Topics

- Parkinson’s disease
- Coral Cages
- India In Arctic
- Siachen
- Mains

By saurabh pandey sir

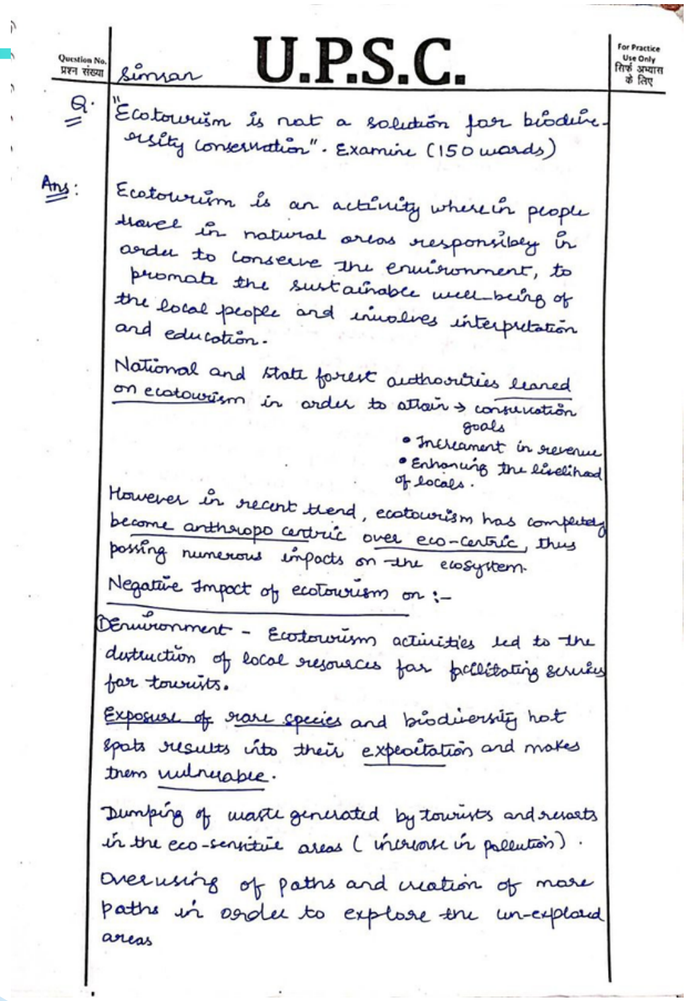
Target Mains 2024/25- Essay

Q" Coral cage is the solution for coral reef conservation" Elaborate

प्रश्न'' मूंगा पिंजरा मूंगा चट्टान संरक्षण का समाधान है'' विस्तार से बताएं

send your answer - Saurabh pandey upsc telegram channel

Answer review



Question No. प्रश्न संख्या | U.P.S.C. | For Practice Use Only निर्माण अभ्यास के लिए

Simran

Q. "Ecotourism is not a solution for biodiversity conservation". Examine (150 words)

Ans:

Ecotourism is an activity wherein people travel in natural areas responsibly in order to conserve the environment, to promote the sustainable well-being of the local people and involves interpretation and education.

National and State forest authorities leaned on ecotourism in order to attain → conservation goals
- Increament in revenue
- Enhancing the livelihood of locals.

However in recent trend, ecotourism has completely become anthropo centric over eco-centric, thus posing numerous impacts on the ecosystem.

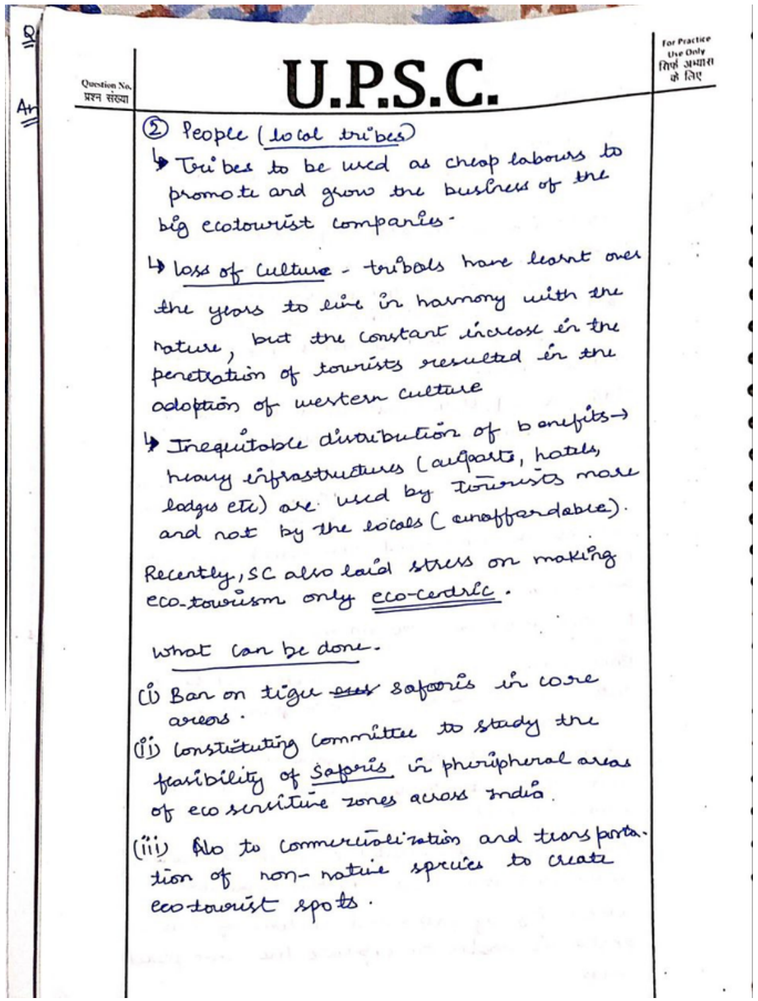
Negative impact of ecotourism on :-

① Environment - Ecotourism activities led to the destruction of local resources for facilitating services for tourists.

Exposure of rare species and biodiversity hot spots results into their exploitation and makes them vulnerable.

Dumping of waste generated by tourists and resorts in the eco-sensitive areas (increase in pollution).

Over using of paths and creation of more paths in order to explore the un-explored areas



Question No. प्रश्न संख्या | U.P.S.C. | For Practice Use Only निर्माण अभ्यास के लिए

② People (local tribes)

↳ Tribes to be used as cheap labours to promote and grow the business of the big ecotourist companies.

↳ loss of culture - tribals have learnt over the years to live in harmony with the nature, but the constant increase in the penetration of tourists resulted in the adoption of western culture

↳ Inequitable distribution of benefits → heavy infrastructures (airports, hotels, lodges etc) are used by tourists more and not by the locals (unaffordable).

Recently, SC also laid stress on making eco-tourism only eco-centric.

What can be done.

(i) Ban on tiger ~~safaris~~ safaris in core areas.

(ii) Constituting committee to study the feasibility of safaris in peripheral areas of eco sensitive zones across India.

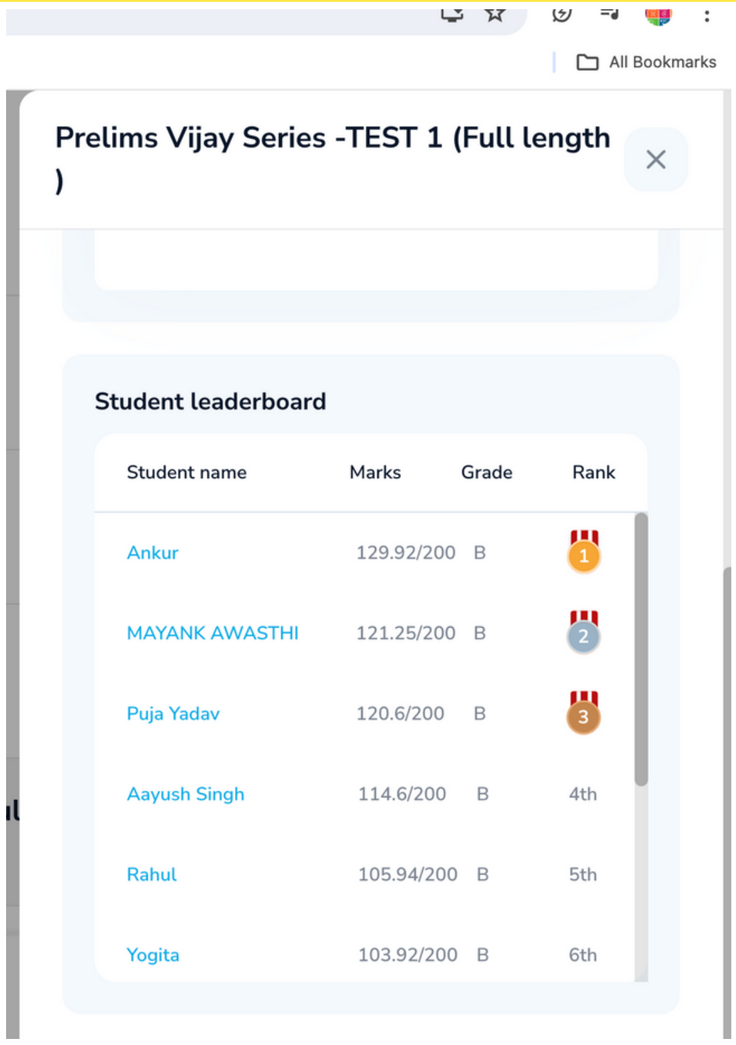
(iii) Ban to commercialization and transportation of non-native species to create eco-tourist spots.

TOPERS FIRST FULL LENGTH TEST (PRELIMS VIJAY SERIES)

Ankur -129.92

Mayank - 121.26

Puja Yadav-120



Gene variant tied to Parkinson's may also show a way to beat it

What makes each person genetically susceptible to nonfamilial Parkinson's disease is different. Using genetic data it is posible to test for types of dysfunction in the cell that are hallmarks of the disease. This will help identify environmental factors that influence the risk of developing it

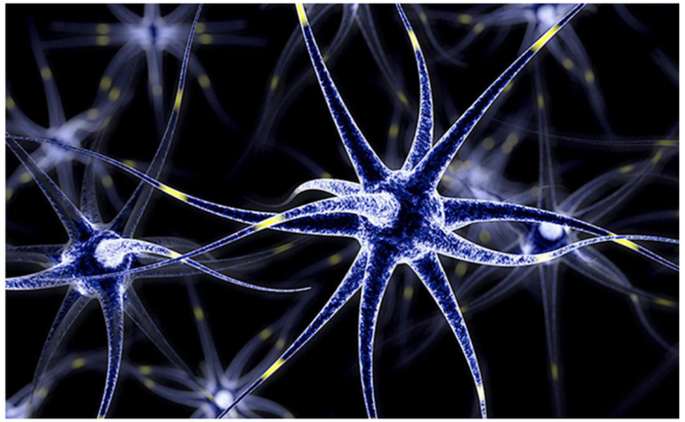
Matthew Farrer

Parkinson's disease is a neurodegenerative movement disorder that progresses relentlessly. It gradually impairs a person's ability to function until they ultimately become immobile and often develop dementia. In the U.S. alone, over a million people are afflicted with Parkinson's, and new cases and overall numbers are steadily increasing.

There is currently no treatment to slow or halt Parkinson's disease. Available drugs don't slow disease progression and can treat only certain symptoms. Medications that work early in the disease, however, such as Levodopa, generally become ineffective over the years, necessitating increased doses that can lead to disabling side effects. Without understanding the fundamental molecular cause of Parkinson's, it's improbable that researchers will be able to develop a medication to stop the disease from steadily worsening in patients.

Many factors may contribute to the development of Parkinson's, both environmental and genetic. Until recently, underlying genetic causes of the disease were unknown. Most cases of Parkinson's aren't inherited but sporadic, and early studies suggested a genetic basis was improbable.

Nevertheless, everything in biology has a genetic foundation. As a geneticist and molecular neuroscientist, I have devoted my career to predicting and preventing Parkinson's disease. In our newly published research, my team and I discovered a new genetic variant linked to Parkinson's that sheds light on the evolutionary origin of multiple forms of familial parkinsonism, opening doors to better understand and treat the disease.



In the U.S. alone, over a million people are afflicted with Parkinson's, and new cases and overall numbers are steadily increasing. GETTY IMAGES/ISTOCKPHOTO

Genetic linkages and associations

In the mid-1990s, researchers started looking into whether genetic differences between people with or without Parkinson's might identify specific genes or genetic variants that cause the disease. In general, I and other geneticists use two approaches to map the genetic blueprint of Parkinson's: linkage analysis and association studies.

Linkage analysis focuses on rare families where parkinsonism, or neurological conditions with similar symptoms to Parkinson's, is passed down. This technique looks for cases where a disease-causing version of the gene and Parkinson's appear to be passed down in the same person. It requires information on your family tree, clinical data and DNA samples. Relatively few families, such as those with more than two living, affected relatives willing to participate, are needed to expedite new genetic discoveries.

"Linkage" between a pathogenic genetic variant and disease development is so significant that it can inform a diagnosis. It has also become the basis of many lab models used to study the consequences of gene dysfunction and how to fix it. Linkage studies, like the one my team and I published, have identified pathogenic mutations in over 20 genes. Notably, many patients in families with parkinsonism have symptoms that are indistinguishable from typical, late-onset Parkinson's. Nevertheless, what causes inherited Parkinsonism, which typically affects people with earlier-onset disease, may not be the cause of Parkinson's in the general population.

Conversely, genome-wide association studies, or GWAS, compare genetic data from patients with Parkinson's with unrelated people of the same age, gender and ethnicity who don't have the disease. Typically, this involves assessing how frequently in both groups over 2 million common gene variants appear. Because these studies require analysing so many gene variants, researchers need to gather clinical data and DNA samples from over 100,000 people.

Although costly and time-consuming, the findings of genome-wide association studies are widely applicable. Combining the data of these studies has identified many locations in the genome that contribute to the risk of developing Parkinson's. Currently, there are over 92 locations in the genome that contain about 350 genes potentially involved in the disease. However, GWAS locations can be considered only in aggregate; individual results are not helpful in diagnosis nor in disease modeling, as the contribution of these individual genes to disease risk is so minimal.

Together, "linked" and "associated" discoveries imply a number of molecular pathways are involved in Parkinson's. Each identified gene and the proteins they encode typically can have more than one effect. The functions of each gene and protein may also vary by cell type. The question is which gene variants, functions and pathways are most relevant to Parkinson's? How do researchers meaningfully connect this data?

Parkinson's disease genes

Using linkage analysis, my team and I identified a new genetic mutation for Parkinson's disease called RAB32 Ser71Arg. This mutation was linked to Parkinsonism in three families and found in 13 other people in several countries, including Canada, France, Germany, Italy, Poland, Turkey, Tunisia, the U.S. and the U.K.

> Linkage between a pathogenic variant and disease development is so significant that it can inform diagnosis. It has also become the basis of many lab models used to study the consequences of gene dysfunction

Although the affected individuals and families originate from many parts of the world, they share an identical fragment of chromosome 6 that contains RAB32 Ser71Arg. This suggests these patients are all related to the same person; ancestrally, they are distant cousins. It also suggests there are many more cousins to identify.

With further analysis, we found RAB32 Ser71Arg interacts with several proteins previously linked to early- and late-onset Parkinsonism as well as nonfamilial Parkinson's disease. The RAB32 Ser71Arg variant also causes similar dysfunction within cells.

Together, the proteins encoded by these linked genes optimize levels of the neurotransmitter dopamine. Dopamine is lost in Parkinson's as the cells that produce it progressively die. Together, these linked genes and the proteins they encode and regulate specialised autophagy processes. In addition, these encoded proteins enable immunity within cells.

Such linked genes support the idea that these causes of inherited parkinsonism evolved to improve survival in early life because they enhance immune response to pathogens. RAB32 Ser71Arg suggest how and why many mutations have originated, despite creating a susceptible genetic background for Parkinson's in later life.

RAB32 Ser71Arg is the first linked gene researchers have identified that directly connects the dots between prior linked discoveries. The proteins encoded bring together three important functions of the cell: autophagy, immunity and mitochondrial function. While autophagy releases energy stored in the cell's trash, this needs to be coordinated with another specialized component within the cell, mitochondria, that are the major supplier of energy. Mitochondria also help to control cell immunity because they evolved from bacteria the cell's immune system recognizes as "self" rather than as an invading pathogen to destroy.

Identifying subtle genetic differences

Finding the molecular blueprint for familial Parkinson's is the first step to fixing the faulty mechanisms behind the disease. Like the owner's manual to your car's engine, it provides a practical guide of what to check when the motor fails.

Just as each make of motor is subtly different, what makes each person genetically susceptible to nonfamilial Parkinson's disease is also subtly different. However, analyzing genetic data can now test for types of dysfunction in the cell that are hallmarks of Parkinson's disease. This will help researchers identify environmental factors that influence the risk of developing Parkinson's, as well as medications that may help protect against the disease.

More patients and families participating in genetic research are needed to find additional components of the engine behind Parkinson's. Each person's genome has about 27 million variants of the 6 billion building blocks that make up their genes. There are many more genetic components for Parkinson's that have yet to be found.

As our discovery illustrates, each new gene that researchers identify can profoundly improve our ability to predict and prevent Parkinson's.

(Matthew Farrer is a professor of neurology, University of Florida. This article is republished from The Conversation.*)*

Parkinson’s disease

- □ Parkinson’s disease is a neurodegenerative movement disorder that progresses relentlessly.
- It gradually impairs a person’s ability to function until they ultimately become immobile and often develop dementia.
- Many factors may contribute to the development of Parkinson’s, both environmental and genetic.
- Until recently, underlying genetic causes of the disease were unknown.
- New genetic mutation for Parkinson’s disease called RAB32 Ser71Arg.

- RAB32 Ser71Arg interacts with several proteins previously linked to early- and late-onset Parkinsonism as well as nonfamilial Parkinson’s disease.
- , the proteins encoded by these linked genes optimize levels of the neurotransmitter dopamine.
- Dopamine is lost in Parkinson’s as the cells that produce it progressively die.
- Together, these linked genes and the proteins they encode and regulate specialised autophagy processes

- **Linked genes** are genes located close together on the same chromosome. They are usually (but not always) inherited together.
- **Autophagy** is the natural, conserved degradation of the cell that removes unnecessary or dysfunctional components through a lysosome-dependent regulated mechanism. It allows the orderly degradation and recycling of cellular components.

A 'Coral Fort' that researchers are using to protect laboratory-grown coral off the coast of Fort Lauderdale, Florida. AP

Scientists grasp at straws to save corals from fish

Associated Press

Researchers trying to prevent predatory fish from devouring laboratory-grown coral are grasping at biodegradable straws in an effort to restore what some call the rainforest of the sea.

Scientists around the world have been working for years to address the decline of coral reef populations. Just last summer, reef rescue groups in South Florida and the Florida Keys were trying to save coral from rising ocean temperatures. Besides working to keep existing coral alive, researchers have also been growing new coral in labs and then placing them in the ocean.

But protecting the underwater ecosystem that maintains upwards of 25% of all marine species is not easy. Even more challenging is making sure coral grown in a laboratory and placed into the ocean doesn't become fish food.

Marine researcher Kyle Pisano said one problem is predators like parrot fish attempt to bite and destroy the newly transplanted coral in areas like South Florida, leaving them with less than a 40% survival rate. With projects calling for tens of thousands of coral to be planted over the next decade, the losses add up when coral pieces can cost more

The cage consists of a limestone disc surrounded by eight vertical straws. The device doesn't have a top, because the juvenile coral needs sunlight and the fish don't face downward to eat

than $100 (Rs 8,300) each.

Mr. Pisano and his partner, Kirk Dotson, have developed 'Coral Fort', claiming the small biodegradable cage made in part with drinking straws boosts the survival rate of transplanted coral to over 90%.

The fish eventually lose interest in the coral as it matures, but scientists need to protect the coral in the meantime. Stainless steel and PVC pipe barriers have been set up around transplanted coral in the past, but those barriers needed to be cleaned of algae growth and eventually removed.

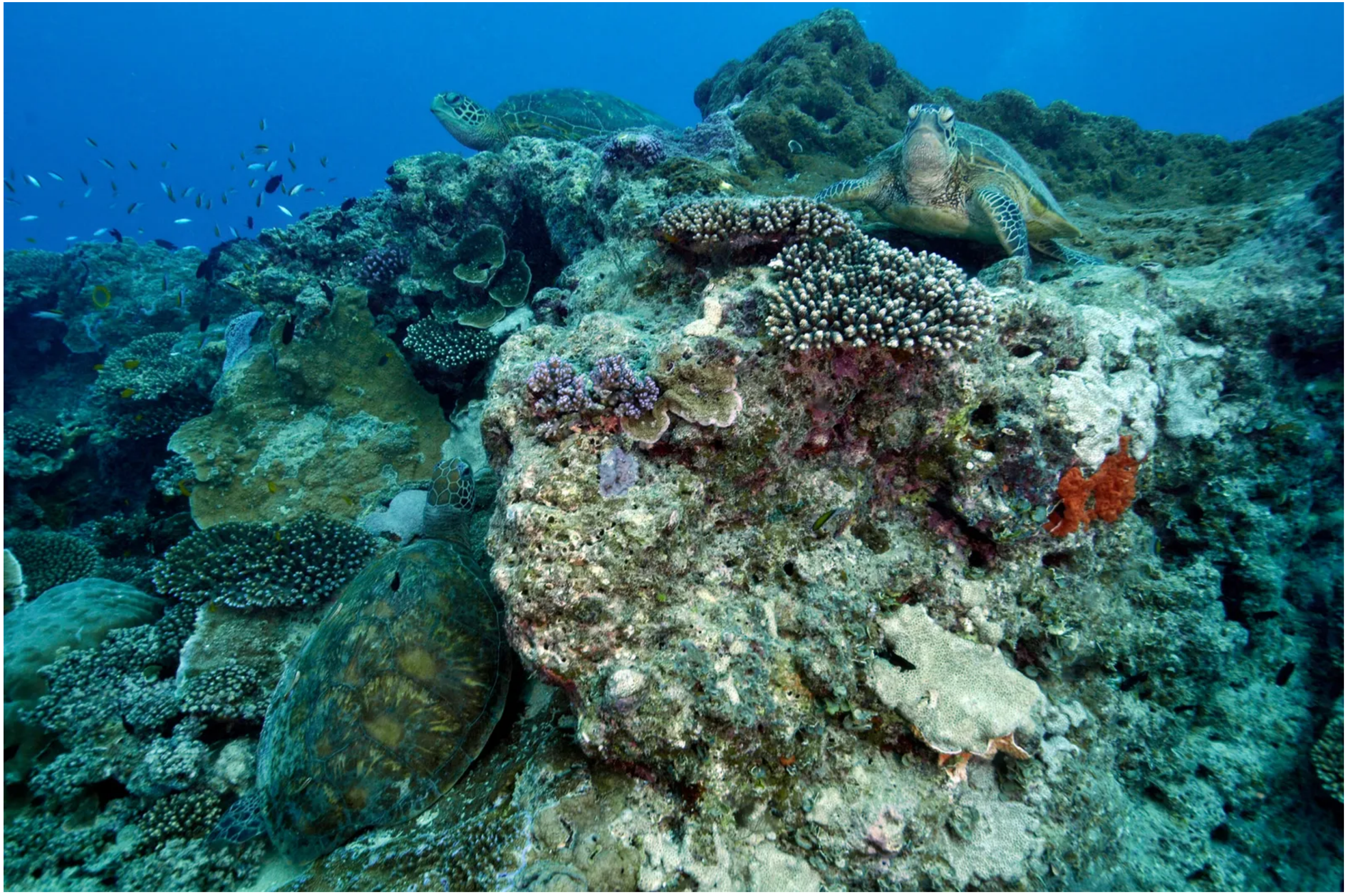
Mr. Pisano had the idea of creating a protective barrier that would eventually dissolve, eliminating the need to maintain or remove it. He began conducting offshore experiments with biodegradable coral cages as part of a master's degree program at Nova Southeastern University. He used a substance called polyhydroxyalkanoate, a biopolymer derived from the fermentation of canola oil. PHA biodegrades in the ocean, leaving only water and carbon dioxide. His findings were published last year.

The coral cage consists of a limestone disc surrounded by eight vertical phade brand drinking straws. The device doesn't have a top, Mr. Pisano said, because the juvenile coral needs sunlight and the parrot fish don't generally want to position themselves facing downward to eat..

Mr. Dotson, a retired aerospace engineer, and Mr. Pisano formed Reef Fortify Inc. to further develop the patent-pending Coral Fort. The first batch of cages were priced at $12 (Rs 1,000) each, but the two believe that could change as production scales up.

Coral Cages

- Scientists around the world have been working for years to address the decline of coral reef populations.
- Besides working to keep existing coral alive, researchers have also been growing new coral in labs and then placing them in the ocean.
- one problem is predators like parrot □sh attempt to bite and destroy the newly transplanted coral in areas like South Florida, leaving them with less than a 40% survival rate.



- developed ‘Coral Fort’, claiming the small biodegradable cage made in part with drinking straws boosts the survival rate of transplanted coral to over 90%.
- The fish eventually lose interest in the coral as it matures, but scientists need to protect the coral in the meantime.
- Stainless steel and PVC pipe barriers have been set up around transplanted coral in the past, but those barriers needed to be cleaned of algae growth and eventually removed.

LAST MILE BATCH

"LAST MILE" BATCH For Prelims 2024

C-GESIA Batch

- PT 730- 2yrs current
- International relations
- Agriculture for GS
- 10 Full length Tests
- Advance Geo, environment and science

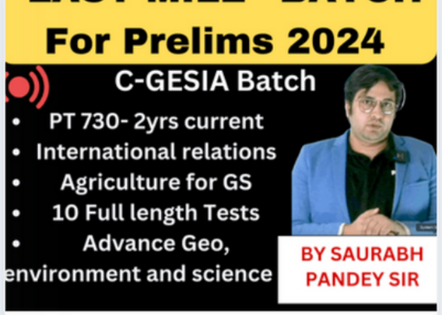
BY SAURABH PANDEY SIR

ONE COURSE ALL SUBJECTS

Rs 3897

CONNECT WITH SIR

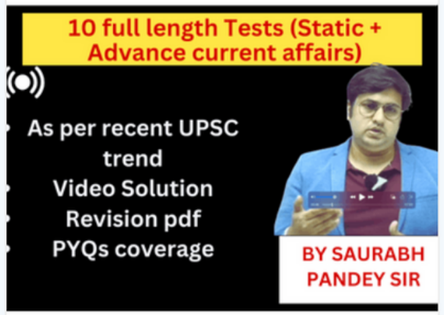
9057921649



Last Mile Batch For UPSC Pr elims 2024. (C-GESIA BAT...

Created by: You(Owner)

5 months



Prelims Vijay Series - 10 Ful l length Tests For upsc pre...

Created by: You(Owner)

4 months

International relations (Basi cs and current affairs)

Created by: You(Owner)

6 months Live

Agriculture for General stud ies

Created by: You(Owner)

6 months Live

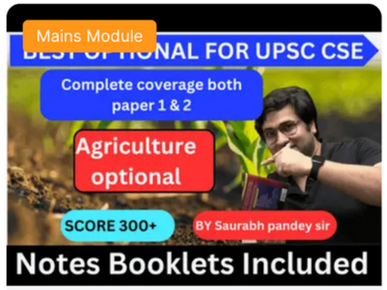
Popular Courses

See More →

"PT 730" PANDEY JI ADVANCED CURRENT...

Admin

Start Learning



Complete Agriculture Optional For IAS/IFoS (...

Admin

Start Learning

Summary With Explanation Of...

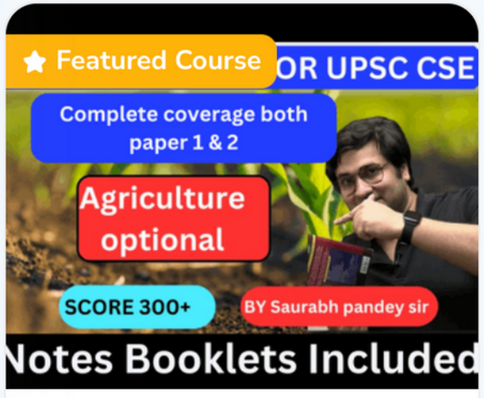
Admin

Start Learning

Prelims Vijay Series – 10 Full Length Tests For...

Admin

Start Learning



Complete Agriculture option al For IAS/IFoS (Batch-2)

Created by: You(Owner)

8 months

India's Arctic imperative

Abhijit Singh

is head of the Maritime Policy Initiative at Observer Research Foundation, New Delhi

Andreas Østhagen

is a Senior Research Fellow at the Fridtjof Nansen Institute in Oslo

In December 2023, when four Indian climate scientists arrived in Oslo to begin acclimatisation for India's maiden winter expedition at the Arctic, they had little idea of what lay ahead. Himadri, India's research station in the International Arctic Research Base at Svalbard in Norway, had until then hosted missions only in the summer. A winter expedition entails living in the intense cold (as low as -15 degrees Celsius) after a period of rigorous acclimatisation. More concerning for Indian researchers was the daunting prospect of polar nights.

Growing interest in the Arctic

In March 2024, India's first winter experience at the Arctic came to a successful end. While the scientists will doubtless be proud of their feat, India's long reluctance to embark on an all-year Arctic mission calls for introspection. For over a decade, India's National Centre for Polar and Ocean Research saw no reason for a winter mission to the Arctic. What changed Indian policy, ostensibly, was scientific data showing that the Arctic was warming faster than previously thought. When facts tying catastrophic climatic occurrences in India to the melting of Arctic Sea ice emerged, decision-makers felt compelled to act.

Second, New Delhi is seized of the opening up of Arctic Sea routes, primarily the Northern Sea Route, and would like to route Indian trade through the region. This might help India reduce costs for shipping companies along with time, fuel, and security costs for transmitting goods.

The third reason is geopolitics. China's growing investments in the Arctic have raised concern in India. Russia's decision to grant China expanded access to the Northern Sea Route has deepened this anxiety. India's increasing focus on the Arctic comes at a time of heightened tensions in the region, fuelled by the Russia-Ukraine conflict and exacerbated by the suspension of various regional cooperative forums. There are concerns about the potential repercussions of these tensions, especially given Russia's growing reliance on its nuclear deterrent on the Kola Peninsula. For India, which aims to maintain constructive relations with both western nations and Russia, these developments carry significant strategic implications.

To be sure, India is no newcomer to the Arctic. Its involvement in the region goes back to 1920, with the signing of the Svalbard Treaty in Paris. In 2007, India undertook its first research mission to investigate Arctic microbiology, atmospheric sciences, and geology. A year later, India became the only developing country, aside from China, to establish an Arctic research base. After being granted 'observer' status by the Arctic Council in 2013, India commissioned a multi-sensor moored observatory in Svalbard in 2014 and an atmospheric laboratory in 2016. The work at these stations focuses on examining Arctic ice systems and glaciers and the consequences of Arctic melt on the Himalayas and the Indian monsoon.

Even so, the issue of Indian engagement in the Arctic divides the country's academic and policy communities. Opinions are split over the potential impacts of the changing climate in the Arctic on India's economy. The concern primarily stems from mining in the region for fossil fuels, an area where India has yet to articulate a clear economic strategy. The proponents of economic exploitation in the Arctic advocate a pragmatic approach in the region, especially around oil and gas exploration, and mining. The sceptics warn about the potential environmental consequences and underscore the need for a more balanced policy framework that recognises the negative aspects of maritime resource exploitation.

While the Indian government seems keen to benefit from seabed mining and resource exploitation in the Arctic, it ought to unequivocally back a sustainable mode of extraction

Potential for collaboration

Norway, the present chair of the Arctic Council, has close ties with India. Since the late 1980s, the two countries have collaborated to investigate changing conditions in the Arctic and Antarctic, as well as their impact on South Asia. As climate change ends up more deeply affecting the Arctic and the South Asian monsoon, these efforts have accelerated over time.

India's present policy is to cooperate with Arctic countries in green energy, and green and clean industries, as a way of bolstering its 'responsible stakeholder' credentials. With Denmark and Finland, for instance, Indian collaboration has come in areas such as waste management, pollution control, renewable energy, and green technology. Many believe a partnership with Norway could be transformational for India as it would enable greater Indian participation in the Arctic Council's working groups, tackling issues such as the blue economy, connectivity, maritime transportation, investment and infrastructure, and responsible resource development. While the Indian government seems keen to benefit from seabed mining and resource exploitation in the Arctic, it ought to unequivocally back a sustainable mode of extraction.

Understandably, a partnership with Norway is likely to be focused on scientific research and climate and environmental protection. These are two of the six pillars that comprise India's Arctic Policy (the other four being economic and human development; transportation and connectivity; governance and international cooperation; and national capacity building). India would perhaps still look to explore economic opportunities in the Arctic. Norway could, then, help India design a sustainable policy that accommodates the needs of both the scientific community and industry. As global geopolitical tensions are also mounting in the Arctic, finding constructive and non-sensitive ways to alleviate pressure will be in the interest of both India and Norway.

SAURABH PANDEY
CSE
(CIVIL SERVICES EXAMINATION)
FROM BASICS TO UPSC BRILLIANCE

India In Arctic

- What changed Indian policy, ostensibly, was scientific data showing that the Arctic was warming faster than previously thought.
- When facts tying catastrophic climatic occurrences in India to the melting of Arctic Sea ice emerged, decision-makers felt compelled to act.
- Second, New Delhi is seized of the opening up of Arctic Sea routes, primarily the Northern Sea Route, and would like to route Indian trade through the region.
- This might help India reduce costs for shipping companies along with time, fuel, and security costs for transmitting goods.
-

The Hindu analysis by saurabh pandey sir


Arctic Circle
RUSSIA
FINLAND
SWEDEN
Arctic Regions
NORWAY
North Pole
ARCTIC OCEAN
ICELAND
Greenland
(Denmark)
Alaska
(U.S.)
CANADA
© Encyclopædia Britannica, Inc.


Alaska
ARCTIC
OCEAN
North Pole
NORWAY
Bering
Strait
Northern Sea Route
St. Petersburg
Siberia
RUSSIA
Vladivostok
Suez Canal
CHINA
Horn of
Africa
Existing route
Strait of
Malacca

- The third reason is geopolitics. China’s growing investments in the Arctic have raised concern in India.
- Russia’s decision to grant China expanded access to the Northern Sea Route has deepened this anxiety.
- India’s increasing focus on the Arctic comes at a time of heightened tensions in the region, fuelled by the Russia-Ukraine con□ict and exacerbated by the suspension of various regional cooperative forums.
-

- There are concerns about the potential repercussions of these tensions, especially given Russia’s growing reliance on its nuclear deterrent on the Kola Peninsula.
- For India, which aims to maintain constructive relations with both western nations and Russia, these developments carry significant strategic implications.
- To be sure, India is no newcomer to the Arctic. Its involvement in the region goes back to 1920, with the signing of the Svalbard Treaty in Paris.
- In 2007, India undertook its first research mission to investigate Arctic microbiology, atmospheric sciences, and geology.
- A year later, India became the only developing country, aside from China, to establish an Arctic research base.

- After being granted ‘observer’ status by the Arctic Council in 2013, India commissioned a multi-sensor moored observatory in Svalbard in 2014 and an atmospheric laboratory in 2016.
- The work at these stations focuses on examining Arctic ice systems and glaciers and the consequences of Arctic melt on the Himalayas and the Indian monsoon.
-

- the issue of Indian engagement in the Arctic divides the country’s academic and policy communities.
- Opinions are split over the potential impacts of the changing climate in the Arctic on India’s economy.
- The concern primarily stems from mining in the region for fossil fuels, an area where India has yet to articulate a clear economic strategy.
- The proponents of economic exploitation in the Arctic advocate a pragmatic approach in the region, especially around oil and gas exploration, and mining
-

India’s Arctic Policy

- India’s present policy is to cooperate with Arctic countries in green energy, and green and clean industries, as a way of bolstering its ‘responsible stakeholder’ credentials.
- With Denmark and Finland, for instance, Indian collaboration has come in areas such as waste management, pollution control, renewable energy, and green technology.
- Many believe a partnership with Norway could be transformational for India as it would enable greater Indian participation in the Arctic Council’s working groups, tackling issues such as the blue economy, connectivity, maritime transportation, investment and infrastructure, and responsible resource development.
- While the Indian government seems keen to bene□t from seabed mining and resource exploitation in the Arctic, it ought to unequivocally back a sustainable mode of extraction

The Hindu analysis by saurabh pandey sir

- India’s Arctic Policy (the other four being economic and human development; transportation and connectivity; governance and international cooperation; and national capacity building)

Siachen: 40 years of Op Meghdoot

April 13, 2024 marks four decades since the Indian Army pre-empted Pakistan and occupied the Siachen glacier on the Saltoro ridge, overlooking the Nubra valley in the Karakoram ranges. While a ceasefire is in place, the operation continues to this day

FULL CONTEXT

Dinakar Peri

"The land is so barren and the passes so high that only the best of friends and fiercest of enemies come by" – reads a Ladakhi saying at Kumar post on the Siachen Glacier located at an altitude of 15,632 feet. The saying captures the conflict on the icy glacier between India and Pakistan. April 13, 2024 marks four decades since the Indian Army pre-empted Pakistan and occupied the glacier on the Saltoro ridge, overlooking the Nubra valley in the Karakoram ranges. Extreme weather is the biggest enemy on the glacier. Around 1,150 soldiers have lost their lives, majority of them to the vagaries of extreme weather.

Conflicting claims

Siachen, in Balti language means "land of roses' – 'Sia' is a kind of rose species that grows in the region and 'Chen' means "in abundance". However, it is known for being the world's highest and coldest battlefield. It sits at a very strategic location with Pakistan on the left and China on the right.

Siachen is a legacy of the Partition between India and Pakistan. While the Line of Control (LoC) was delineated and accepted by both sides upto NJ-9842 as part of the 1972 Simla agreement, the glacier itself was left unmarked. India claims the area based on the Jammu and Kashmir Accession Agreement of 1947 and the Karachi Agreement of 1949, which define the ceasefire line beyond NJ-9842 as running "Northwards to the glaciers". On the other hand, Pakistan interprets it as 'North-Eastwards' to claim the area beyond the Saltoro Ridge and beyond Siachen as its own. This would give Pakistan direct connectivity to China as well as strategic oversight over the Ladakh region and the crucial Leh-Srinagar highway, posing a serious threat to India.

The genesis of Operation Meghdoot

In the 1970s and 1980s, Pakistan began allowing foreign mountaineering expeditions, resorting to cartographic aggression, to add credence to its claims. Following intelligence inputs of imminent military action by Pakistan in early 1984, India moved to pre-empt it.

Mountaineering expeditions led by Col. Narinder 'Bull' Kumar to the Siachen glacier and Saltoro range as Commandant of the High Altitude Warfare School (HAWS) in the early 1980s helped immensely in the planning process leading up to Operation Meghdoot. Based on these recce reports, the Indian Army launched 'Operation Meghdoot' on April 13, 1984 to capture the 76.4 km-long glacier. This was accomplished after a platoon of 4 Kumaon led by then Captain Sanjay Kulkarni (retired as Lt Gen) planted the Indian flag at Bilafond La at an altitude of 18,000 feet. Personnel from the Ladakh Scouts were also deployed via Cheetah helicopters by the Indian Air Force (IAF).

Although the operation began in 1984, IAF helicopters were already operating in the glacier with the first landing of a Cheetah helicopter in October 1978. Additionally, in preparation for the operation, IAF's tactical and strategic airlifters, An-12s, An-32s and IL-76s transported stores and troops and air-dropped supplies to high altitude airfields, from where Mi-8, Mi-17, Cheetah and Chetak helicopters ferried men and material to the icy heights on the glacier, far above the limits helicopters were meant to be operated. Soon, about 300-odd troops were positioned on the strategically important peaks and passes of the glacier, the IAF recounted in a statement on Operation Meghdoot.

Cold battlefield: An IAF aircraft flies past as Operation Meghdoot marks 40 years of the Army's presence in the Siachen glacier, in Ladakh on April 13. ANI

In June 1987, Indian troops captured the Quaid post at 21,153-feet under Operation Rajiv. The post was later renamed the Bana top, in honour of then Naib Subedar Bana Singh (later Subedar Major and Hony Captain) from 8-Jammu and Kashmir Light Infantry (JAK LI) who was also conferred the Param Vir Chakra, India's highest wartime gallantry award for leading the attack in an impossible situation by scaling a 1,500 foot ice wall.

From 1984 to 2003, both sides were exchanging fire regularly. The guns finally fell silent in 2003 after the ceasefire agreement along the LoC and the 110km long Actual Ground Position Line (AGPL) in Siachen. While the LoC has flared up on multiple occasions, ceasefire along the AGPL has held since. Operation Meghdoot continues to this day, becoming the longest continuing operation in the world.

A test of endurance

The actual Army posts are located at heights of 18,000 feet and above, with the Bana post being the highest on the glacier and Indira Col the highest point. At 18,000-19,000 feet, Indian and Pakistani posts face each other; however, at 20,000 feet and beyond, it is only India.

Operations on Siachen remain a test of human endurance and skill. It was especially so in the early days of Operation Meghdoot with limited high altitude clothing and equipment. While in the initial months, IAF operations saw the employment of helicopters and transport aircraft, the fighters entered the fray when a detachment of Hunter aircraft from the No. 27 squadron commenced operations in September 1984 from the high altitude airfield at Leh. In the next couple of years, the Hunters flew over 700 sorties from Leh carrying out fighter sweeps and simulated strikes to keep the adversary at bay. Later, live armament sorties were carried out at the high altitude firing range at Kar Tso, south of Leh, according to the IAF. The IAF inducted the Cheetal helicopters in the glacier in 2009. Cheetal is a Cheetah helicopter with a re-engineered engine offering better reliability and load carrying capability at high altitude.

Recent developments on the glacier

A lot has changed over the last four decades, especially in terms of technology, improvement in facilities and logistical support to ensure smooth operations and save lives. Some of the major improvements have been in the areas of habitat, communications, mobility, logistics and medical support and green initiatives.

The glacier is also bearing the brunt of climate change.

In 2015, the snout, which is the starting point of the glacier at the base camp, had receded by over a kilometre from where it originally was in 1984.

Elaborating on major enhancements in the last five years, officials say that mobile and data connectivity has improved considerably. "The introduction of VSAT technology has revolutionised communication on the glacier, providing troops with data and internet connectivity. This leap in technology has enhanced real-time situational awareness, telemedicine capabilities, and the well-being of our soldiers by keeping them connected with their families," one official said.

In addition to All-Terrain Vehicles (ATVs) and ATV bridges improving mobility across the glacier, the induction of Chinook heavy-lift helicopters and logistic drones has significantly improved the supply of essential provisions to personnel deployed in posts that are cut off during winters. New logistics chains also means fresh rations and vegetables for forward posts. The availability of special clothing, mountaineering equipment, advanced rations and timely weather updates ensure that soldiers are better prepared to withstand temperatures that fall to -60 degrees.

Today, nearly all the aircraft of the IAF including Rafale, Su-30MKI, Chinook, Apache, Advanced Light Helicopter Mk III & Mk IV, Light Combat Helicopter Prachand, MiG-29, Mirage-2000, C-17, C-130 J, IL-76 and An-32 operate in support of Operation Meghdoot, the IAF said. Helicopters continue to remain the lifeline on the glacier supporting troops in remote posts. IAF's 114 helicopter unit along with the Army aviation continues to play a stellar role.

On the medical front, in addition to telemedicine nodes established by the ISRO for forward posts, the medical facilities in Partapur and Base Camp boast some of the best medical and surgical specialists in the country, Army officials say it includes state-of-the-art high altitude pulmonary oedema (HAPO) chambers, and oxygen generation plants besides life support systems.

What next?

Siachen along with Sir Creek have often been referred to as "low-hanging fruits" in the India-Pakistan conflict, especially considering the much more complicated Kashmir issue.

India and Pakistan have had dialogues on Siachen at the level of Defence Secretaries. On occasions when demilitarisation of the glacier was mooted, India while expressing willingness has called for authenticating the 110 km AGPL as the first step, which Pakistan has refused.

In January 2020, then Army Chief Gen. Manoj Mukund Narvane termed Siachen as the place from where a collusive threat from China and Pakistan was maximum while stressing on the importance of keeping that particular area always in India's possession.

Siachen overlooks Shaksgam valley which is part of Pakistan Occupied Kashmir (POK) and adjacent to Siachen was ceded by Pakistan to China in 1963 – a year after the India-China war. The 2020 standoff with China in Eastern Ladakh and the continuing tensions all along the Line of Actual Control has only further complicated any settlement of Siachen.

Siachen is probably not so 'low hanging' any more.

THE GIST

- Siachen is known for being the world's highest and coldest battlefield. It sits at a very strategic location with Pakistan on the left and China on the right.
- In the 1970s and 1980s, Pakistan began allowing foreign mountaineering expeditions, resorting to cartographic aggression, to add credence to its claims over the glacier. Following intelligence inputs of imminent military action by Pakistan in early 1984, India moved to pre-empt it.
- In January 2020, then Army Chief Gen. Manoj Mukund Narvane termed Siachen as the place from where a collusive threat from China and Pakistan was maximum while stressing on the importance of keeping that particular area always in India's possession.

SAURABH PANDEY
CSE
(CIVIL SERVICES EXAMINATION)
FROM BASICS TO UPSC BRILLIANCE

Siachen

- Conflicting claims Siachen, in Balti language means “land of roses’ — ‘Sia’ is a kind of rose species that grows in the region and ‘Chen’ means “in abundance”.
- However, it is known for being the world’s highest and coldest battle□field. It sits at a very strategic location with Pakistan on the left and China on the right.
- Siachen is a legacy of the Partition between India and Pakistan.
- While the Line of Control (LoC) was delineated and accepted by both sides upto NJ-9842 as part of the 1972 Simla agreement, the glacier itself was left unmarked.

The Hindu analysis by saurabh pandey sir


Map showing
Siachen Glacier Region
and Shaksgam Valley
Area ceded by
Pakistan to China,
claimed by India
Siachen
Glacier
Shaksgam
Valley
Gilgit
PAKISTAN
OCCUPIED
KASHMIR
PAKISTAN
NJ 9842
Line of Control
Area held
by China,
claimed
by India
Muzaffarabad
Srinagar
Kargil
Leh
Islamabad
CHINA
Jammu
INDIA
100km
60 miles

- India claims the area based on the Jammu and Kashmir Accession Agreement of 1947 and the Karachi Agreement of 1949, which de□ne the cease□re line beyond NJ-9842 as running “Northwards to the glaciers”. On the other hand, Pakistan interprets it as ‘North-Eastwards’ to claim the area beyond the Saltoro Ridge and beyond Siachen as its own.
- This would give Pakistan direct connectivity to China as well as strategic oversight over the Ladakh region and the crucial Leh-Srinagar highway, posing a serious threat to India

Operation Meghdoot

On April 13, 1984, first platoon of 4 KUMAON led by then Captain Sanjay Kulkarni (now a Lieutenant General (Retd)) planted the first Indian flag on the Siachen glacier, which began "Operation Meghdoot".

India gained the control of the world's highest battlefield under the joint operation by the Indian Army & Indian Air Force.

LAST MILE BATCH

"LAST MILE" BATCH For Prelims 2024

C-GESIA Batch

- PT 730- 2yrs current
- International relations
- Agriculture for GS
- 10 Full length Tests
- Advance Geo, environment and science

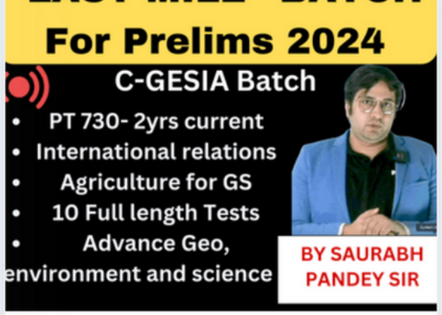
BY SAURABH PANDEY SIR

ONE COURSE ALL SUBJECTS

Rs 3897

CONNECT WITH SIR

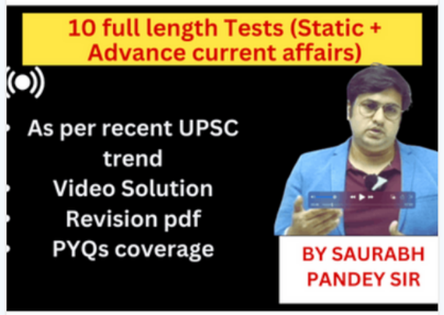
9057921649



Last Mile Batch For UPSC Pr elims 2024. (C-GESIA BAT...

Created by: You(Owner)

5 months



Prelims Vijay Series - 10 Ful l length Tests For upsc pre...

Created by: You(Owner)

4 months

International relations (Basi cs and current affairs)

Created by: You(Owner)

6 months Live

Agriculture for General stud ies

Created by: You(Owner)

6 months Live

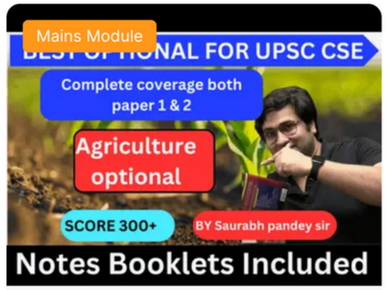
Popular Courses

See More →

"PT 730" PANDEY JI ADVANCED CURRENT...

Admin

Start Learning



Complete Agriculture Optional For IAS/IFoS (...

Admin

Start Learning

Summary With Explanation Of...

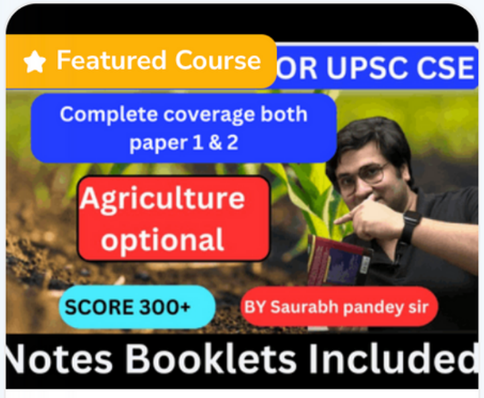
Admin

Start Learning

Prelims Vijay Series – 10 Full Length Tests For...

Admin

Start Learning



Complete Agriculture option al For IAS/IFoS (Batch-2)

Created by: You(Owner)

8 months

Google Play Games Apps Movies & TV Books Kids

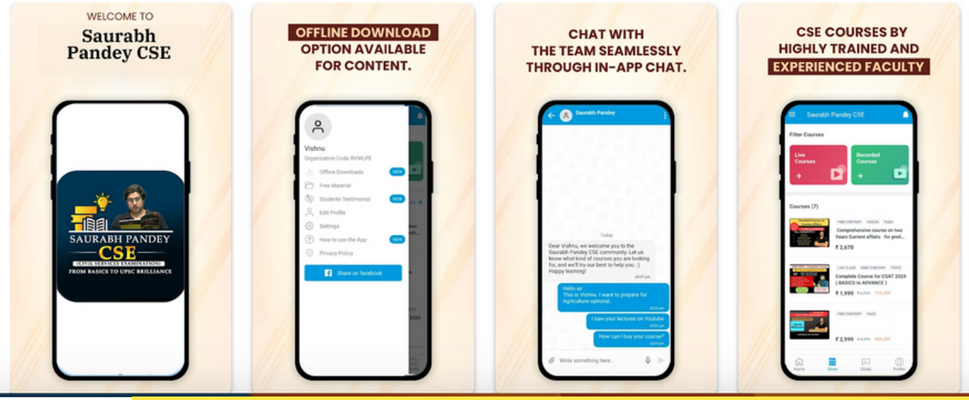
Saurabh Pandey CSE

Saurabh Pandey CSE

4.8★ 73 reviews | 1K+ Downloads | Everyone

Share | Add to wishlist

You don't have any devices



App support

For any query msg-

9057921649

40 PER OFF IN ALL COURSES
LINK IN DESCRIPTION BOX

For any query msg-
9057921649

Target Mains 2024/25- Essay

Q“ Ecotourism is not solution for biodiversity conservation” Examine(150 words)

प्रश्न" इकोटूरिज्म जैव विविधता संरक्षण का समाधान नहीं है" परीक्षण करें (150 शब्द)

send your answer - Saurabh pandey upsc telegram channel