.

E-commerce policy to aid Inclusive growth

- Inclusive growth being an important objective of the proposed e-commerce/FDI policy, it should recognise and support new business models in **both product and service segments**.
- The policy should be aimed at **improving consumer experience** and providing gainful employment to **regular and gig workers with improved earnings**.
- India, in fact, is the first country to extend protections to workers including the new-age gig and platform workers, which is being viewed with interest globally.
- With the passage of the **Code on Social Security 2020**, policymakers have focused on **financial and social security associated with employment** to contemporary socio-economic realities.
- The role of platform workers amidst the pandemic has presented a strong case to attribute a **more robust responsibility to platform aggregator companies and the State**.
- This has cemented their role as public infrastructures who also sustain **demand-driven aggregators** and e-commerce platforms.

- This role of the platform workers may help in higher productivity and more sustainable employment, when many of them could potentially become mini-entrepreneurs.
- This, however, would need to be **facilitated by concerned public and private institutions** as also the multiple regulators in the e-commerce ecosystem.
- In an online services market place and to provide full support to regular and gig professionals rendering services on the platform, it must be imperative on the service platform to build their capacity through **training, technology and access to high-quality consumables and tools.**

Conclusion

We are in for exciting times, as we enter this decade, rightly called the 'Techade'; 2020 has accelerated technology infusion in all segments of life and activity. The world is looking at India with expectations and we owe it to our nation.

6. GST on fuel is a price vs revenue trade-off

How much tax we pay on petrol and diesel

- The Union and state levies put together **account for roughly 55 per cent and 52 per cent of the retail price of petrol and diesel** respectively.
- These work out to around **135 per cent and 116 per cent of the base prices** of the two products respectively.
- The central levy on petrol and diesel works out to around **36 per cent of the retail price** while the state component is **around 20 per cent (diesel) to 28 per cent (petrol).**
- Of the **total central levies on petrol and diesel**, Rs 1.40 per litre and Rs 1.80 per litre is the basic excise duty for the two fuels, and Rs 11 per litre and Rs 18 per litre is the **special additional excise duty.**
- **Both these components form part of the divisible pool of taxes** i.e. 42 per cent of which (approximately Rs 52,000 crore) goes to the states.
- The remaining portion of Rs 18 per litre in both cases is the **Road and Infrastructure Cess** and Rs 2.50 per litre and Rs 4 per litre is the **Agriculture Infrastructure and Development Cess** which are **retained by the Centre.**

How other countries tax fuel oils

- Being **demerit goods**, fuel oils and liquor are almost universally **subject to a dual levy** by countries that implement any kind of VAT or GST.
- The levy is a mix of GST at a fixed percentage of the price which qualifies for credit in the value chain and a fixed amount or percentage of the price which is not creditable and is thus outside GST.

- Punitive taxes of this order are levied primarily **to discourage consumption of environmentally degrading fossil fuels and to garner revenues to fund infrastructure**, while the creditable component enables offsetting of taxes on basically capital inputs.
- These products are subjected to a plethora of levies like VAT, excise duty, storage levies, security levies and environmental taxes in the EU and the total incidence of such **taxes ranges from around 45 per cent to 60 per cent**.
- The US is an exception in these matters since it imposes taxes at rates as low as around 15 per cent.

Including fuel oils in the GST regime

- the 122nd Constitution Amendment Bill in 2014 for GST adopted the delayed choice approach.
- Under the **delayed-choice approach**, petroleum products would be subjected to GST with effect from such date as the council may recommend.
- Accordingly, **sections 9(2) and 5(2) of the CGST/SGST Act** and the IGST Act respectively, explicitly provide for levy of GST on these products with effect from such date **as the Council may recommend**.
- Thus, bringing the aforesaid petro-products under GST is not within the reach of the central government alone.

How much will be the loss of revenue

- A 28 per cent levy of GST on the base price would fetch around Rs 5.40 per litre on petrol and around Rs 5.45 on diesel to the central and each of the state governments.
- Contrast the above with the current yield of Rs 32.90 per litre on petrol and Rs 31.80 per litre on diesel to the Centre alone and an average of around Rs 20 per litre and Rs 15 per litre on petrol and diesel, respectively, to each of the states.
- This, however, would bring down the prices of petrol and diesel to around Rs 55 per litre.
- This would translate into a revenue loss of around Rs 3 lakh crore on account of petrol and around Rs 1.1 lakh crore on account of diesel to the Centre and the states, at current volumes.

Conclusion

Clearly, bringing petro-products under GST would not lower fuel oil prices by itself, unless the Union and the state governments are willing to take deep cuts in their revenues.

Prelims practice Questions

1. Consider the following statements with respect to the Model Code of Conduct (MCC):

1. MCC comes into force from the date of election until the date that the results are out.
2. They are a set of guidelines issued by the Election Commission of India.
3. MCC does not have a statutory backing.

Which of the given statement/s is/are INCORRECT?

- a. 3 only
- b. 1 and 3 only
- c. 1 only
- d. None of the above

Answer: c

Explanation:

- Model code of Conduct is a set of guidelines issued by the Election Commission of India for conduct of political parties and candidates during elections mainly with respect to speeches, polling day, polling booths, election manifestos, processions and general conduct.
- The MCC comes into force from the date the election schedule is announced until the date that results are out.
- It does not have statutory backing. This means, if someone breaches the MCC, a case cannot be filed under any clause of the code itself.

2. Which of the following pairs is wrongly matched?

- a. Mojave desert: Africa
- b. Patagonian desert: South America
- c. Great Sandy: Australia
- d. Taklamakan desert: Asia

Answer: a

Explanation:

- Mojave desert is in North America

3. Which of the following statement/s is/are correct with respect to Diphtheria?

1. It is caused by strains of bacteria called *Corynebacterium diphtheria*.
2. It can lead to death if not treated with diphtheria antitoxin and proper antibiotics.
3. It is a vaccine preventable disease.

Options:

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1,2 and 3

Answer: d

Explanation:

- Diphtheria is a serious infection caused by strains of bacteria called *Corynebacterium diphtheriae* that make toxin (poison). It can lead to difficulty breathing, heart failure, paralysis, and even death.
- The diphtheria toxin causes inflammation of heart muscle (myocarditis) and this can lead to death if not treated with diphtheria antitoxin and proper antibiotics.
- Diphtheria is a vaccine preventable disease – the toxoid vaccine elicits an immune response against the toxin which is encoded by a tox gene of the pathogen.
- The increasing diversity of the bacterium species, emergence of variant toxin genes and progression of antimicrobial resistance may lead to an increase in the incidence of diphtheria.

4. Which of the following statements is/are correct with respect to Bose-Einstein condensate?

1. It is observed at very low temperatures very close to absolute zero (-273.15 °C)
2. It is characterized by relatively higher density.

3. It is also sometimes referred to as the fifth state of matter.

Options:

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1,2 and 3

Answer: d

Explanation:

- Bose-Einstein condensate (BEC) – the macroscopic ground-state accumulation of particles with integer spin (bosons) at low temperature and high density – has been observed in several physical systems, including cold atomic gases and solid-state quasiparticles.
- In condensed matter physics, a Bose-Einstein condensate (BEC) is a state of matter (also called the fifth state of matter) which is typically formed when a gas of bosons at low densities is cooled to temperatures very close to absolute zero (-273.15 °C).
- A Bose-Einstein condensate is a group of atoms cooled to within a hair of absolute zero. When they reach that temperature the atoms are hardly moving relative to each other; they have almost no free energy to do so. At that point, the atoms begin to clump together, and enter the same energy states.

5. With reference to Current Account Deficit (CAD), consider the following statements:

- 1. Current account records exports and imports in goods and services only.
- 2. CAD can be reduced by curbing non-essential imports such as gold, mobiles, and electronics.

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

- **The current account records exports and imports in goods and services and transfer payments. Hence, statement 1 is not correct.**
 - It represents a country's transactions with the rest of the world and, like the capital account, is a component of a country's Balance of Payments (BOP).
- There is a deficit in Current Account if the value of the goods and services imported exceeds the value of those exported.
- **Current Account Deficit could be reduced by boosting exports and curbing non-essential imports** such as gold, mobiles, and electronics. **Hence, statement 2 is correct.**

6. Persistent Viral Shedding was in the news, it is a condition of-

A Full Immunity developed against the virus.

B A special type of viral infection developed in Old age people.

C Recovered patients continue to carry some of virus within their system

D When recovered patients are not affected again by the virus already infected.

Answer : C

Explanation

- **Persistent Viral Shedding:**
 - When an individual gets infected by a respiratory virus like SARS-CoV-2, the virus particles bind to the various types of viral receptor.
 - Thus, Recovered patients can sometimes continue to carry low levels of virus within their system for up to three months.
 - These levels are no longer enough to make the person sick or transmit the disease to others, but it can get detected in diagnostic tests.
 - The disease developed from such persistent virus is what is called Persistent viral shedding.
 - **Hence option C is correct.**

Mains Practice Questions

1. What do you understand by Western Disturbances? Discuss its impact on Indian weather systems. (250 words)

Approach

- In general explain the western disturbances as a geographical phenomena and its main effect on Indian weather systems.
- Mention the areas of its origin and influence and briefly explain its mechanism, it can also be illustrated in a suitable diagram.
- Explain the impact of western disturbances on India in various dimensions like climate, agriculture and disasters associated with it.
- Summarise the answer and mention some of the measures to augment the preparedness to deal with the western disturbances

2. “Anthropogenic forcings are exacerbating the phenomenon of urban heat islands in India”. Discuss the factors that give rise to Urban heat islands. (150 words)

Approach

- Briefly describe the phenomenon of Urban Heat Island effect.
- Discuss the major anthropogenic activities that cause the formation of urban heat islands in India.
- Give a suitable conclusion.