UPSC CURRENT AFFAIRS NOTES 13-03-2024

Gorsam Kora Festival

The Gorsam Kora festival, symbolised the enduring friendship between India and Bhutan commenced on 7th March and concluded on 10th March this year.

It is held in Arunachal Pradesh's Zeminthang Valley along the Nyanmjang Chu River.

History

This annual festival is held at Gorsam Chorten, a 93 feet tall Stupa, built during 13th century AD by a local monk- Lama Pradhar.

This is also the place where the 14th Dalai Lama had his first rest after fleeing from Tibet in 1959.

It features cultural performances and Buddhist rituals at the Gorsam Chorten, which is older than the Tawang Monastery.

Many devotees including a large number of Bhutanese nationals visit during Gorsam Kora festival to celebrate the virtuous occasion during the last day of the first month of the Lunar calendar.

It attracted pilgrims and Lamas from Bhutan, Tawang and neighbouring regions, epitomising the spirit of camaraderie and cultural exchange.

The festival featured a diverse array of events, including enthralling performances by local cultural troupes and by the Indian army bands, martial performances like Mallakhamb and Zanjh Pathaka.

Mahayana Buddhism is the largest Buddhist sect in the world, and its beliefs and practices are what most non-adherents recognize as "Buddhism" in the modern era. It developed as a school of thought sometime after 383 BCE, possibly from the earlier school known as Mahasanghika, though that claim has been challenged.

'Bharat Shakti'

The Prime Minister recently witnessed the tri-service exercise 'Bharat Shakti' in Pokhran, Rajasthan.

It is an integrated tri-service firepower and manoeuvre exercise, showcasing the prowess of indigenously manufactured defence equipment across the three services.

Location: Pokhran, Rajasthan.

The exercise involves the showcasing of the calibrated tactical employment of niche technology in a tri-services environment against perceived threats.

The exercise displays an array of indigenous weapon systems and platforms as a demonstration of the prowess of the country, premised on the nation's Aatmanirbharata initiative.

It will also simulate realistic, synergised, multi-domain operations displaying the integrated operational capabilities of the Indian armed forces to counter threats across land, air, sea, cyber, and space domains.

It features indigenous weapon systems: T-90 (IM) Tanks, Dhanush and Sarang Gun Systems, Akash Weapons System, Logistics Drones, Robotic Mules, ALH, and various unmanned aerial vehicles from the Indian Army showcasing the advanced ground warfare and aerial surveillance capabilities.

The Indian Navy displays Naval Anti-Ship Missiles, Autonomous Cargo Carrying Aerial Vehicles, and Expendable Aerial Targets.

The Indian Air Force showcases indigenous aircraft: Light Combat Aircraft Tejas, Light Utility Helicopters, and Advanced Light Helicopters.

AKASH is a Short Range Surface to Air Missile System to protect vulnerable areas and points from air attacks. Akash Weapon System (AWS) can simultaneously engage Multiple Targets in Group Mode or Autonomous Mode. It has built-in Electronic Counter-Counter Measures (ECCM) features. The entire weapon system has been configured on mobile platforms.

Kochrab Ashram

The Prime Minister inaugurated the redeveloped Kochrab Ashram in Ahmedabad, Gujarat, recently to mark the 94th anniversary of the Dandi March.

About Kochrab Ashram

It was the first ashram founded by Mahatma Gandhi in 1915, following his return to India from South Africa.

Location: It is located in Kochrab village, situated on the outskirts of Ahmedabad, Gujarat.

It was called Satyagraha Ashram based on his ideas of achieving India's independence from British rule through peaceful methods.

Establishment:

Gopal Krishna Gokhale requested Mahatma Gandhi to return to India, which needed his skills as a community organizer.

Mahatma Gandhi began his association with Ahmedabad after returning to India from South Africa.

About his decision to settle in Ahmedabad in 1915, Gandhi wrote that, as a Gujarati, he should be able to serve the country best through the Gujarati language.

On 20th of May, 1915, Gandhi began living in a bungalow in Kochrab village.

The bungalow, which he soon rechristened as the Satyagraha Ashram, was given to him by his fellow lawyer and colleague, Jeevan lal Desai.

Mahatma Gandhi based himself here for about one-and-a-half years before moving to the new campus of Sabarmati Ashram.

It is a colonial-style building with a white-washed façade.

The campus has hostels and kitchens.

The Gandhi Memorial Museum in the ashram campus has a small collection of artifacts associated with the life of Mahatma Gandhi and historical photographs.

The Dandi March, also known as the Salt March and the Salt Satyagraha, led by Mahatma Gandhi, was a milestone in the Civil Disobedience Movement. It was started as a nonviolent protest against the unjust salt tax, imposed by the British Government in India.. On 12th March 1930, Mahatma Gandhi started the historic march along with 78 followers from the Sabarmati Ashram in the Ahmedabad district to the coastal town of Dandi near Surat. The march was joined by huge crowds everyday as Gandhi walked through different villages. They walked 241-miles for twenty-four days and reached Dandi on 5th April 1930. On the morning of 6th April, Mahatma Gandhi and his followers broke the Salt Act by producing salt from sea water.

FOREVER CHEMICALS

Perfluoroalkyl and polyfluoroalkyl substances (PFAS), also known as "forever chemicals," pose significant health risks due to their persistence and widespread use in various consumer products.

In response to the pressing need for efficient detection methods, Massachusetts Institute of Technology (MIT) chemists have engineered a groundbreaking sensor capable of detecting trace amounts of PFAS in drinking water.

Details

Significance of PFAS Detection

PFAS are highly stable chemicals commonly found in food packaging, nonstick cookware, and other consumer products.

Their persistence in the environment poses severe health risks, including cancer, reproductive problems, and immune system disruption.

The Environmental Protection Agency (EPA) has established advisory health limits for certain PFAS chemicals in drinking water.

Development of the Sensor

MIT researchers have designed a sensor based on lateral flow technology, similar to rapid COVID-19 tests.

The sensor employs a special polymer called polyaniline, which undergoes a change in conductivity when exposed to PFAS.

PFAS in a water sample trigger a reaction with the polyaniline, altering its electrical resistance.

This change in resistance is measured using electrodes and can be quantitatively assessed using external devices like smartphones.

About the chemicals

Forever chemicals, scientifically known as per- and polyfluoroalkyl substances (PFAS), represent a class of synthetic chemicals with unique properties and widespread applications.

The term "forever chemicals" stems from their resistance to degradation, leading to their persistence in the environment and potential accumulation in living organisms.

Per- and polyfluoroalkyl substances (PFAS) are widely used in consumer products, including cosmetics, due to their water- and grease-resistant properties.

Recently, some countries have taken significant steps to ban the use of PFAS in cosmetics due to their persistence in the environment and associated health risks.

Characteristics of PFAS:

PFAS constitute a class of 14,000 chemicals used in consumer products for imparting water resistance.

Their persistence in the environment raises alarms about long-term contamination of soil, water, and air.

Chemical Structure:

PFAS compounds consist of carbon-fluorine bonds, imparting exceptional stability and resistance to degradation.

Variability in chain length and functional groups contribute to diverse properties and applications.

Common Uses:

Firefighting foams (AFFF)

Non-stick coatings (e.g., Teflon)

Water and oil repellents (e.g., Scotchgard)

Food packaging materials

Textiles and carpets

Semiconductor manufacturing

Health Risks Associated with PFAS Exposure:

Cancer Risk: Evidence suggests an association between PFAS exposure and increased risks of certain cancers, such as kidney and testicular cancer.

Liver Damage: High levels of PFAS have been linked to liver damage and disturbances in liver functionality.

Thyroid Disruption: Certain PFAS compounds are associated with disruptions in thyroid hormone levels, affecting metabolism and growth.

Impact on Lipid Profile: PFAS exposure may lead to changes in lipid metabolism, potentially increasing cardiovascular risks.

Neurodevelopmental Effects: Emerging research suggests adverse effects on neurodevelopment, particularly concerning cognitive deficits and behavioral issues in children.

New Zealand's Ban on PFAS in Cosmetics:

New Zealand announced a ban on PFAS or forever chemicals in cosmetics starting from December 31, 2026.

The Environmental Protection Authority highlighted concerns about the non-degradability of PFAS in the body and the environment, linking them to various health issues including cancers and hormonal disruptions.

The ban requires the cosmetics industry to phase out the use of PFAS by the specified deadline.

Regulatory Landscape:

Environmental Protection Agency (EPA): Establishing health advisory levels and regulations for drinking water contamination.

Stockholm Convention: PFAS listed as persistent organic pollutants (POPs), aiming for global regulation and reduction.

European Chemicals Agency (ECHA): Assessing risks and restricting PFAS use in the European Union.

Emerging Solutions:

Remediation Technologies

Activated carbon filtration

Advanced oxidation processes

Phytoremediation

Bioremediation

Alternative Chemicals and Materials

Short-chain PFAS substitutes

Green chemistry approaches

Designing products for durability and recyclability

Policy and Advocacy

Advocating for stricter regulations and pollution prevention measures.

Encouraging industry-wide collaboration and transparency.

Supporting research on PFAS fate, transport, and health impacts.

EENTHU PANA

Eenthu Pana (Cycas circinalis) in Kerala is under threat of extinction due to an unknown and fast-spreading plant disease.

Eenthu Pana, scientifically known as Cycas circinalis, is under serious threat of extinction in northern Kerala due to a rapidly spreading and unnamed plant disease. The disease is killing these trees, some of which are decades or centuries old.

Farmers and residents complain as the old Eenthu Pana trees die, with no clear solution for the disease. The lack of targeted research and action strategies raises concerns about the eventual eradication of these unique plants.

Eenthu Pana

Eenthu Pana is a rare palm-like tree native to Kerala.

It holds significant cultural and ecological value for the region.

The tree is recognized for its medicinal and nutritional value.

Its seeds are high in dietary fibre and can be turned into flour for use in a variety of traditional meals, including Eenthu Payasam, a type of cereal made with partially crushed seeds, and Eenthu Pidi, flour balls cooked in coconut milk.

Eenthu Pana flour has long been used as a source of sustenance in Kerala's tribal populations.

The seeds are said to have medicinal properties and are used as dietary supplements to treat diabetes.

Concerns have been raised about the declining Eenthu Pana population in specific regions of Kerala as a result of a rare disease, highlighting the need for immediate research, action plans, and collaborative efforts, while farmers emphasise the importance of engaging agricultural authorities to address the issue and prevent the extinction of this valuable tree.

Digital Competition Law (CDCL)

The Ministry of Corporate Affairs (MCA) had constituted a 16-member Committee on Digital Competition Law (CDCL) on the recommendations of the 53rd report of the Parliamentary Standing Committee on Finance.

It is based on the subject titled ‘Anti- Competitive Practices by Big Tech Companies’, to examine the need for a separate law on competition in digital markets.

The Committee has submitted its report along with the Draft Bill on Digital Competition Law.

Key Points on Proposed Digital Competition Legislation:

The bill aims to bring regulations for larger companies based on turnover, gross merchandise value, global market capitalization, user base, and other relevant factors.

In response to conflicts between Big Tech firms and Indian companies, like Google's recent delisting and eventual restoration of Indian apps, the legislation seeks to empower the Competition Commission of India (CCI) for proactive intervention.

It proposes the designation of "Systemically Significant Digital Enterprises" (SSDEs) based on quantitative and qualitative criteria, ensuring robust regulation of major players in core digital services.

The Committee recommends flexible designation of SSDEs and Associate Digital Enterprises (ADEs) within corporate groups, ensuring comprehensive regulation.

Monetary penalties of up to 10% of global turnover are proposed for SSDEs for non-compliance, with additional penalties for incorrect reporting and liability for key managerial persons. Group penalties would be based on total turnover, subject to CCI discretion.

The CCI is entrusted with the authority to determine SSDEs, ADEs, and exact penalty amounts, ensuring adaptable enforcement mechanisms.

MAJOR TAKEAWAYS IN A NUTSHELL

A major takeaway from the report is the recommendation of a new Digital Competition Act to enable the Competition Commission of India (CCI) to “selectively” regulate large digital entities on an ex-ante basis.

For the uninitiated, ex-ante framework envisages the government taking measures before an issue occurs.

The Committee further notes that the proposed Digital Competition Act should complement and strengthen the existing competition framework governing large digital enterprises by ensuring timely detection, enforcement, and disposal of proceedings in digital markets.

Key highlights

Identifying quantitative thresholds (tests) for designating an enterprise as an SSDE under the new digital competition law

Adopting a base value of $75 Bn for the determination of the value of global market capitalisation of a company under the financial test

Base value of at least 1 Cr end users or at least 10,000 business users in India for the purposes of the significant spread test to determine SSDE

All SSDEs should be obligated to institute a transparent grievance redressal mechanism

Empowering the Centre to exempt certain enterprises (startups) or classes of enterprises from the purview of the draft bill

The CCI ought to bolster its technical capacity to ensure early detection and disposal of cases, need for dynamic regulation making, among others

Setting up a separate bench within the NCLAT for speedy disposal of appeals related to digital markets

The draft bill also entrusts the big tech giants with a slew of obligations, spanning aspects such as prevention of fraud, cybersecurity, prevention of trademark and copyright infringement, compliance to local laws, among others.

Alongside, these major entities will also have to comply with various rules, including the relevant provisions of the Digital Personal Data Protection Act, 2023. Under the draft rules, the SSDEs will also be barred from restricting the ability of end users and businesses to use third-party apps.

Note: This comes when a major standoff between Indian startups and Google after the latter began delisting apps from Play Store for non-compliance with the new user choice billing system.

The draft bill also empowers the CCI to order an inquiry into a big tech company for non-compliance of obligations. It also underlines penalties to the tune of 10% of the global turnover of SSDEs.

Significance

The move is significant and comes amid the ongoing raging debate on competition laws.

Apart from the recent standoff between startups and Google, a parliamentary panel also raised concerns over foreign-owned companies (Walmart-backed PhonePe and Alphabet-owned Google Pay) dominating the UPI payments space.

Besides, big tech companies like Meta and Apple are also facing antitrust probes in the country.

Graphics Processing Unit

As the world rushes to make use of the latest wave of AI technologies, one piece of high-tech hardware has become a surprisingly hot commodity: the graphics processing unit, or GPU.

About Graphics Processing Unit

It is a computer chip that renders graphics and images by performing rapid mathematical calculations.

GPUs are used for both professional and personal computing. Originally, GPUs were responsible for the rendering of 2D and 3D images, animations and video.

Like a central processing unit (CPU), a GPU is also a chip component in computing devices.

One important difference, though, is that the GPU is specifically designed to handle and accelerate graphics workloads and display graphics content on a device such as a PC or smartphone.

A typical modern CPU is made up of between 8 and 16 “cores”, each of which can process complex tasks in a sequential manner.

GPUs, on the other hand, have thousands of relatively small cores, which are designed to all work at the same time (“in parallel”) to achieve fast overall processing.

This makes them well suited for tasks that require a large number of simple operations which can be done at the same time, rather than one after another.

How does a GPU work?

GPUs work by using a method called parallel processing, where multiple processors handle separate parts of a single task.

A GPU will also have its own RAM to store the data it is processing. This RAM is designed specifically to hold the large amounts of information coming into the GPU for highly intensive graphics use cases.

For graphics applications, the CPU sends instructions to the GPU for drawing the graphics content on screen.

The GPU executes the instructions in parallel and at high speeds to display the content on the device -- a process known as the graphics or rendering pipeline.

Applications

GPUs are now used for creative content production, video editing, high performance computing (HPC) and artificial intelligence (AI).

GPUs were developed as a way to offload those tasks from CPUs for graphics applications.

It performs graphics-related calculations very quickly and in parallel to allow for fast and smooth rendering of content on the computer screen.