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By saurabh Pandey



THE HINDU





Saurabh Pandey CSE

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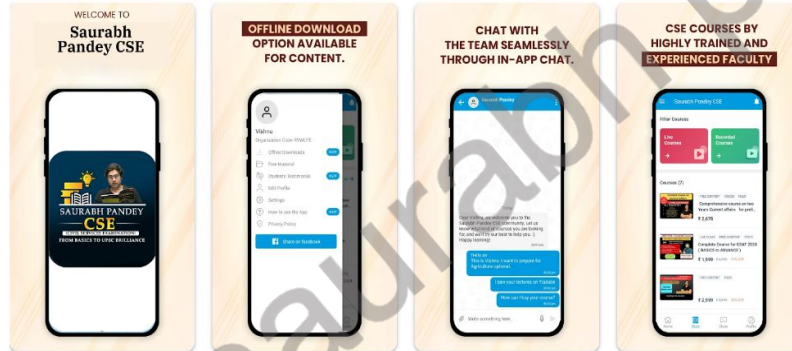
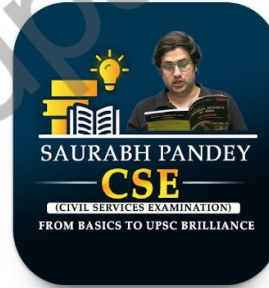
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Target Mains -2024/25 -

Q “Operations in cyberspace need to be dovetailed into the national security fabric, to evolve the ‘ends,’ ‘ways’ and ‘means’ to create advantage and influence events in all other operational environments and across all instruments of power” Examine

प्रश्न "साइबरस्पेस में संचालन को राष्ट्रीय सुरक्षा ढांचे में शामिल करने की आवश्यकता है, ताकि लाभ पैदा करने और अन्य सभी परिचालन वातावरणों और शक्ति के सभी उपकरणों में घटनाओं को प्रभावित करने के लिए 'साध्य', 'तरीके' और 'साधन' विकसित किए जा सकें।"

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Mission clean-up



Action plan: Workers clearing the Adyar river mouth in Chennai on Tuesday. The Water Resources Department has engaged more machinery to clear silt and complete the project by June-end. B. VELANKANNI RAJ

The Adyar River

- The Adyar River, originating near the **Chembarambakkam Lake** in **Kanchipuram district**, is one of the three rivers which winds through **Chennai (Madras)**, **Tamil Nadu, India**, and joins the **Bay of Bengal** at the **Adyar estuary**.
- The 42.5-kilometre (26.4 mi) long river contributes to the **estuarine ecosystem** of Chennai.
- Despite the high pollution levels, boating and fishing take place in this river.
- Most of the **waste** from the city is drained into this river and the **Cooum**

Abduction case: HC gives anticipatory bail to Bhavani

The Hindu Bureau
BENGALURU

In a relief to Bhavani Revanna, mother of rape-accused Prajwal Revanna, former MP, the High Court of Karnataka granted regular anticipatory bail in the case of alleged abduction of one of the victims of her son's sexual assaults.

Justice Krishna S. Dixit passed the order while allowing Ms. Bhavani's petition seeking anticipatory bail.

The court said there is no material against the petitioner to *prima facie* attract Section 364A of the IPC, as the victim herself, in her statement recorded either before the police or before the judicial magistrate, has not given any such statements against Ms. Bhavani.

The court observed: "Despite vociferous submissions, why the police want custodial interrogation has not been even nearly substantiated and therefore, it cannot be granted." Referring to the SIT's arguments claiming that she is not cooperating with the probe and giving misleading answers, the court said she had answered 80 questions so far and "the police cannot insist that an accused should give answers in the way as the police desire".

Meanwhile, Mr. Prajwal Revanna was remanded in to judicial custody for 14 days by the Special Court of Magistrate for Criminal Cases against former and present MPs and MLAs on Tuesday.

Saurabh Khedey upsc

Anticipatory bail.

- Under Section 438 of the Criminal Procedure Code there is a provision for a person to seek 'Anticipatory Bail'. This means that an individual can seek or request to get bail in anticipation or in expectation of being named or accused of having committed a non-bailable offence.
- Anticipatory bail is meant to be a safeguard for a person who has false accusation or charges made against him/her, most commonly due to professional or personal enmity, as it ensures the release of the falsely accused person even before he/she is arrested.
-

- **To get anticipatory bail the person seeking it, must approach the Court of Sessions or the High Court and citing section 438 of the Criminal Procedure Code as well as giving proper reason, apply for it. If the court, based on a number of conditions and the nature of the case, sees merit in the petition the bail is granted.**
- **Hence if and when the person is arrested, he/she will be immediately released on the basis of the anticipatory bail.**

Conditions that are taken into consideration by the court when granting anticipatory bail include, but are not limited to:

- **The person will make him/herself available for interrogation by the police as and when required by them**
- **The individual shall not directly or indirectly make any threat, promise or offer any bribe to any person who is connected to the case or knows facts about the case, so as to keep them quiet or to get them to change their report of facts to the court or the police**
- **An assurance that the person shall not leave India without prior permission from the court**

CDS releases blueprint for warfare in cyberspace

The Hindu Bureau
NEW DELHI

Acknowledging that cyberspace has emerged as a crucial and challenging domain in modern warfare, the Chief of Defence Staff, General Anil Chauhan, released India's first joint doctrine for cyberspace operations during a meeting of the Chiefs of Staff Committee on Tuesday.

The joint doctrine is a keystone publication that will guide commanders of the armed forces in conducting cyberspace operations in today's complex military operating environment, the Defence Ministry said in a statement.

Unlike territorial limits in the traditional domains of warfare, cyberspace is a "global common and hence has shared sovereignty", the Ministry statement said.

"Operations in cyberspace need to be dovetailed into the national security fabric, to evolve the 'ends,' 'ways' and 'means' to create advantage and influence events in all other operational environments and across all instruments of power," the statement added.



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Kollam port designated as Immigration Check Post

The Hindu Bureau

NEW DELHI

The Union government has designated the Kollam port in Kerala as an authorised Immigration Check Post (ICP) for entry and exit from India with valid travel documents for all classes of passengers, an order by the Union Ministry of Home Affairs (MHA) said.

The MHA notification was issued under Rule 3 (b) of the Passport (Entry into India) Rules, 1950.

“In exercise of the powers conferred by sub-clause (2) of Clause 2 of the Foreigners Order 1948, the Central Government hereby appoints Foreigners Regional Registration Officer, Trivandrum as the ‘Civil Authority’ for the purposes of the said Order for the Immigration Check Post located at Kollam Seaport in the State of Kerala with effect from 18 June, 2024,” the notification said.

The issue was raised several times in the last Lok Sabha by Kollam Member of Parliament N.K. Premachandran.

The MHA had earlier informed a parliamentary panel that India has 31 authorised seaport ICPs and out of those 10 are under the direct control and management of the Bureau of Immigration, Ministry of Home Affairs. The remaining Immigration Check Posts are controlled by State police agencies.

Saurabh Ardey upsc

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- **The remaining Immigration Check Posts are controlled by State police agencies.**
- **Kollam Port is one of the oldest ports situated 4 kilometres away from Downtown Kollam It is the second largest port in Kerala by volume of cargo handled and facilities and one of the four Kerala ports having immigration checkpoint facility**



Turbine hall valves meant for nuclear reactors of Kudankulam Nuclear Power Project ready in Russia for shipping to KKNPP site.

Russia ready to ship turbine hall valves for Kudankulam

The Hindu Bureau
TIRUNELVELI

Russia is all set to ship the first batch of 26 turbine hall pipeline valves, totally weighing about 27.5 tonnes, for the Kudankulam Nuclear Power Project's (KKNPP) reactors 5 and 6.

These specially designed valves can withstand temperature up to 350 degrees Celsius.

Russian State Atomic Energy Corporation, Rosatom's machine-building plant Petrozavodskmash is shipping the turbine hall pipeline valves to KKNPP, where 2 X 1,000 MWe VVER reactors built with Russian technical know-how are generating power while four more reactors with similar capacity are under construction.

Currently shipped high-pressure and low-pressure

gate valves are designed for installation in the turbine hall of the nuclear power plant.

The key function of the shipped items is a tight shutoff of the fluid or gas flow to ensure reliable operation of the system. During the manufacture, each piece of equipment has been subjected to a set of factory checks including pneumatic, hydraulic and tightness tests. The pipe-

line valves are distinguished by a high class of tightness, which is confirmed by life tests under operating parameters in testing laboratories accredited by the Rosatom State Atomic Energy Corporation.

The valves are being transported from Petrozavodskmash's production site to the Great Port of St. Petersburg by road from where the equipment will

reach KKNPP site by sea. Similar pipeline valves of Petrozavodsk have been installed in reactor and turbine halls of the Leningrad Nuclear Power Plant and the Belarusian Nuclear Power Plant. These valves are used in piping systems to monitor and control the flow of fluids or gases.

Rosatom has agreed to supply fuel to the power units of the KKNPP throughout their life.

Kudankulam Nuclear Power Project's (KKNPP)

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saurabh pandey upsc

Kudankulam Nuclear Power Plant

- **Kudankulam Nuclear Power Plant is the largest nuclear power station in India, situated in Kudankulam in the Tirunelveli district of the southern Indian state of Tamil Nadu. Construction on the plant began on 31 March 2002,**
- **KKNPP is scheduled to have six VVER-1000 reactors built in collaboration with Atomstroyexport, the Russian state company and Nuclear Power Corporation of India Limited (NPCIL), with an installed capacity of 6,000 MW of electricity.**

Scientists from India, China, U.K. develop catalyst to produce cheaper biodiesel

Rahul Karmakar

GUWAHATI

A team of scientists from Assam and Odisha in India, China, and the U.K. has developed a water-repellent catalyst that can cut the cost of producing “environmentally benign” biodiesel substantially from the current levels.

The process of arriving at the “spherical superhydrophobic activated carbon catalyst” to withstand water byproduct during the production of biodiesel – pursued as a substitute for diesel, an exhaustible fossil fuel – has been published in the latest issue of the peer-reviewed *Advanced Functional Materials*, a high-impact journal of the international materials science community.

The authors of the study



Dr. Samuel Lalthazuala Rokhum, centre, one of the authors of the study, with his researchers. SPECIAL ARRANGEMENT

are Arpita Das, Kangkana Saikia, and Samuel Lalthazuala Rokhum of the Department of Chemistry, National Institute of Technology (NIT), Silchar; Chandrakanta Guchhait and Bimalendu Adhikari of NIT, Rourkela, Odisha; Da

Shi of the University of Cambridge in the United Kingdom; and Hu Li of the Guizhou University in China.

Superhydrophobic catalysts, imitating the anti-wetting or water-repulsing properties of natural sur-

faces such as lotus leaves, are deemed crucial for their ability to prevent the poisoning of active sites by water, produced *in situ* or as a by-product.

“Our novel superhydrophobic catalyst can be a game-changer in the field of biodiesel production. It stands out because of unmatched robustness; it can withstand the water byproduct during biodiesel production,” Dr. Rokhum told *The Hindu*.

“This means the catalyst remains highly effective and can be reused multiple times, making the catalytic process more efficient and cost-effective,” he said.

He further said the catalyst, derived from biomass (cellulose), is ecologically benign, abundant, and highly affordable. “This breakthrough has the po-

tential to significantly reduce the cost of biodiesel production, making sustainable energy more accessible,” he added.

At present, the cost of biodiesel in India is about ₹100 or \$1.2 per litre. Using the superhydrophobic activated carbon catalyst can bring down the cost to about 37 cents per litre. A litre of less fuel-efficient diesel costs at least ₹87 in India. “Biodiesel is a key player in the quest for sustainable energy. Our innovative catalyst could pave the way for broader adoption and a greener future because it makes the production process more efficient, cost-effective, and environment friendly,” Dr. Rokhum, among the world’s top five scientists in the field of biodiesel, said.

“spherical superhydrophobic activated carbon catalyst”

- **A team of scientists from Assam and Odisha in India, China, and the U.K. has developed a water-repellent catalyst that can cut the cost of producing “environmentally benign” biodiesel substantially from the current levels.**
- **The process of arriving at the “spherical superhydrophobic activated carbon catalyst” to withstand water byproduct during the production of biodiesel — pursued as a substitute for diesel, an exhaustible fossil fuel —**

- **Superhydrophobic catalysts, imitating the antiwetting or water-repulsing properties of natural surfaces such as lotus leaves, are deemed crucial for their ability to prevent the poisoning of active sites by water, produced in situ or as a by-product.**
- **“Our novel superhydrophobic catalyst can be a game-changer in the field of biodiesel production.**
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- **catalyst, derived from biomass (cellulose), is ecologically benign, abundant, and highly affordable.**
- **“This breakthrough has the potential to significantly reduce the cost of biodiesel production, making sustainable energy more accessible,”** .

Saurabh Pardey UPSC

Genomes reveal legacies of human sacrifice and medieval epidemics

In the last decade, scientists have used the tools of archaeogenetics and evolutionary medicine to study ancient human burial sites, thus understanding the origins of a bubonic plague pandemic, the evolution of malarial parasites, the spread of the mpox virus, and the historical occurrence of Down's syndrome

Sridhar Sivasubbu
Vinod Scaria

People's practice of burying human remains throughout modern history echoes diverse cultural, spiritual, and social beliefs, and is often considered to be a line in the sands of time between modern and ancient humans. Studying burial practices is a complex endeavour, however, it's hard to say if some prehistoric cave burials are intentional commemorations or remains covered by sediment over time, for example. Nevertheless, researchers have recorded the practice of burying since the time of our now-extinct Neanderthal ancestors. The oldest intentional modern human burial dates to more than 100,000 years ago, in a cave in Israel. This timeline overlaps with the discovery of the skeletal remains of a roughly three-year-old child buried in Kenya some 80,000 years ago.

Burial practices evolved with advancing human civilisations, with the construction of elaborate mausoleums (that continue to date). The pyramids of Egypt were monumental tombs for the pharaohs. Mughal emperor Shah Jahan commissioned the Taj Mahal in Agra as a mausoleum for his wife. These structures reflect an enduring human desire to honour the dead and remember them.

The handful of well-preserved skeletal remains at ancient burial sites also open a window into the dietary habits, environmental adaptations, microevolutionary characteristics, biological kinship, sex, and genetic history of the population. These sites, spread worldwide, have thus been sites of intense scientific investigation as well. Some famous examples include the Tollund Man Bog Bodies in Denmark and the 'Thebes Tombs in Egypt.

Studies of these sites have accelerated in the last decade thanks to rapid technological advances in genome sequencing and medical genetics, which has expanded to seed the new fields of archaeogenetics and evolutionary medicine.

Of late, researchers have used the tools and concepts therein to understand the origins of the bubonic plague pandemic, the evolution of malarial parasites, the spread of the mpox virus, and even the occurrence of Down's syndrome in ancient genomes.

Ancient Mayan genomes

Chichén Itzá is an ancient Mayan city located in modern-day Mexico. It is known for its grand architecture and iconic ceremonial temples, built around



The Temple of Kukulcán is the most famous structure at the Chichén Itzá archaeological site. DANIEL SCHWEN (CC BY-SA 4.0)

800-1000 AD. The temples are also infamous for having been the site of human sacrifices made as ritual offerings, and have been under constant archaeological investigation for more than a century.

The offerings were deposited in an enormous sinkhole or a subterranean cistern called the 'Sacred Cenote'. In Mayan culture, these subterranean features were often associated with water and rain. The Sacred Cenote in Chichén Itzá holds the skeletal remains of more than 200 ritually sacrificed individuals, many of them children or adolescents. But we don't know much about the lives of these individuals or their biological relationship (if any) with contemporary inhabitants of the region. European colonists used to believe these children and adolescents were "obtained" by kidnapping, purchase, or exchange of gifts with other nations.

In a recent scientific report published in *Nature*, a team of archaeologists and scientists from Germany, Mexico, Spain, the U.K., and the U.S., sequenced genetic material obtained from the human remains. They read the results along with bio-archaeological evidence collected at the site to launch an extensive investigation of the remains of 64 sub-adults from the Sacred Cenote and compared them to modern-day individuals of Mayan origin.

Their studies revealed that all sub-adults in the cenote were genetically male and closely related to each other.

The findings go against 20th-century colonial accounts that claimed young women had been sacrificed here.



Studying burial practices is a complex endeavour. It's hard to say if some prehistoric cave burials are intentional commemorations or remains that have been covered by sediment over time

The study also identified two pairs of monozygotic twins among the remains. Twins held significance in Mayan spiritual life and were linked to the underworld, so their presence in the cenote wasn't surprising. The researchers also used isotopic studies to establish that all the related individuals in the cenote had similar diets, suggesting they all belonged to the same household.

The similarities also suggested they were selected for a specific purpose. It is widely believed that the Mayans organised ritual sacrifices to ensure the bountiful growth of maize and to appease the rain gods.

Genetic studies comparing the skeletal remains with those of present-day Maya people showed the latter are direct genetic descendants of the populations involved in the ritual sacrifices. This long-term continuity within the Mayan population opens doors for additional investigations on microevolutionary studies and genomic adaptations over the years, with implications for the study of population health.

THE GIST

The oldest modern human burial dates to more than 100,000 years ago, in Israel. This overlaps with the discovery of the buried remains of a three-year-old in Kenya some 80,000 years ago

Skeletal remains at ancient burial sites open a window into the dietary habits, environmental adaptations, microevolutionary characteristics, biological kinship, sex, and genetic history of the population

By comparing ancient and modern genomes from Mexico, researchers found evidence of positive selection in genes related to immunity. The study of genomes helps resolve mysteries, and gain new insights into the past

Legacy of colonial epidemics

The ceaseless wars, famines, and epidemics wrought by colonial invaders decimated the Mexican population. Their numbers fell from 10-20 million to 2 million by the end of the 16th century. In this period, diseases such as smallpox, measles, influenza, typhus, typhoid, and enteric fever spread among the people, resulting in a genetic bottleneck. The rapid decline of a population also shrinks the genetic variations therein. Future populations will be based on this smaller pool, and will thus be at greater risk of disease. Such events can leave long-lasting genetic footprints in the population. By studying them, researchers may be able to identify genes that have been subjected to genetic selection.

By comparing the ancient and modern genomes from Mexico, the researchers found evidence of positive selection in genes related to immunity, especially those associated with resistance to enteric fever caused by *Salmonella enterica Paratyphi C*, a pathogen serotype previously identified with the 16th century cocoliztli epidemic in Mexico. The study of ancient genomes and their modern counterparts allows us to resolve mysteries, dispel old hypotheses, and gain new insights from the past to light the way for the future.

(The authors are senior consultants at the Vishwanath Cancer Care Foundation, Adjunct Professors at Indian Institute of Technology, Kanpur and Dr. DY Patil Medical College, Hospital and Research Center, Pune.)

Chichén Itzá

- **Chichén Itzá is an ancient Mayan city located in modern-day Mexico.**
- **It is known for its grand architecture and iconic ceremonial temples, built around 800-1000 AD.**
- **The temples are also infamous for having been the site of human sacrifices made as ritual offerings, and have been under constant archaeological investigation for more than a century.**

- **The Maya civilization** developed in the **Maya Region**, an area that today comprises southeastern **Mexico**, all of **Guatemala** and **Belize**, and the western portions of **Honduras** and **El Salvador**.
- It includes the **northern lowlands** of the **Yucatán Peninsula** and the **Guatemalan Highlands** of the **Sierra Madre**, the Mexican state of **Chiapas**, southern **Guatemala**, **El Salvador**, and the southern lowlands of the Pacific littoral plain.

Why clouds go grey before they rain



Q: Why do clouds usually appear white but look grey when they're going to rain?

Vineeth E.K.

A: Scattered water droplets in the clouds are the reason. When the Sun shines over clouds, water droplets in the latter act like prisms, splitting white sunlight into its component colours. They send these rays of light of different colours (frequencies) flying in different directions at haphazard angles. These rays often manage to recombine because there are several droplets in clouds, all scattering sunlight and creating white light. This is why clouds are white.

But just before clouds are going to rain, the water droplets are swollen. They coalesce to form larger droplets, of a few millimetres or more each. These droplets absorb more light and transmit less to the base of the clouds. As a result, these clouds have a greyish appearance; only their base scatters white light (image) to observers on the ground. However, because enough sunlight illuminates the clouds' upper decks, they continue scattering white light to anyone viewing them from space



Dust scatters white light the same way clouds do for the same reason, in a process called Mie scattering. ROADTRIPWITHRAJ/UNSPLASH

or from aboard an aeroplane.

Such scattering phenomena manifest in other ways too. Dust scatters white light the same way clouds do for the same reason, in a process called Mie scattering. It takes place only when the size of the scattering particle is comparable to the wavelength of the light.

- *Karthik Vinod, intern with The Hindu*

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for 'Science', please write to science@thehindu.co.in with the subject 'Daily page'

Why clouds go grey before they rain

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BIG SHOT



Professor Hong Jin-kee with a bowl containing pink “meaty rice” at the Yonsei University in Seoul on May 21. In a small laboratory in the South Korean capital, a team of scientists is injecting cultured beef cells into individual grains of rice, in a process they hope will revolutionise how the world eats. AFP

Meaty Rice

- **this unique type of rice is prepared by embedding cultured beef cells into individual grains of rice. It is considered an eco-friendly, ethical and sustainable way for people to get their protein.**
- **What makes it unique is the faint buttery aroma due to beef muscles and fat cells and the beautiful pink hue.**

How can Himachal Pradesh fight against forest fires?

What does the State need to do in order to democratise forest management and curtail raging forest fires?

Tikender Singh Panwar

The story so far:

Himachal Pradesh (H.P.) is witnessing widespread forest fires across the region. According to the Himachal Pradesh Forest department, there have been a total of 1,684 forest fires since April 15. These fires have damaged a total of 17,471 hectares of forest land, resulting in significant loss to wildlife. From 2001 to 2023, H.P. has lost 957 hectares of tree cover from fires and 4.37 thousand hectares from all other drivers of loss.

How do forest fires start in the State?

Fires in the Himalayas occur during the pre-monsoon summer period of moisture stress, due to the resultant depletion of snowmelt water. The moisture conditions of the pre-monsoon season, characterised by rainstorms, play a critical role in determining the nature of forest fires. The less moisture there is, the greater the impact of the fires. Human activities such

as unattended campfires, discarded cigarettes etc., are also some of the common causes for forest fires.

These fires are also a major source of pollutants, including black carbon, which significantly contribute to glacier melt in the Himalayas and negatively influences the regional climate. The primary causes of these forest fires are faulty forestry practices, and treating forests from a utilitarian perspective, excluding people's participation.

Have the Himalayan forests undergone a transformation?

The Himalayan forests have been systematically transformed over the last two centuries. A crucial watershed moment in Indian forestry began with the construction of railways in the 1850s. Lord Dalhousie's understanding about railway construction was that the railways were to be constructed not just to market British goods but also to serve as an outlet for British capital seeking profitable avenues. Unfortunately, the profitability

of Himalayan forests continue to be a driving force. From 1853 to 1910, the construction of around 80,000 kms of railway track led to an assault on forests and the extinction of the customary rights of the people. Between 1869 and 1885, 6.5 million sleepers were made of Deodar, and the area for Chir pines was expanded for timber and resin. Total trees from which resin was tapped between 1910 and 1920 increased from 2,60,000 to 21,35,000. Resin was used for commercial and industrial applications, and its extraction continues to be a major source of production from pine forests. Verrier Elwin, an Oxford scholar and renegade priest, wrote in the early 20th century that State-managed forestry led to the gradual replacement of the Banj oak, a source of fuel, fodder, and leaf manure, with the Chir pine, which was more valued commercially as a source of timber and resin. Ecologically, Banj forests absorb a high content of rainwater, leading to better moisture retention and water springs in the mountains.

Currently, more than 17.8% of the total 37,033 square kilometers of forest area is covered with Chir pine trees in H.P. Chir forests are very vulnerable to forest fires.

What needs to be done?

Democratisation of forests is essential to ensure that people and communities who have lived in and around forests are made part of the forest management process. The rights of the local community have been periodically curtailed, and as a result, when forest fires start, first responders are nowhere to be found.

The traditional forest rights of Himalayan dwellers included the right to extract wood for fuel, timber, fodder, and other activities. H.P. is under Schedule V of the Indian Constitution, which requires community assent for development activities in the region. However, for large projects like hydro power generation, road widening, and four-lane highways, forests are being diverted with ease.

What the Himalayan States now need is to build mixed forestry and remove pine trees; ensure that both scientific and community knowledge converge and forest management is conducted in a participatory manner; implement check dams and other methods to revive water springs; create environmental services at the village level; and articulate their case with the ongoing 16th Finance Commission, seeking help apart from disaster mitigation funds.

Author is former Deputy Mayor, Shimla, and Member, Kerala Urban Commission.

THE GIST

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- Fires in the Himalayas occur during the pre-monsoon summer period of moisture stress, due to the resultant depletion of snowmelt water.
- The moisture conditions of the pre-monsoon season, characterised by rainstorms, play a critical role in determining the nature of forest fires.
- The less moisture there is, the greater the impact of the fires.
- Human activities such as unattended camp fires, discarded cigarettes etc., are also some of the common causes for forest fires.

- **These fires are also a major source of pollutants, including black carbon, which significantly contribute to glacier melt in the Himalayas and negatively influence the regional climate.**
- **The primary causes of these forest fires are faulty forestry practices, and treating forests from a utilitarian perspective, excluding people's participation.**

Himalayan transformation

- **early 20th century that State-managed forestry led to the gradual replacement of the Banj oak, a source of fuel, fodder, and leaf manure, with the Chir pine, which was more valued commercially as a source of timber and resin.**
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- **The rights of the local community have been periodically curtailed, and as a result, when forest fires start, first responders are nowhere to be found.**
- **The traditional forest rights of Himalayan dwellers included the right to extract wood for fuel, timber, fodder, and other activities.**

- **H.P. is under Schedule V of the Indian Constitution, which requires community assent for development activities in the region.**
- **However, for large projects like hydro power generation, road widening, and four-lane highways, forests are being diverted with ease.**
- **What the Himalayan States now need is to build mixed forestry and remove pine trees; ensure that both scientific and community knowledge converge and forest management is conducted in a participatory manner; implement check dams and other methods to revive water springs; create environmental services at the village level;**

Chinese forces seize two Philippines boats in disputed shoal

Associated Press

MANILA

Chinese forces seized two Philippine rubber boats that were delivering food and other supplies to a military outpost in a disputed South China Sea shoal in a tense confrontation in which some Filipino navy personnel were injured, Philippine security officials said on Tuesday.

The U.S. renewed a warning on Tuesday that it is obligated to defend the Philippines, a treaty ally, a day after the hours-long hostilities in Second Thomas Shoal. The shoal has been occupied by a small Philippine navy contingent aboard a long-grounded warship that has been closely monitored by China's coast guard and navy in a years-long stand-off.

There is fear that territorial disputes in the South China Sea could escalate and pit the United States and China in a larger conflict. China and the Philippines blamed each other for Monday's hostilities, the most serious in recent months, but provided few details.

A Philippine government task force overseeing the territorial disputes con-

demned what it said were "dangerous maneuvers, including ramming and towing" which disrupted an effort to transport food, water and other supplies to the Filipinos manning the territorial outpost on the grounded ship, the *BRP Sierra Madre*, at the shoal.

Two Philippine security officials, who had knowledge of the supply mission at the shoal, separately said that two rubber boats manned by Filipino navy personnel had approached the *BRP Sierra Madre* at the shoal to deliver fresh supplies when several Chinese coast guard personnel on speedboats arrived to disrupt the mission, sparking a scuffle and collisions.

At least eight of the Filipinos were injured, including one who lost a thumb, in the scuffle, said one of the two officials.

U.S. Deputy Secretary of State Kurt Campbell discussed China's actions with his Philippine counterpart, Maria Theresa Lazaro, in a telephone call. Both agreed that China's "dangerous actions threatened regional peace and stability," State Department spokesperson Matthew Miller said.



The U.S. renewed a warning that it is obligated to defend the Philippines, a day after the hostilities in Second Thomas Shoal. AP

Second Thomas Shoal,

- **Second Thomas Shoal, also known as Ayungin Shoal and Rén'ài Jiāo is a submerged reef in the Spratly Islands of the South China Sea, 105 nautical miles (194 km; 121 mi) west of Palawan, Philippines**

saurabh pandey upsc

Maritime standoff

A new standoff is developing in the disputed waters of the South China Sea between Chinese and Philippine forces at the Second Thomas Reef.

/// Exclusive Economic Zone



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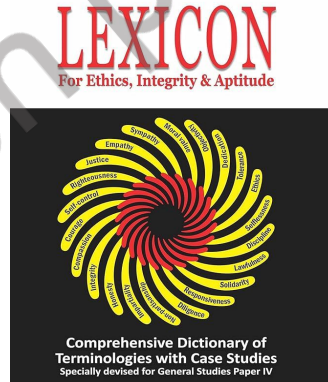
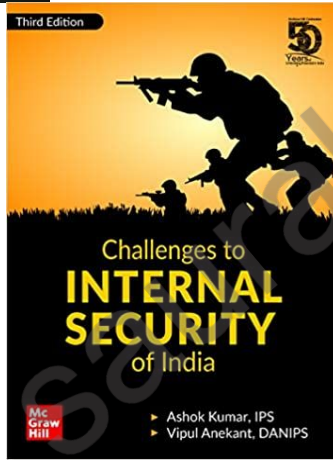
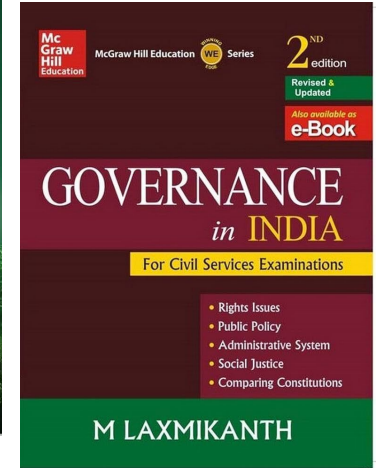
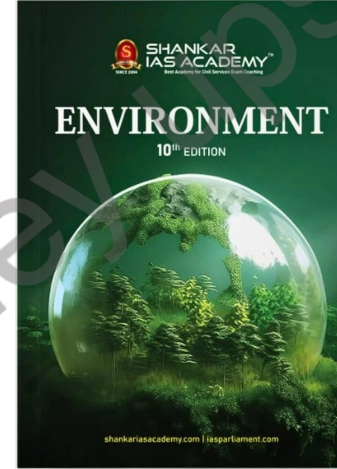
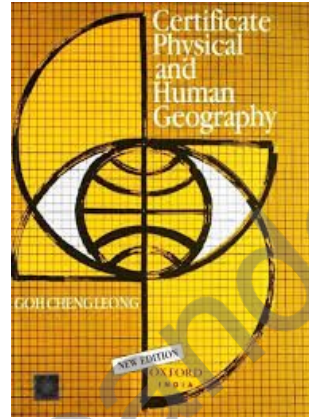
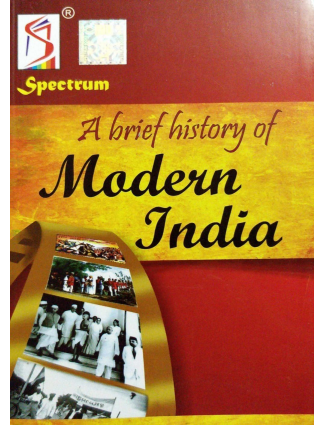
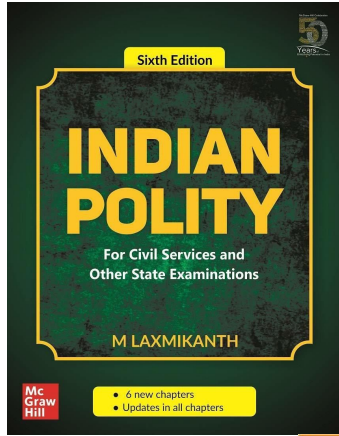
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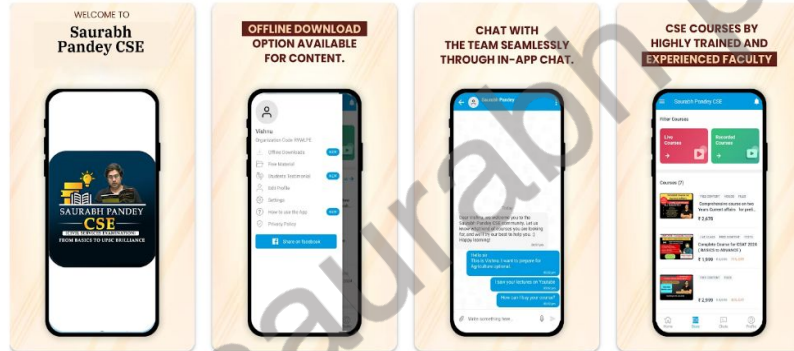
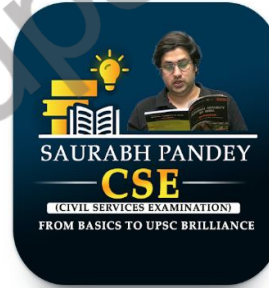
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X 22nd october 2...



Periodical cicada emergence disrupts food webs

The periodical mass emergence of cicadas in eastern North American forests can "rewire" forest food webs and initiate a cascade of impacts that propagates throughout the food chain, as per a study that quantified effects of the 2021 brood X cicada emergence. The study found that when insect-eating birds have prey in the form of cicadas and thus shift their focus away from their usual prey – leaf-eating caterpillars – the caterpillars feast more heavily upon the leaves of oak saplings, doubling insect leaf damage.

- The periodical mass emergence of cicadas in eastern North American forests can "rewire" forest food webs and initiate a cascade of impacts that propagates throughout the food chain, as per a study that quantified effects of the 2021 Brood X cicada emergence.

The cicadas are a superfamily, the Cicadoidea, of insects in the order

Hemiptera.



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X 10th october 2...

States as per Article 244(2).

What are Scheduled Areas?

- Scheduled Areas cover 11.3% of India's land area, and have been notified in 10 States: Andhra Pradesh, Telangana, Odisha, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, Gujarat, Maharashtra, and Himachal Pradesh

How are Scheduled Areas governed?

- The President of India notifies India's Scheduled Areas. States with Scheduled Areas need to constitute a Tribal Advisory Council with up to 20 ST members.
- They will advise the Governor on matters referred to them regarding ST welfare.
- The Governor will then submit a report every year to the President regarding the administration of Scheduled Areas.

- The national government can give directions to the State regarding the administration of Scheduled Areas.
- The Governor can repeal or amend any law enacted by Parliament and the State Legislative Assembly in its application to the Scheduled Area of that State.

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X 7TH DECEMBE...

Garba dance of Gujarat makes it to UNESCO list

Sreeparna Chakrabarty
NEW DELHI

Gujarat's traditional dance form "Garba" was on Wednesday included in the list of Intangible Cultural Heritage by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The popular dance form is the 15th cultural item from India to make it to the UNESCO list. Kolkata's Durga Puja was the last one added two years ago.

The inclusion has been made under the provisions of the 2003 Convention for the Safeguarding of Intangible Cultural Heritage. The international cultural body described the 'Garba' as a ritualistic and devotional dance performed in India.

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- The international cultural body described the 'Garba' as a **ritualistic and devotional dance performed in India.**



'Garba' dance of Gujarat is making the world sick

By Sreeparna Chakrabarty
New Delhi
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WION
 Russia loads 'Avangard' missile into launch Silo, fears of nuclear warfare on rise | World DNA

Que-3 With reference to exercise 'Mitra Shakti', consider the following statements

- 1- Between India and Nepal.
- 2- The aim of the exercise is to jointly rehearse sub-conventional operations under Chapter VII of the United Nations Charter, which authorises the Security Council to take enforcement measures, including the use of military force, to address threats to international peace and security.
- 3- "Exercise MITRA SHAKTI-2023" recently commenced in Goa.

How many of the above statements are correct?

a) Only one b) Only two
 c) All three d) None

Ans 3- (a)

- "Exercise MITRA SHAKTI-2023" recently commenced in Aunah (Pune).
- Between India and Sri Lanka.

• The Constituent Assembly debated whether fundamental rights including this one could be suspended or limited during an Emergency. The Article cannot be suspended except during the period of Emergency.

Can High Courts be approached in cases of violation of fundamental rights?

- Both the High Courts and the Supreme Court can be approached for violation or enactment of fundamental rights through five kinds of writs:
- Habeas corpus (related to personal liberty in cases of illegal detentions and wrongful arrests)
- Mandamus — directing public officials, governments, courts to perform a statutory duty;
- Quo warrant — to show by what warrant is a person holding public office;

- Prohibition — directing judicial or quasi-judicial authorities to stop proceedings which it has no jurisdiction for; and
- Certiorari — re-examination of an order given by judicial, quasi-judicial or administrative authorities.
- In civil or criminal matters, the first remedy available to an aggrieved person is that of trial courts, followed by an appeal in the High Court and then the Supreme Court.
- When it comes to violation of fundamental rights, an individual can approach the High Court under Article 226 or the Supreme Court directly under Article 32.
- Article 226, however, is not a fundamental right like Article 32.

IE

- 12th BRICS summit

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 100 Nobel Peace Prize Economic Sciences awarded To Claudia Gold...
 Simon Cipher Case, He Jishi Missing, Israel Hamas War

... awarded to ... of women's

Que-2 Consider the following statements

- 1- Article 244, pertaining to the administration of Scheduled and Tribal Areas, is the single most important constitutional provision for STs.
- 2- Article 244(1) provides for the application of Fifth Schedule provisions to Scheduled Areas notified in any State other than Assam, Meghalaya, Tripura, and Mizoram, the Sixth Schedule applies to these states as per Article 244(2).
- 3- The Prime Minister of India notifies India's Scheduled Areas.

How many of the above statements are correct?

a) Only one b) Only two
 c) All three d) None

Ans (b)

The President of India notifies India's Scheduled Areas.

Scheduled Areas cover 11.3% of India's land area, and have been notified in 10 States: Andhra Pradesh, Telangana, Odisha, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, Gujarat, Maharashtra and Himachal Pradesh. In 2015, Kerala proposed to notify 2,133 habitations, five gram panchayats and two wards in five districts. It awaits the Indian government's approval.

- The President of India notifies India's Scheduled Areas. States with Scheduled Areas need to constitute a Tribal Advisory Council with up to 20 ST members. They will advise the Governor on matters referred to them regarding ST welfare. The Governor will then submit a report every year to the President regarding the administration of Scheduled Areas.
- The national government can give directions to the State regarding the administration of Scheduled Areas. The Governor can repeal or amend any law enacted by Parliament and the State Legislative Assembly in its application to the Scheduled Area of that State. The Governor can also make regulations for a Scheduled Area, especially to prohibit or restrict the transfer of land by or among members of the STs, and regulate the allotment of land to STs and money-lending to STs.



Ethics vs privilege committee

- Objective: It oversees the moral and ethical conduct of members and examines cases of misconduct referred to it.
- Appointment of members in Lok Sabha: The members of the Ethics Committee are appointed by the Speaker for a period of one year.

Procedure for complaints

- Any person can complain against a Member through another Lok Sabha MP, along with evidence of the alleged misconduct, and an affidavit stating that the complaint is not "false, frivolous, or vexatious".
- If the Member himself complains, the affidavit is not needed.
- The Speaker can refer to the Committee any complaint against an MP.
- The Committee does not entertain complaints based only on media reports or on matters that are sub-judice.
- The Committee makes a prima facie inquiry before deciding to examine a complaint. It makes its recommendations after evaluating the complaint.
- The Rules (for example, the Rules of Procedure and Conduct of Business in the Lok Sabha) applicable to the Committee of Privileges also apply to the ethics panel.
- An allegation of corruption against an MP can be sent to either body, but usually more serious accusations go to the Privileges Committee.
- The mandate of the Privileges Committee is to safeguard the "freedom, authority, and dignity of Parliament".
- These privileges are enjoyed by individual Members as well as the

House as a whole.

- An MP can be examined for breach of privilege; a non-MP too can be accused of breach of privilege for actions that attack the authority and

Santiniketan finds its place on UNESCO's World Heritage List

World body makes announcement on Sunday. Manisa says town, nurtured by Tagore, has been reportedly Bengal Culture Ministry says exhibiting important heritage in human cities



UNESCO World Heritage List... Santiniketan, a town established by Nobel laureate Rabindranath Tagore, made it to the UNESCO's World Heritage List on Sunday. Located in West Bengal's Birbhum district, Santiniketan, which means "abode of peace", started taking shape in 1901 and is the place where Tagore laid the foundations of Visva-Bharati University.

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Located in West Bengal's Birbhum district, Santiniketan, which means "abode of peace", started taking shape in 1901 and is the place where Tagore laid the foundations of Visva-Bharati University.

EU chief promises a plan of action as migrants flock to island

Ursula von der Leyen, along with Italian PM Giorgia Meloni, visits Lampedusa where more than 2000 people have arrived this week. EU leaders program have arrived in Italy this year, almost double the figure by the corresponding period in 2022.



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ceramics and glasses, greases, metallurgical powders, polymers and other uses.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Que-2 With reference to Parliaments special sessions, consider the following statements

- There is specific provision in the Constitution that deals with special sessions.
- Article 352, which deals with the proclamation of Emergency, refers to a 'special sitting' of the House, this clause was added through the 44th Amendment Act in 1978, which included safeguards against the Emergency.
- The Question Hour was suspended during the session.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None



Que-3 Consider the following statements about Sacred Ensembles of the Hoysala

- This includes five temples in Karnataka, has been recently inscribed on the UNESCO's World Heritage List.
- The Hoysala Temples, built in the 12th and 13th centuries by the Hoysala kings, are dedicated to Shiva and Vishnu.
- The temples became targets of plundered and destruction by the Delhi Sultanate army of Ala-ud-din Khilji in the early 14th century and another Delhi Sultanate army of Sultan Muhammad bin Tughluq in 1326 AD.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None



Que-4 Consider the following statements about SHREYAS scheme

- It comprises 4 central sector sub-schemes.
- The objective of the Scheme is to provide coaching of good quality for economically disadvantaged Scheduled Castes (SCs) and Other Backward Classes (OBCs) candidates to enable them appear in competitive and entrance examinations.
- The ceiling of the total family income under the scheme is 2 lakhs per annum and 3500 slots are allotted per annum.

How many of the above statements are correct?

- a) Only one
- b) Only two
- c) All three
- d) None

Que-5 Consider the following statements about Women's Reservation Bill

- The Constitution (One Hundred and Twenty-Eight Amendment) Bill, 2023, seeking to reserve 33% of seats in Lok Sabha and state Assemblies for women.



Que-5 With reference to Shumang Leela, consider the following statements

- Shumang Leela is a traditional form of theatre in Tripura.
- In this the roles of women are all played by men, called Nupi Shabis.
- It is performed in an open courtyard surrounded by spectators on all four sides.

Which of the following given above is/are correct

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

Ans: (d)

- Shumang Leela is a traditional form of theatre in Manipur.
- In the case of women's theatre groups, the roles of men are played by women.
- Shumang Leela translates to "courtyard performance".
- Today, Shumang Leela is of two types: Nupa Shumang Leela, performed only by men, and Nupi Shumang Leela, performed only by women.

Que-6 Consider the following statements about Red Sanders also called Red Sandalwood

- It is a species found in the southern tropical dry deciduous forest of Telangana.
- The tree reaches an average height of 10 to 15 metres.
- The species is listed as 'Endangered' in the International Union for Conservation of Nature and falls in Appendix II of CITES.

Which of the following given above is/are correct

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

Ans: (d)

- It is a species found in the southern tropical dry deciduous forest of Andhra Pradesh (AP).
- CITES (shorter name for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention).
- In India, it has been enlisted under Schedule IV of the Wildlife (Protection) Act, 1972.
- The heartwood of Red Sanders is in demand in the domestic and international markets for making

furniture, handicrafts and musical instruments in China and Japan. The red dye obtained from the wood is used as a colouring agent in the textiles, medicine and food industries.

Que-7 Consider the following statements about Compressed Biogas (CBG) and compressed natural gas (CNG)

- Chemically, CBG is the same as CNG — both are compressed methane — and has the same calorific value.
- CNG is a by-product of petroleum, CBG can be produced from any biomass, be it crop residue, cattle dung, sugarcane press mud, municipal wet waste or effluents from a sewage treatment plant.
- CBG cannot be transported through cylinders or pipelines to retail outlets.

Which of the following given above is/are correct

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

Que-8 Finance Minister announced 500 new 'waste to wealth' plants under Galvanizing Organic Bio-Agro Resources Dhan scheme (GOBARdhan) in the Union Budget 2023. Consider the following statements about this

- The new GOBARdhan scheme is an upgrade and an expansion of the old one of the same name, launched in 2018 by the Department of Drinking Water and Sanitation.
- This scheme limited itself to cluster- or community-level biogas plants, for instance, for Arganwadis or farms.
- Compressed biogas (CBG) was never a part of the initial scheme launched in 2018 because it is very different from biogas in terms of utilisation and constituents.

Which of the following given above is/are correct

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

c) 1, 2 and 3 d) 3 only

Ans: (b)

- In the union budget of FY 2023-24, it is announced to launch a mission to eliminate sickle cell anemia by 2047.

Que-7 Lamu Archipelago, recently in News, belongs to which country

- a) Somalia
b) Malaysia
c) Indonesia
d) Kenya

Ans: (d)

- The Lamu Archipelago is located in the Indian Ocean close to the northern coast of Kenya, to which it belongs. The islands lie between the towns of Lamu and Kiunga, near the Coast Province. It is a part of Lamu District.

Que-8 Consider the following statements about "Operation Sadbhavana", recently in News

- Launched by an Indian Army.
- For development of Jammu and Kashmir.

- Some of the objectives achieved through Operation Sadbhavana are national interfaith tours, women's empowerment, employment generation, education, and

development activities geared towards nation-building.

Which of the following given above is/are correct

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

Ans: (b)

- For development of Ladakh.
- The Indian Army is organising multiple welfare activities, such as running schools and infrastructure development projects, as part of "Operation Sadbhavana" in the Union Territory of Ladakh.

Que-1 Consider the following statements

- A spy balloon is literally a gas-filled balloon that is flying quite high in the sky, more or less where we fly commercial airplanes.
- Disadvantage that low Earth orbit satellites have is that they are continually moving around the Earth.
- Geosynchronous orbit satellite has the disadvantage that it's harder to see things clearly when you're very, very far away.

Which of the following given above is/are correct

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

Ans: (b)

- The disadvantage these low Earth orbit satellites have is that they are continually moving around the Earth.

of what we call persistence, allowing satellites to capture images continuously.

Que-2 With reference to Paris Club, consider the following statements

- The Paris Club is a group of mostly western creditor countries.
- It grew from a 1956 meeting in which Brazil agreed to meet its public creditors in Paris.
- Their objective is to find sustainable debt-relief solutions for countries that are unable to repay their bilateral loans.

Which of the following given above is/are correct

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

Ans: (b)

- It grew from a 1956 meeting in which

Exchange traded fund

- An exchange-traded fund (ETF) is a pooled investment security that can be bought and sold like an individual stock.
- ETFs can be structured to track anything from the price of a commodity to a large and diverse collection of securities.
- ETFs can even be designed to track specific investment strategies.

- ETF share prices fluctuate all day as the ETF is bought and sold; this is different from mutual funds, which only trade once a day after the market closes.
- ETFs offer low expense ratios and fewer broker commissions than buying the stocks individually.
- An ETF must be registered with the Securities and Exchange Commission.

Pros and Cons of Exchange-Traded Funds

<ul style="list-style-type: none"> Lower costs Diversification and risk management Tax benefits Easy to trade 	<ul style="list-style-type: none"> Potentially higher costs Limited control Tracking error
---	---

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7 MEMBER COUNTRIES

Importance of BIMSTEC

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- Estimated GDP of \$2.7 trillion
- Most populous the world's traded goods from the Bay every year
- Key economic trade, technology, energy, transport



... DELIMITATION COMMISSION ...

DELIMITATION COMMISSION

- Delimitation literally means the act or process of fixing limits or boundaries of territorial constituencies in a country or a province having a legislative body. The job of delimitation is assigned to a high power body. Such a body is known as Delimitation Commission or a Boundary Commission
- In India, such Delimitation Commissions have been constituted 4 times - in 1952 under the Delimitation Commission Act, 1952, in 1963 under Delimitation Commission Act, 1962, in 1973 under Delimitation Act, 1972 and in 2002 under Delimitation Act, 2002.

- The Delimitation Commission in India is a high power body whose orders have the force of law and cannot be called in question before any court. These orders come into force on a date to be specified by the President of India in this behalf.
- The copies of its orders are laid before the House of the People and the State Legislative Assembly concerned, but no modifications are permissible therein by them.

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defends of ...adhwaiva Kutumbak

productivity, uphold good health and prevent poverty. ... CURRENT AFFAIRS BY SAURABH PANDEY SIR

- Question 5 With reference to Doppler radar network, consider the following statements
- It is named after Christian Doppler, the physicist who first proposed the concept of the Doppler effect.
 - It is a system of multiple radar stations that work together to provide comprehensive coverage of a specific area.
 - The entire stretch of India will be covered under the Doppler Weather Radar Network to better predict extreme weather events more accurately.
- Which of the following given above is/are correct
- a) 1 and 2 only b) 1 only
c) 1, 2 and 3 d) 2 and 3 only

CURRENT AFFAIRS BY SAURABH PANDEY SIR

- 5- (c)
- It is named after Christian Doppler, the physicist who first proposed the concept of the Doppler effect. The Doppler effect is the change in frequency or wavelength of a wave (such as sound or light) as it approaches or moves away from an observer.
 - What is a Doppler radar network?
 - A Doppler radar network is a system of multiple radar stations that work together to provide comprehensive coverage of a specific area. The system uses the Doppler effect to detect and track moving objects, such as weather systems, aircraft, and vehicles.
 - How does a Doppler radar network work?
 - Each station in the network includes a radar transmitter, which sends out a microwave signal, and a radar receiver, which detects the reflected signal. The transmitter and receiver are typically located at the same site, but they can also be separated by a significant distance. The radar signal reflects off any moving objects in its path and the change in frequency of the signal due to the Doppler effect is used to determine the speed and direction of the moving object.
 - What are the uses of a Doppler radar network?
 - Doppler radar networks are widely used for weather forecasting and severe weather warning, tracking of aircraft and vehicles, and also used in meteorology and atmospheric sciences. These radar networks provide detailed information about storm systems, including the location, size, and movement of thunderstorms, tornadoes, and other severe weather events.

CURRENT AFFAIRS BY SAURABH PANDEY SIR

- Question 6 Consider the following statements about Army Day
- India celebrates Army Day on January 15 every year.
 - The Army Day is celebrated every year to honour Cariappa and the defence forces.
 - 75th Army Day was held in Hyderabad this year.
- Which of the following given above is/are correct
- a) 1 and 2 only b) 1 and 3 only
c) 1, 2 and 3 d) 2 and 3 only

CURRENT AFFAIRS BY SAURABH PANDEY SIR

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- In 1997 Bangkok Declaration launched a modest grouping (of Bangladesh, India, Sri Lanka and Thailand), with the acronym, BIST-EC.
- Originally formed as BIST-EC (Bangladesh, India, Sri Lanka and Thailand Economic Cooperation) in 1997, it became BIMST-EC after Myanmar joined, and BIMSTEC in 2004, with the inclusion of Nepal and Bhutan. This unique set of five countries from South Asia and 100 from Southeast Asia are parents to an institution with an unwieldy name but lofty ambitions.

- 6- (a)
- The portal ensures end-to-end coverage of all the linked schemes.
 - Anyone can apply for a loan.

- 7- (b)
- Any serving or retired three-star officer from either of the three services, below 62 years on the date of projected appointment, would be eligible to be elevated as the CDS and will superannuate at the age of 65. Earlier, the post was only open for four-star generals.

- 8- (c)
- The Chief of Defence Staff is principally responsible for getting the armed forces better integrated than operating in silos as has been the case for decades.
 - The job includes the creation of new military commands which integrate the Army, Air Force, and Navy to fight together.
 - According to the government, the CDS acts as the Principal Military Adviser to the Defence Minister only on tri-services matters. The three service chiefs will continue to advise the Defence Minister exclusively on the matters concerning their respective services.
 - The CDS will not hold any military command, including over the three service chiefs.
 - As the Permanent Chairman of the Chief of Staff Committee, the CDS brings about jointness in operation, logistics, transport, training, support services, communications, repairs and maintenance of the three services.



Target Mains -2024/25 -

Q “Operations in cyberspace need to be dovetailed into the national security fabric, to evolve the ‘ends,’ ‘ways’ and ‘means’ to create advantage and influence events in all other operational environments and across all instruments of power” Examine

प्रश्न "साइबरस्पेस में संचालन को राष्ट्रीय सुरक्षा ढांचे में शामिल करने की आवश्यकता है, ताकि लाभ पैदा करने और अन्य सभी परिचालन वातावरणों और शक्ति के सभी उपकरणों में घटनाओं को प्रभावित करने के लिए 'साध्य', 'तरीके' और 'साधन' विकसित किए जा सकें।"

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Saurabh Pandey UPSC

