PRAJYA

MONTHLY NEWS MAGAZINE FOR CHILDREN

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First cable stayed rail bridge in India

It's time to feed some birds!

World Migratory Bird Day

MAY 13th

Migratory birds connect people, ecosystems and nations. They are symbols of peace and of an interconnected planet. Their epic journeys inspire people of all ages, across the globe.

Save our thirsty friends!
Keep water for birds!

THE PRAJYA TEAM

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FROM THE EDITOR'S DESK

यत् भावो – तत् भवति

(Translation: You become what you believe.)

Wing Commander Deepika Misra is a worthy example of what this shloka says. She knew she had in her the capacity to brave the terrible weather and valiantly contribute to the rescue operations during the floods in Madhya Pradesh in 2021. Her daring reconnaissance mission helped in the planning and execution of the rescue operation which saved 47 lives. Her contribution beyond the call of duty demonstrated exemplary behaviour, worthy of the Vayu Sena Medal. As the first woman recipient of the gallantry award, she shall inspire many more to bring out the best in them.

"The bigger the vision, the bigger is the inspiration you get from yourself," says Dr Annapurni a pioneer in the field of Indian astrophysics. She goes on to say "Start building your skill-set necessary for your career and personal life, because there is no escape route." Her self-belief made it possible to easily straddle a world of career and family life.

The recently launched **YUVA** portal seems to echo her thoughts. **"We can, we will"** goes the motto of Yi. Its mission is to strengthen India's future by giving a stage and voice to the next generation of changemakers and upskill themselves. It aims to nurture leadership, enhance the entrepreneurial spirit and ecosystem and create youth-led changes to build the nation.

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.

- Editorial Team

Dear Readers,

There have been requests from quite a few readers for hard copies of Prajya. We understand that quite a high percentage of our young readers keep revisiting some articles, and a handy print version within reach induces one to read more often, highlight things and make notes. This also partly contributes to students spending less screen time. The Prajya team is happy to bring to you the issue in print.

However, there are few things that we want to be careful about:

A. We don't want to print more than what is required and

B. Keep the cost of the print version (plus postage) within reasonable limits.

Please note that the access to free online e-version will continue.

So, it will greatly help us if you could fill in the details in the link provided.

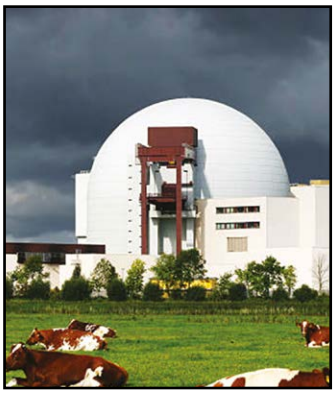
http://bit.ly/Prajya

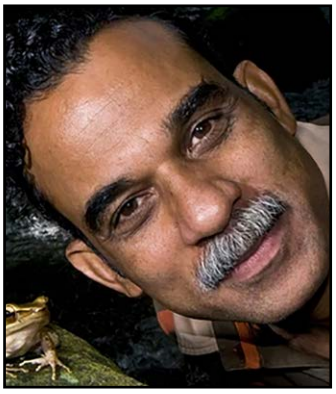
Happy Reading !

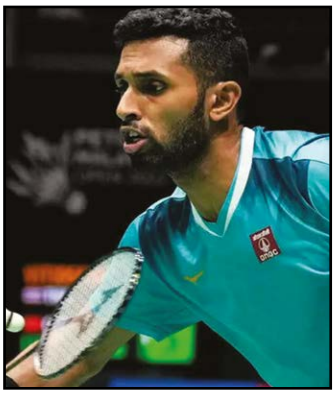
Watch out for the Monthly Prajya Quiz online

Visit https://davchennai.org/publications/prajya-news-magazine/

Content







International Current Affairs

National Current Affairs

Defence Updates

General Knowledge

Shri Mrithyunjay GN

End of an era

Germany shuts down nuclear reactors

With plans to achieve 80% dependency on renewable power, Germany is one of the world leaders in the field of sustainable and clean energy. Unfortunately, as of 2022, only half of the country's power is from renewable sources. On 15th April, the country shut down its last three nuclear reactors in a shocking and controversial move.

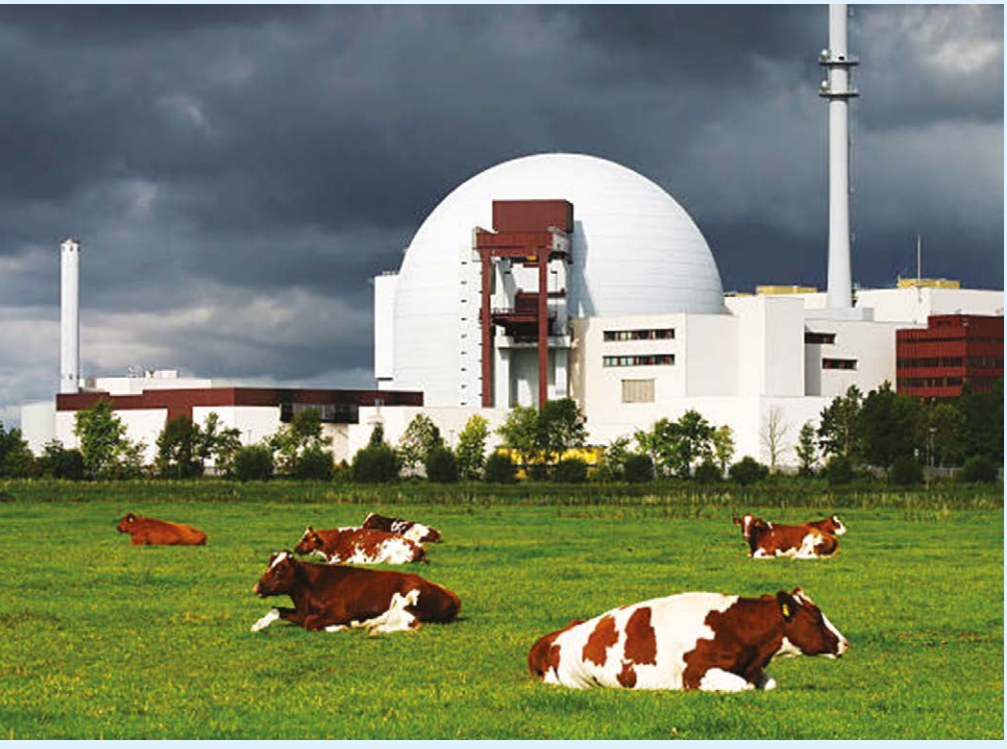
RWE, a German energy company, declared that the shutdown of three reactors signifies "the conclusion of a significant period". Following the Fukushima disaster in Japan, Germany, the largest economy in Europe, expedited the process of phasing out nuclear power in 2011, despite already having initiated the same in 2002.

Despite pushback from experts, the decision has been popular in a country with a powerful anti-nuclear movement caused by fears of a Cold War conflict and atomic disasters such as Chernobyl and Fukushima. "The risks of nuclear power are ultimately unmanageable," said Environment Minister Steffi Lemk.

While the risks of nuclear disasters have been reduced, to make up for the lack of clean energy until other sustainable sources are up and running, the German government stated that they were turning to older, coal-fueled power plants. This has resulted in pushback, for Germany is already the largest emitter in the European Union.

Another reason this has been seen as controversial is because other countries around the world have increased their investments in atomic energy and research to reduce pollution and emissions from traditional, non-renewable sources.

Despite protests, the end of Germany's nuclear power programme started at the end of 2022, but was halted after the Russia - Ukraine war stopped imports of fossil fuel from Russia. With the conflict still continuing, fuel prices are expected to go up and supplies to go down.



The reactors are expected to be dismantled completely and decommissioned, with atomic fuel and waste safely placed in long term storage. While the need to look out for safety is certainly worth praising, the current rate of progress on renewable sources could be too slow to ensure that Germany meets its climate protection goals.

Only time, extensive monitoring and research will show the impact of this decision on the country.

Shri Mrithyunjay GN

INGENUITY

Mars helicopter logs 50th flight

Just as the Wright brothers continued their experiments well after that momentous day at Kitty Hawk in 1903, the Ingenuity team continues to pursue and learn from the flight operations of the first aircraft on another world.

There is no corner of the universe where human ingenuity will not take us. This statement has never been truer in the face of NASA's Ingenuity Mars Helicopter's record breaking fiftieth flight across the surface of the red planet.

Having arrived on Mars in February 2021, alongside the Perseverance rover, Ingenuity first flew on 19th April 2021. However, being the first aircraft to achieve powered, controlled flight on another planet, a feat that has been called a "Wright Brothers moment" is not the only special achievement it has to its name.

Lori Glaze, Director of the Planetary Science Division at NASA opined, "Just as the Wright brothers continued their experiments well after that momentous day at Kitty Hawk in 1903, the Ingenuity team continues to pursue and learn from the flight operations of the first aircraft on another world."

Only five flights were initially planned for the helicopter, but despite the thin Martian atmosphere, Ingenuity has completed 91.4 flying minutes, covering 11.7 km and reached altitudes as high as 18 m; and has successfully completed 10 times the planned number of flights.

These have not just been test flights either. Throughout its journey across the Martian landscape, the helicopter has provided detailed previews of areas of interest that the perseverance rover can explore and has also helped astronomers make detailed maps of the planet.

With blades made of ultra-light carbon fibre, and equipped with a multitude of antennas, cameras and sensors, Ingenuity continues to collect detailed images of Mars and sends it back to the Perseverance rover for transmission back home. These images will help NASA understand the history of Mars and how it evolved to become the red expanse it is today.

Ingenuity, its tech demo complete, will transition to a new operations demonstration phase to explore how future rovers and aerial explorers can work together, paving the way for humanity on Mars and potentially, other planets as well.

Smt Archana Sundar

Operation Kaveri

Operation Kaveri was a collaborative effort between various Indian government entities, including the Ministry of External Affairs, the Indian embassy in Sudan and the Indian Air Force.

In Sudan, a deadly power struggle has been unfolding between the country's army and a paramilitary group. This conflict has resulted in the loss of over 427 lives including 273 civilians and has left more than 3,700 people injured. Violence erupted due to disagreements regarding an internationally supported plan to establish a new civilian government, four years after the fall of the autocrat Omar al-Bashir and two years after a military coup. Each side blames the other for hindering the transition process.

The ongoing conflict poses several challenges and has far-reaching consequences, including an economic crisis, an impediment to the democratic transition and destabilization of neighbouring countries. The city of Port Sudan, located approximately 850 km away from the capital, Khartoum, has witnessed intense fighting between the army and the paramilitary forces.

Given the volatile situation, the Indian government swiftly initiated evacuation plans named Operation Kaveri, following PM Modi's instructions to ensure the safe return of approximately 3,000 Indians stranded in Sudan.

Operation Kaveri was a collaborative effort between various Indian government entities, including the Ministry of External Affairs, the Indian embassy in Sudan and the Indian Air Force. The objective was to transport Indian citizens from different parts of Sudan to Khartoum, where they will then be flown back to India on special flights.

Since Sudan's airspace has been closed, Indian officials opted to deploy Navy ships for the evacuation. The Indian Navy's

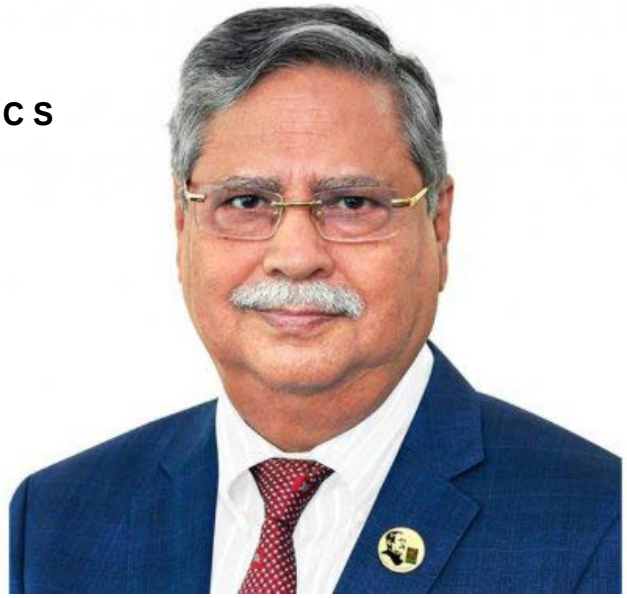
INS Sumedha, a stealth offshore patrol vessel, and two Indian Air Force C-130J special operations aircraft were utilized. According to the Indian embassy in Khartoum, five Indian naval ships and 16 Indian Air Force aircraft, including one from Wadi Sayyidna military airbase have been utilized to transport the evacuees out of Port Sudan.

To ensure efficient coordination, separate control rooms were set up in Jeddah and Port Sudan, and the Indian embassy in Khartoum had been coordinating with them, besides being in touch with the headquarters of the Ministry of External Affairs in Delhi.

The rescue operation was named Kaveri to establish a metaphorical significance that rivers reach their destination despite the barriers they go through. Here, River Kaveri is portrayed as a mother who will ensure that she brings her children back home safely.

Operation Kaveri, officially concluded on 5th May 2023. Collective efforts, spirit, perseverance and courage of all those involved led to the successful execution.

Shri Krishnakumar C S



Shahabuddin Chuppu

22nd President of Bangladesh

"An educated, enlightened and informed population is one of the surest ways of promoting the health of a democracy."

- Nelson Mandela

Like India, Bangladesh follows parliamentary democracy.

In 1947, India was partitioned into two countries – India and Pakistan. East Bengal (Modern Bangladesh) became a part of Pakistan. However, the people of Bangladesh faced political and economic marginalization from the ruling elite in West Pakistan.

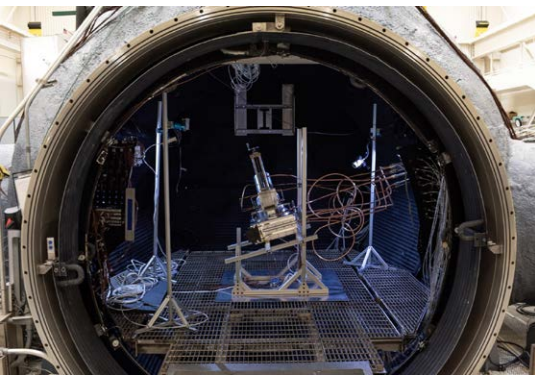
In the 1970 general elections, Bengali-dominated Awami League led by Sheik Mujibur Rahman won a majority. The West Pakistani leaders refused to accept the election results. Pakistani army started a military crackdown on the Bangladeshi people. Sheik Mujibur Rahman declared independence of Bangladesh on 25th March 1971. This resulted in a civil war. On 16th December 1971, the Pakistani army surrendered to the joint forces of the Indian Army and the Mukti Bahini (the Bangladeshi guerrilla force) and Bangladesh emerged as an independent country.

Like India, Bangladesh follows parliamentary democracy. The prime minister and his council of ministers constitute the real executive. The president is a nominal head of the state. He has only ceremonial powers.

Mohammed Shahabuddin, a jurist, civil servant and politician, was sworn in as the President of Bangladesh on 24th April 2023. He was elected unopposed as a nominee of the Awami League. Before his presidency, he served as a district and sessions judge and commissioner of the Anti-Corruption Commission from 2011 to 2016.

Let us hope that India- Bangladesh relations would strengthen during his tenure.

Shri Ramaswamy R



NASA extracts oxygen from lunar soil simulant

Regolith is unconsolidated residual or transported material that overlies the solid rock on the earth, moon or a planet.

A lunar regolith simulant is a terrestrial material synthesized in order to approximate the chemical, mechanical or engineering properties of, and the mineralogy and particle size distributions of lunar regolith.

Lunar regolith is made up of rock chips, mineral fragments, impact and volcanic glasses and a peculiar component only found on the Moon called "agglutinates".

NASA scientists at Johnson Space Center in Houston have successfully extracted oxygen from simulated lunar soil (lunar regolith simulant). NASA's primary goal is to establish a long-term human presence on lunar surface. In addition to breathing, oxygen is also required as fuel for lunar surface transport.

Oxygen Extraction from lunar soil simulant

The team of scientists conducted the experiment named **Carbo Thermal Research Demonstration** (CaRD). They placed lunar soil simulant inside 15- foot spherical chamber. Vacuum conditions inside the chamber were similar to that on the moon. Carbothermal reactor inside the chamber heated the sample to high temperatures. The CaRD team was able to detect carbon monoxide using Mass Spectrometer observing lunar operations (MSolo).

The technology has the potential to produce large quantities of oxygen for future plans of using lunar surface for launching astronauts to planet Mars. The astronauts would also use the oxygen as fuel for their Volatile Investigating Polar Exploration Rover (VIPER) vehicles. These vehicles can explore locations such as Mons Mouton (named after NASA mathematician Melba Mouton) on lunar South Pole, for water, ice and other potential resources.

Shri Sampath D

India extends USD 1 Billion credit line to Sri Lanka

India has extended USD 1 billion credit line for Sri Lanka by one year, giving the crisis-hit country some backup funds to pay for essential imports. The credit line, which is part of about USD 4 billion in emergency assistance extended by India during the peak of Sri Lanka's financial crisis early last year, was scheduled to end in March.

Priyantha Rathnayake, Deputy Secretary to the Treasury, Sri Lanka said, that post-negotiations, the credit line was extended till March 2024. He further added that there is about USD 350 million left of the credit line that can be utilised as needed.

Sri Lankan economy faced severe shortage of essential goods and it was on a tailspin. The citizens of the country were put to serious hardships and had to endure difficult times. Further, their reserves dropped to record lows in April last year, triggering its worst financial crisis since independence from British rule in 1948. The island spent months struggling to pay for essential imports such as fuel, cooking gas and medicines, and also defaulted on its foreign debt.

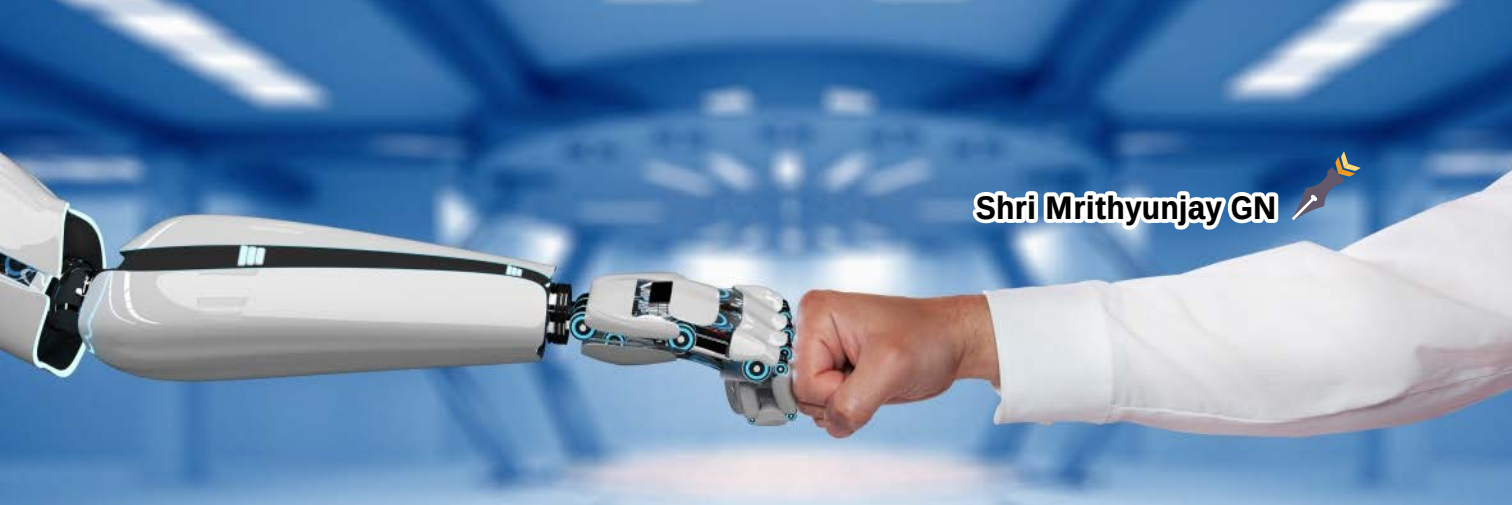
India extended a concessional loan of USD 1 billion to the Government of Sri Lanka, through the State Bank of India, on 17th March 2022. It was for various food items like rice, sugar, milk powder, wheat, medicines, fuel and industrial raw materials. It was based on the priorities of the government and people of Sri Lanka.

Sri Lanka is now on an improvement curve having finalised a nearly USD 3 billion bailout package from the International Monetary Fund (IMF) in March and negotiating debt restructuring talks with key bilateral creditors India, Japan and China.

The online meeting will be held within a new framework launched in Washington, DC, that creditors hope will serve as a model to resolve the debt difficulties of middle-income economies. Sri Lanka has kicked off talks to rework part of its domestic debt and aims to finalise the deal by May.

While the extension of the credit line by India would come as a welcome relief for Sri Lanka, the country still faces significant economic challenges. It will need to implement structural reforms to address its debt levels and create an environment which can attract further investment.

Sri Lanka owes USD 7.1bn to bilateral creditors, government data show, with USD 3bn owed to China, followed by USD 2.4bn to the Paris Club and USD 1.6bn to India.



Shri Mrithyunjay GN

IBM and NASA to convert satellite data into high- resolution maps

These maps allow scientists to map out landscape transformations caused by natural disasters, thereby giving them a deeper understanding of how the earth has changed across centuries.

Tracking the weather is not an easy feat. With five geostationary satellites around the planet and thousands of smaller satellites monitoring local weather conditions, the amount of data being processed to give us our daily weather updates is astronomical, pun intended.

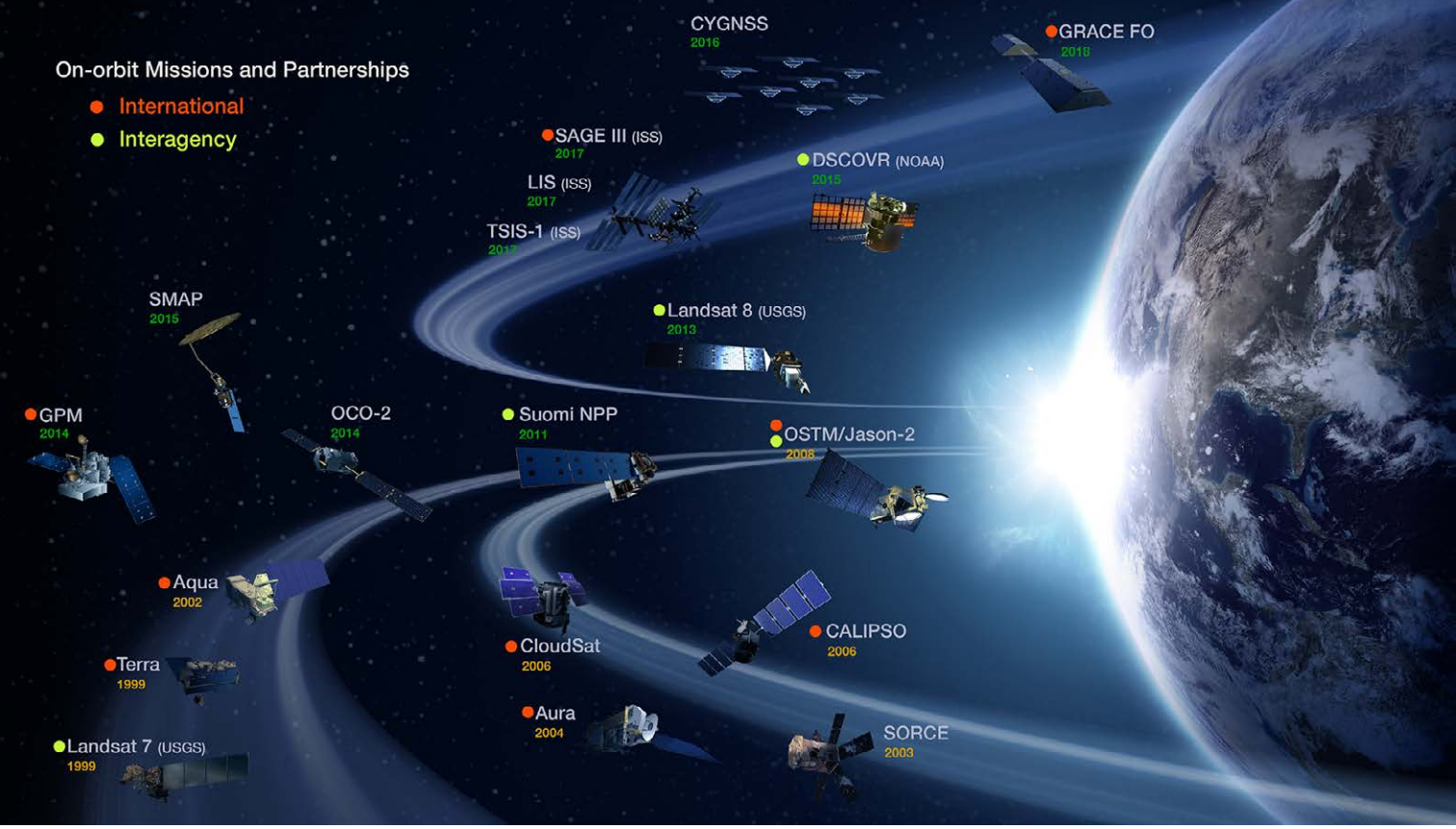
But these satellites not only provide a glimpse into the near future, they also collect data that can help us look far into the earth's past. They also just might have the potential to offer us glimpses into its future.

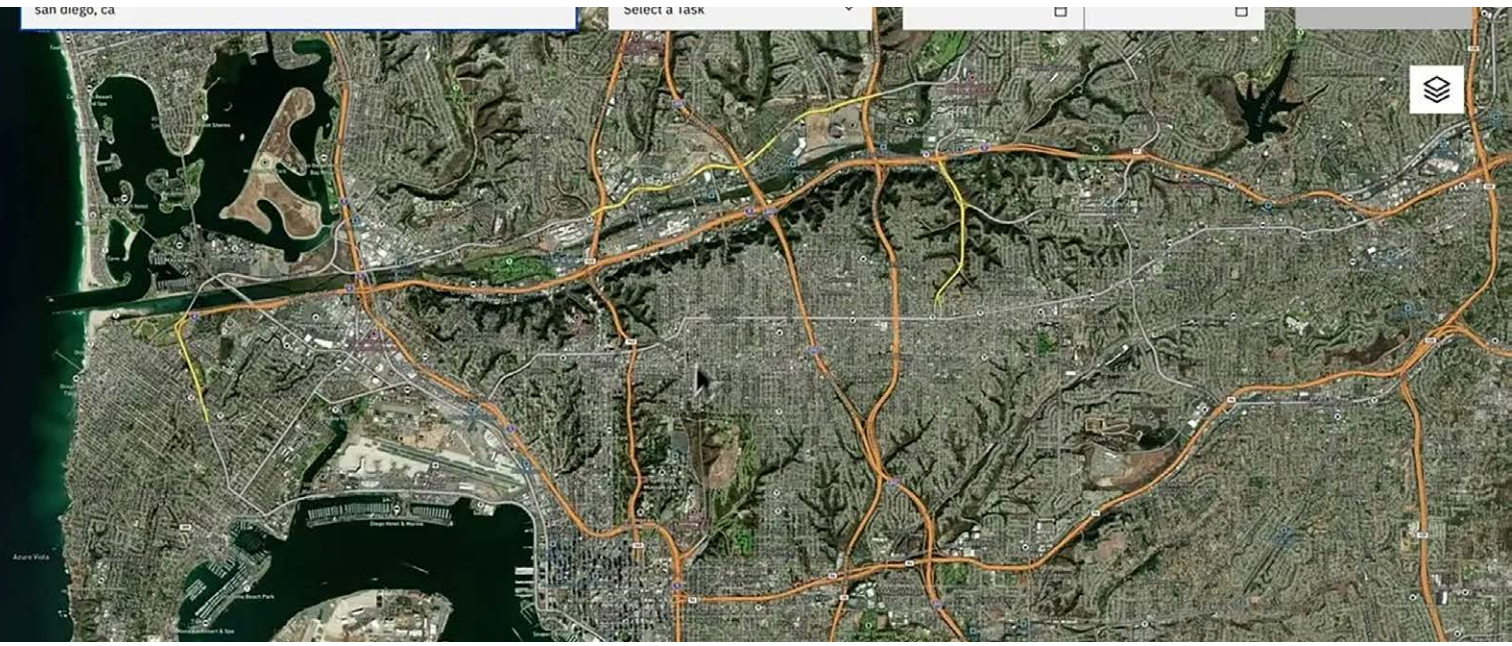
NASA has partnered with International Business Machines (IBM) to introduce a new geospatial foundation model. This model compiles the millions of gigabytes of data collected by NASA and maps them onto a model of the earth, thereby allowing us to create extremely detailed maps of the earth.

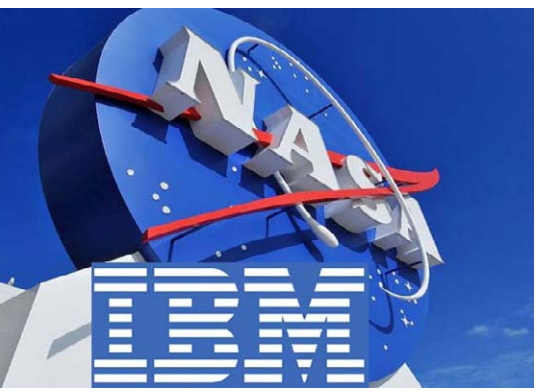
These maps allow scientists to map out landscape transformations caused by natural disasters, thereby giving them a deeper understanding of how the earth has changed across centuries. The model is expected to be accessible later in 2023, allowing for potentially more accurate assessments of risks to agriculture, infrastructure and so on.

This has been done as part of a Space Pact Agreement with NASA, where over the last four months, IBM built the first ever foundation model for analyzing the geospatial data. This has been possible due to recent advancements in AI and Natural Language Processing models.

AI machines are trained to recognize patterns and once training is complete, they are allowed to categorize and sort new data on their own, speeding up the process and reducing the need for human intervention.







Nearly a quarter of the world's population lives in a flood zone and that number is expected to climb. **The ability to accurately map flooding events can be key to not only protecting people and property now but steering development to less-risky areas in the future.**

This collaboration providing scientists across the globe access to accurate and reliable data is in complete alignment of NASA's OSSI principle. OSSI **(Open-Source Science Initiative)** seeks to foster an inclusive, transparent and collaborative open science community in the coming decade. One that will help us tackle some of the biggest problems like global warming and its consequences.

Shri Sridhar P

INDIAN OCEAN CONFERENCE 2023

The Indian Ocean is the 3rd largest ocean with an area of 70.56 sq km. 36 countries share borders with it - 13 African,22 Asian and 1 oceanic.

The sixth annual Indian Ocean Conference 2023 was held in Dhaka Bangladesh between the 12th and 13th of May with the theme **"Peace, prosperity and partnership for a resilient future".** It brought together delegates from over 25 countries, to discuss ways to promote economic development while maintaining peace and stability in the region.

Indian Ocean and its strategic importance: The Indian Ocean is the 3rd largest ocean with an area of 70.56 sq km. 36 countries share borders with it - 13 African,22 Asian and 1 oceanic.

It is strategically important for it is a geopolitical hotspot for the Asian regional powers. There are a few choke points through which ships have to pass with their cargo -Strait of Hormuz, Malacca Strait and the Suez Canal. **It is the transit point for one third of the world's cargo and two-thirds of crude oil shipments.**

Highlights of this conference: Countries with a coastline have an edge over landlocked countries by way of access to sea routes for trading. Movement of cargo by sea is the cheapest when compared to rail or road. Hence establishing connectivity is an important agenda of this IOC 2023 meet. This will promote trade and regional development while adopting a long term perspective.

Upholding legal obligations and agreements: Disregarding legal obligations can erode trust and undermine confidence amongst member countries. From activities as diverse as trade, security or observing pacts, a legal framework and its observance are a crucial part of IOC 2023 agenda.

Sustainable projects and debt: We have seen in the recent past how countries have gone bankrupt, spiralling into chaos and confusion due to wrong economic and fiscal policies. They are neck deep in debt trap. Encouraging transparent lending practices with market realities are necessary to avoid future complications.

Shared responsibility and focus: To thwart any attempt to garner individual dominance of the region IOC 2023 has ensured shared responsibility for maritime security. Terrorism, fundamentalism and piracy have always troubled this vast ocean.

Shared responsibility puts in a framework that blocks the escape routes of countries encouraging the same.

Climate change: Climate change is real. IOC 2023 hopes to address issues like rising sea levels, maritime pollution collapsing fisheries and overfishing.

Driving blue economic initiatives: The Indian Ocean region is rich in mineral resources. Leveraging the same will drive sustainable growth. Hence all the crucial issues of economic, geopolitical and security issues were discussed.

Shri Sampath D

SCO accepts India's Digital Public Infrastructure proposal

India Stack, which details these digital assets, is a set of open APIs and digital public goods that aim to unlock the economic primitives of identity, data and payments at population scale.

India's proposal to promote the expansion and adoption of its digital public infrastructure (DPI), United Payments Interface (UPI) and DigiLocker was accepted by the Shanghai Cooperation Organisation (SCO) during a gathering of ICT Development ministers chaired by India.

The SCO Composition

- Eight **Member States** (India, China, Kazakhstan, Kyrgyzstan, Russia, Pakistan, Tajikistan and Uzbekistan).
- Four **Observer States** interested in acceding to full membership (Afghanistan, Belarus, Iran, and Mongolia).
- Six **Dialogue Partners** (Armenia, Azerbaijan, Cambodia, Nepal, Sri Lanka and Turkey).

Ashwini Vaishnaw, Union Minister for Electronics, IT, Communications and Railways encouraged other SCO member countries to assess and implement India Stack while stressing the significance of interoperability and increased digital inclusion.

India Stack, which details these digital assets, is a set of open APIs and digital public goods that aim to unlock the economic primitives of identity, data and payments at population scale. Even though the name of this project could bear the word India, the vision of India Stack is not restricted to one country;

API (Applications Programming Interface)

- APIs are mechanisms that enable two software components to communicate with each other using a set of definitions and protocols. For example, the weather bureau's software system contains daily weather data. The weather app on a phone "talks" to this system via APIs and shows daily weather updates on the phone.

it is applicable to any nation, be it a developed one or an emerging one. It is seen that many governments have shown an interest in India Stack.

India Stack includes Aadhaar, which is a biometric identification system providing a unique identification number to every citizen of India. e-KYC, which is another component allowing electronic verification of the identity of individuals and businesses and the Unified Payments Interface (UPI), enables instant transactions in real time between bank accounts.

It is seen as a significant recognition of India's efforts towards having digitally inclusive growth at the global scale.

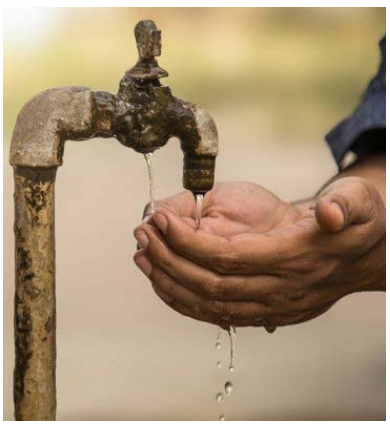
India also shared with SCO member states about investing USD 3 billion which would take mobile connectivity to villages in remote areas and USD 5 billion to bring broadband connectivity to all 250,000-village council.

The SCO has taken a major stride towards creating a more interconnected and equitable future for the region. This clearly showcases India's increasing influence in the digital domain and every effort is being made to bring into unison the neighbours and also reduce the digital divide and encourage connectivity.

With these components in place, India is in the best position to provide a digital foundation which can be leveraged by various organisations in offering a range of services, including financial services, e-commerce and healthcare, among others.

Smt Gaayathiri G

Kerala adopts Water Budget



Kerala became the first state to adopt a water budget on 17th April 2023 as a solution to water scarcity during summer months to ensure equitable water distribution. The budget looks into the availability and consumption of water, which can help the state manage the resource effectively. The move will also create awareness regarding proper water use and avoiding wastage.

The first phase of the project would cover 94 Gram Panchayats and 15 Block Panchayats, where water shortage has been noted. The budget gives data about water availability in a particular place and consumption based on the population in the region. The budget was prepared by the Centre for Water Resources Development and Management Institute, along with the State Water Department.

According to water experts, the initiative will help improve the demand and supply system. The budget is also timely, as the temperatures in the state have been increasing significantly and this has resulted in water scarcity in some regions, even though the **state has more than 44 rivers and dozens of lakes, ponds and canals.** However, in spite of the increasing scarcity, the state still has three times more water available than the national average.

The Kerala Government will also ensure the participation of local self-governing institutions through the budget so that rainwater can be distributed equitably for agriculture and irrigation. It has revived 15,119 kilometres of waterways in the last few years. Local bodies are rejuvenating more ponds and streams and the responsibility of implementing the water budget has also been entrusted to them.

Kum Shrivaishnavi R

YUVA portal launched

This amalgamation of the portal and programme will greatly contribute to channelizing the hidden potential in the country's youth.

The Union Minister of Science and Technology Dr. Jitendra Singh inaugurated the launch of the 'YUVA' portal. This portal aims to identify and bring together potential start-ups in their infancy. **The portal will serve as a medium for early-stage start-ups and businesses to upskill themselves, learn the art of entrepreneurship and help develop a more prosperous India.**

The objective of the portal is to empower students of the country – Young Indians or "Yi" – by connecting the young leaders of the country, equip them by providing them with platforms to express themselves, and also make available courses that they can utilize to expand their knowledge and interests. The Yi mission is exactly this: to strengthen the upcoming generation of the country and thereby help them harness their talents and inclinations for the benefit of the nation.

The slogan and motto of the Yi mission is **"We can, we will".** The three pillars that act as the base for this mission:

- power of youth leadership,
- responsibility of nation building and
- nurturing thought leadership.

The portal has a host of courses keeping with the themes mentioned above. They are grouped into six verticals: **Entrepreneurship, Health, Innovation, Climate Change and Global Warming, Accessibility and Road Safety.**

This portal will also be powered by the **'One Week – One Lab'** initiative, where 37 CSIR (Council of Scientific and Industrial Research) labs will showcase their work to the public.

This way, the young minds of the country can be inspired and even aid them in looking for ventures in tech from the ideas showcased in these labs. This amalgamation of the portal and programme will greatly contribute to channelizing the hidden potential in the country's youth.

Smt Shubha T R

Mangrove Pitta found in Odisha

DO YOU KNOW ?

- **Mangroves** are shrubs or trees that grow in coastal saline or brackish water and have roots above the ground. Their intricate roots system stabilizes the coastline, reducing erosion from storm surges, currents, waves and tides.
- **Sundarbans, West Bengal and Pichavaram (near Chidambaram)** are amongst the largest mangrove forests in the world.
- **Bhitarkanika National Park** witnessed the arrival of 1,39,959 birds of 140 species indicating its significance as bird habitat this year.

In the first ever census conducted by forest officials in two coastal districts of Odisha, Kendrapara and Jagatsinghpur, a total of **179 Mangrove Pitta** birds were counted using point count method (direct sightings and chirping to count birds).

The exotic, colourful species were found in Mangroves near **Bitarkanika National Park, Odisha.** These near-threatened, non-migratory resident birds are an important **bio indicator of the health of mangrove forests** which are crucial to maintain the ecological balance in coastal areas.

The objective of the census is to record the growth pattern of these birds. It also provides valuable information on habitat preferences of the birds and establishes a baseline for future population analysis of the species.

Kum Silpa Nandakumar

SATHI
Portal and Mobile App launched

SATHI portal enables farmers to access seed certification, traceability and inventory management services in a unified application.

As an agricultural country, it is not surprising that India is the second largest producer of wheat and rice, the world's major food staples. We are also a major producer of several dry fruits, agriculture-based textile raw materials, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. Now, a revolutionary step has been taken towards increasing production and addressing agriculture issues– a portal and mobile app.

Minister of Agriculture and Farmers' Welfare Narendra Singh Tomar unveiled SATHI (Seed Traceability, Authentication and Holistic Inventory) under the **Uttam Beej – Samriddh Kisan** scheme. It is a centralized online system designed to address seed production challenges, seed quality identification and certification.

During the launch, the minister said that the government is constantly trying to overcome the challenges and difficulties faced by agriculture sector through various schemes and programmes. He said that seeds, pesticides, fertilizers and irrigation play a major role in agriculture. Inferior quality and spurious seeds affect the growth of agriculture and affects production.

Developed by National Informatics Centre (NIC), SATHI portal enables farmers to access seed certification, traceability and inventory management services in a unified application. There is a QR code in the app, through which the seeds can be traced. Training will be imparted through Indian Council of Agricultural Research (ICAR), Krishi Vigyan Kendras (KVKs) and state governments.

Shri Mrithyunjay GN

Prof SD Biju named Harvard's Radcliffe Fellow

Prof Biju is credited with unearthing 116 unique amphibian species across India, Indonesia and Sri Lanka.

Taken on its own it would be a particularly significant achievement, for anyone to have risen the academic heights needed to become a Harvard Fellow. It is one of the most prestigious academic programmes in the world and is awarded every year to scholars, artists and practitioners engaged in innovative work seeking to engage audiences beyond academia, confronting pressing social and policy issues along the way.

But it is the why behind it all that makes the man, who will join the likes of Novelist Zadie Smith, US senator Elizabeth Warren and the Nobel Laureate Michael Kremer.

Geographically positioned in the tropical zone of the world, India is home to lush greenery and varied flora and fauna. This biodiversity is displayed, perhaps most spectacularly, in frogs! With 380 unique species native to India, frogs always seemed to fascinate Prof SD Biju. One can argue however that fascinate is too light a word, considering he is credited with unearthing 116 unique amphibian species across India, Indonesia and Sri Lanka.

Popularly known as **Frogman of India,** Professor Biju has been chosen as a distinguished recipient of the prestigious Harvard Radcliffe fellowship for the academic year 2023-24. As a senior professor in environmental studies at Delhi University and already an associate of the department of organismic and evolutionary biology at Harvard, this fellowship will allow him to teach and work at the prestigious university full time.

Smt Sarada Devi Ravutu

Sonam Wangchuk gets Santokbaa Humanitarian Award

DO YOU KNOW ?

- The Santokbaa Humanitarian Award, which carries a cash prize of ₹ 1 crore, was instituted in memory of SRK and SRKKF's Founder Chairman Govind Dholakia's mother Late Santokbaa Dholakia in 2006.
- Aamir Khan's character Phungsuk Wangdu in the film *3 Idiots* was inspired by Sonam Wangchuk's life.

Geographical location and adverse climatic conditions hamper the development of Ladakh. Ladakh hero Sonam Wangchuk takes the initiative for improving the lives of the people and protecting the ecosystem of the region.

He was honoured with the prestigious Santokbaa Humanitarian Award on 10th April 2023 by Shree Ramkrishna Exports (SRK) a leading diamond crafting and exports company and its philanthropic arm Shree Ramkrishna Knowledge Foundation (SRKKF) of Surat for his ingenious solutions and relentless dedication towards solving major problems in Ladakh, including water scarcity and environmental issues.

Accomplishments

- Sonam Wangchuk invented the **Ice Stupa technique** used for storing winter water in the form of a cone-shaped ice heap for which he received the prestigious **Rolex Award** for Enterprise.
- Founder-Director of the **Students' Educational and Cultural Movement** of Ladakh, an NGO with a campus that runs entirely on solar energy.
- Launched **"Operation New Hope"** in 1994 to reform the government school system by focusing on hands-on experience.

Smt Manju Aildasani

India's first WATER METRO in Kochi

Kochi, Kerala has become India's first city to have a **Water Metro Project** after the launch of its first boat in December 2021, namely '**Muziris**,' manufactured by **Cochin Shipyard Limited**. This launch is a part of the ₹ 747-crore project operated by **Kochi Water Metro Ltd (KWML).** The boats are equipped with latest safety and communication devices. With a total outlay of **₹ 819 crore**, the project's major part is financed under Indo-German Financial Cooperation through a long-term loan agreement of 85 million Euros (₹ 579 crore) with the German funding agency, KFW (Kreditanstalt für Wiederaufbau).

It is the **first** integrated water transport system of this size in **Asia**, which connects Kochi's **10 island communities** with the **mainland** through a fleet of 78 battery-operated **electric hybrid boats** plying along 38 terminals and 16 routes spanning 76 kilometers. It is integrated with the **Kochi Metro** and serves as a feeder service to the suburbs along the rivers where transport accessibility is limited.

The construction work started in 2016 and its first route between **Vytilla** and **Info Park** was inaugurated in February 2021 by Chief Minister Pinarayi Vijayan. It was officially inaugurated and opened to passengers by PM Modi on 25th April 2023.

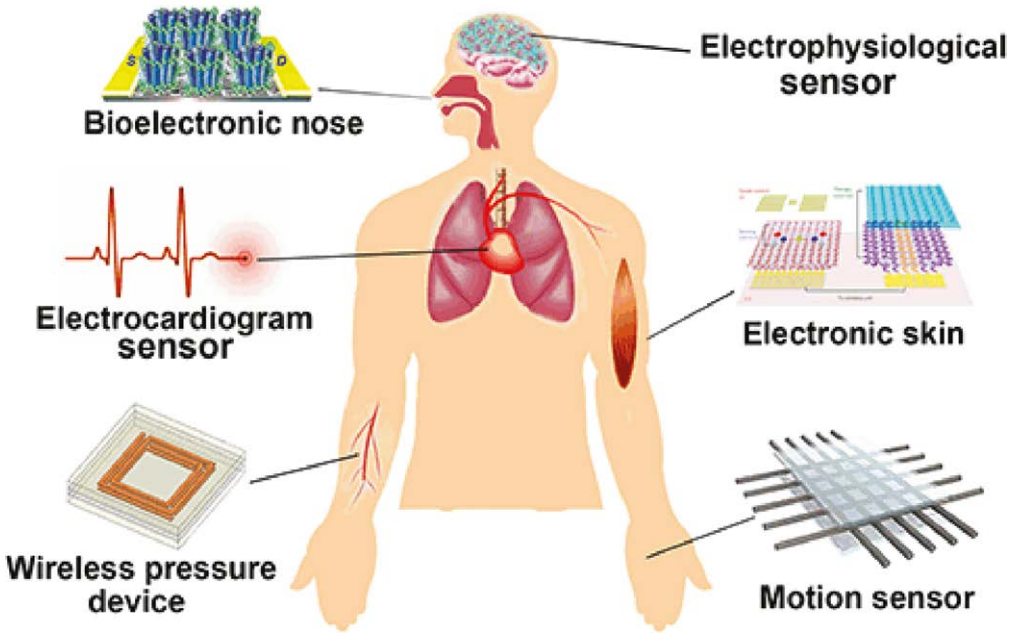
The **Automatic Fare Collection** system being implemented by the Kochi Metro will be extended to water transport system which facilitates travelling the metro train and the boat using the same ticket.

In November 2022, the **International Maritime Organisation** officials visited Kochi as a part of their Green Voyage 2050 project and praised Kochi Water Metro project for its unique initiatives.

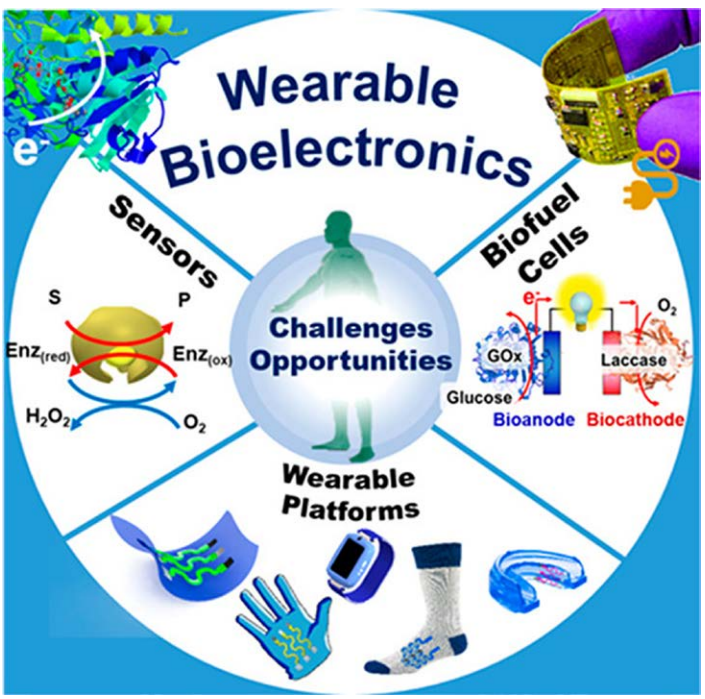
KWM Snapshot

- The largest electric boat metro transportation infrastructure in the world.
- Expected to become fully operational by 2035 with a daily commuter-count of 1.5 lakh passengers.

Kum Anu Narayan



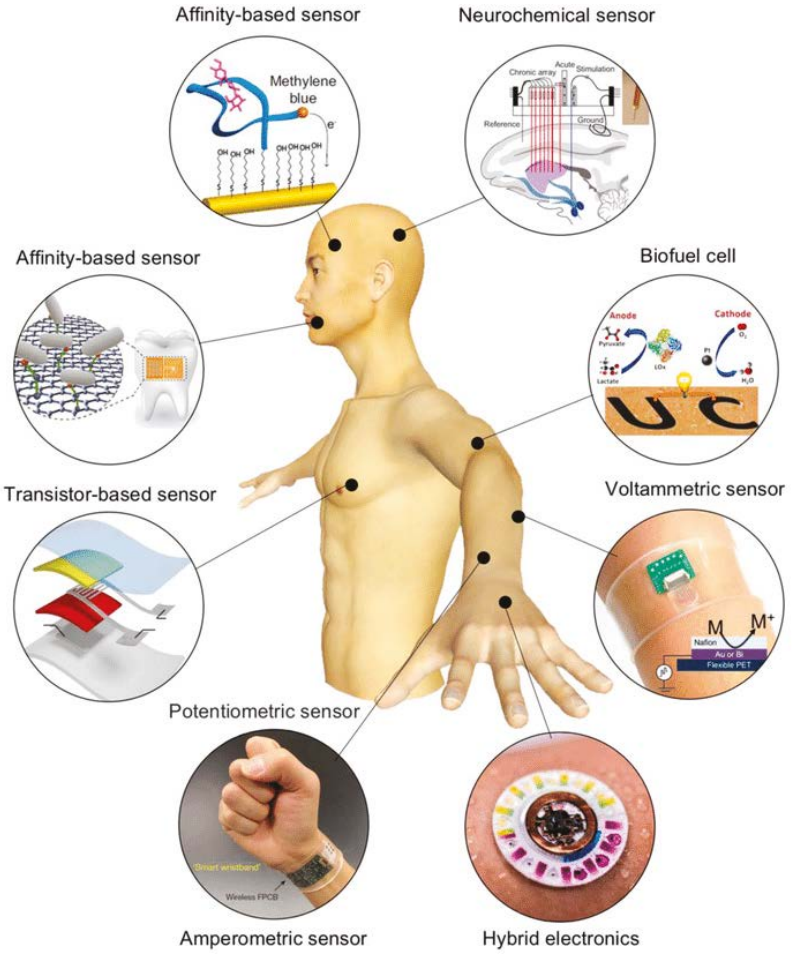
Bio-electronic device for wearable sensors



Scientists of the Institute of Advanced Study in Science and Technology (IASST), an autonomous institute of the Department of Science and Technology (DST), have fabricated a new flexible bio-electronic uric acid detecting device. Prof. Neelotpal Sen Sarma and his Ph.D student Nasrin Sultana led this work, which was recently published in the journal ACS Applied Electronic Materials.

Uric acid is an antioxidant that helps reduce oxidative stress and maintain blood pressure stability in living beings. The amount of uric acid in blood ranges from 0.14 to 0.4 mmol dm-3, and for urine, 1.5 to 4.5 mmol dm-3. However, due to lack of balancing between the production and excretion of uric acid levels causes several diseases like type 2 diabetes, hyperuricemia,

As the device requires no enzymes, it outperforms all currently available ones in terms of effectiveness and cost.



hypertension, cardiovascular diseases, Lesch–Nyhan syndrome and renal disorders.

This device can be used for various applications such as wearable sensors and point-of-care diagnostics. A new class of zero-dimensional, functional nanostructures with unique physicochemical and surface properties called reduced phosphorene quantum dots make up this device. The quantum dots can be used in fabricating high-performance electrical biosensors as they show distinctive electrical performance in biomedical applications.

Increased uric acid concentration has been used to study the current voltage and the impedance (opposition to electron flow) responses for the fabricated device. With increase in uric acid concentration, the current density increases and shows a maximum current of about 1.35 ×10-6 A.

In interaction with the uric acid, the fabricated device shows reversibility, which repeatedly enables the use of the device for sensing experiments. As it requires no enzymes, it outperforms all currently available ones in terms of effectiveness and cost.

The response of the fabricated device was investigated with real samples like human blood serum and artificial urine. **The device so developed detects uric acid with a limit of about 0.809 µM and is simple, cost-effective, portable, and easy to fabricate.**

Lesch–Nyhan syndrome (LNS) - A rare inherited disorder caused by a deficiency of the enzyme hypoxanthine-guanine phosphoribosyl-transferase (HPRT). A disease carried by the female parent and passed on to a male child, LNS is present at birth in males.

Kum Sunita D Behera

Indians ace in Badminton Asia Championships

On 30th April 2023, **Chirag Shetty** and **Satwiksairaj Rankireddy** were the last Indians standing at the Badminton Asia Champions going on to create history by becoming the **first Indian men's doubles pair to win a final at the Badminton Asia Championships.**

They were also the second to clinch gold after Dinesh Khanna won the men's singles gold medal in 1965. Dipu Ghosh and Raman Ghosh won the bronze medal in 1971.

The final which lasted an hour and seven minutes saw Shetty and Rankireddy win against Malaysia's Ong Yew Sin and Teo Ee Yi. The Malaysian pair won the first set with the scores being 21-16. The Indians made the final match a decider by winning the second set with the scores being 21-17.

The third and final set saw Ong Yew Sin and Teo Ee Yi playing aggressively while Chirag Shetty and Satwiksairaj Rankireddy were on the defensive. The game started out to be in favour of the Malaysian pair which later leaned towards the Indians leading them to win gold with the scores 21-19.

Hailing from Maharashtra and Andhra Pradesh respectively, Shetty and Rankireddy achieved their career-high rank of world No. 5 in the Badminton World Federation's (BWF) rankings after winning the Swiss Open in March. They had achieved the same ranking previously in December 2022.

The other badminton players part of the championships were former World Champion PV Sindhu and World No. 9 HS Prannoy who bowed out early in the singles quarterfinals.

Smt Ghana Saraswathy M

Anji Khad

India's first cable stayed rail bridge

DO YOU KNOW ?

Anji Khad has a total length of 473.25 m, while the length of the viaduct is 120 m. The central embankment has a length of 94.25 m.

Anji Khad is part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL) project, which is crucial for the region's connectivity, tourism and economic growth.

India's first cable-stayed railway bridge, Anji Khad, which crosses the Chenab River in Jammu and Kashmir, is a true engineering marvel. It is part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL) project, which is crucial for the region's connectivity, tourism and economic growth.

Significance and Challenges

One of the highest railway bridges in the world, standing at 359 meters above the riverbed, it is designed to withstand seismic activity and high-velocity winds. It is expected to reduce travel time between Jammu and Srinagar, two important cities in the region, by several hours.

When the project was first conceptualized in 2002, it was discovered during the stretch survey that no approach roads existed for starting the railway tunnel construction.

While about 205 km of approach roads were constructed between 2008 and 2016, the proposed bridge's construction was stalled by legal disputes over its alignment. Despite the difficulties, the cable-stayed train bridge is finally close to being finished, which will be an important improvement to India's railway system.

Kum Anu Narayan

Machine learning tool to detect tumour in brain

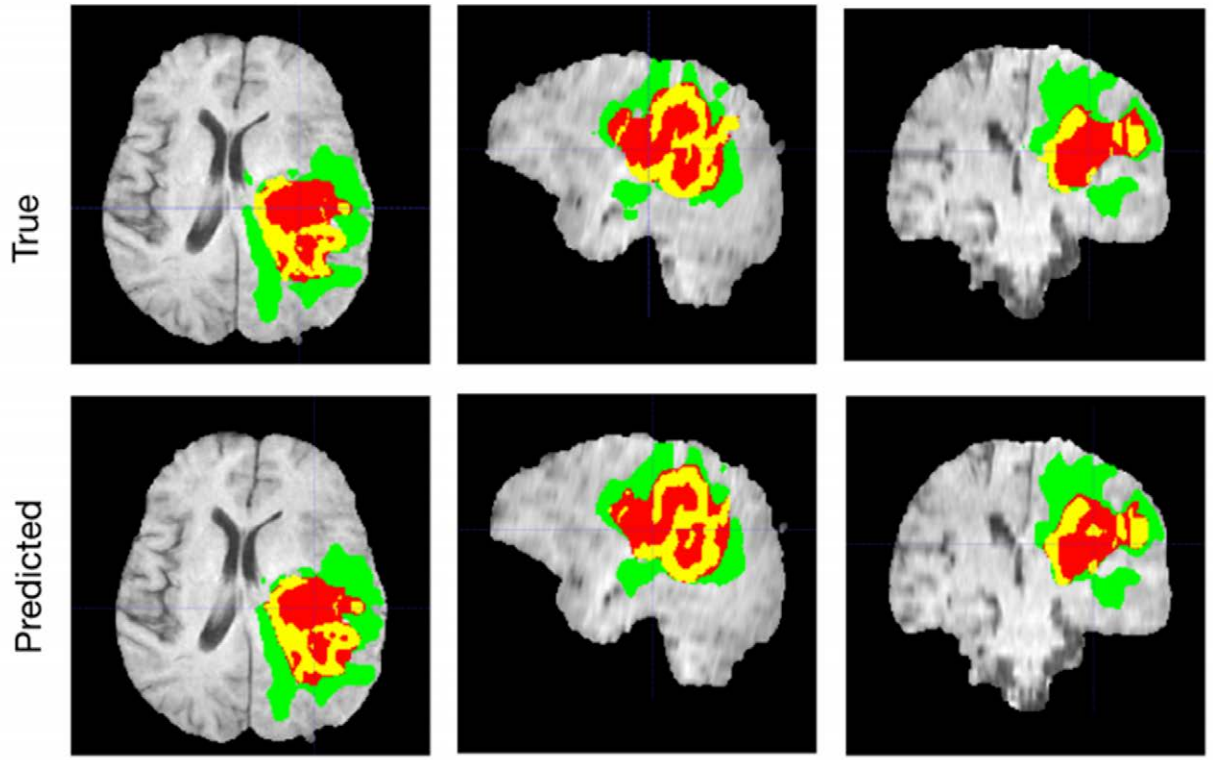
The GBMDriver was specifically developed to identify driver mutations and passenger mutations (passenger mutations are neutral mutations) in Glioblastoma.

A machine learning-based computational tool to detect glioblastoma in the brain and spinal-cord has been developed by scientists at IIT- Madras. The tool, known as 'GBMDriver' (GlioBlastoma Multiform Drivers), is publicly available online.

Glioblastoma is a rapidly growing tumour that aggressively takes over the brain and spinal cord. Despite the research undertaken to understand this tumour, the expected survival rate is less than two years from the initial diagnosis and therapeutic options remain limited.

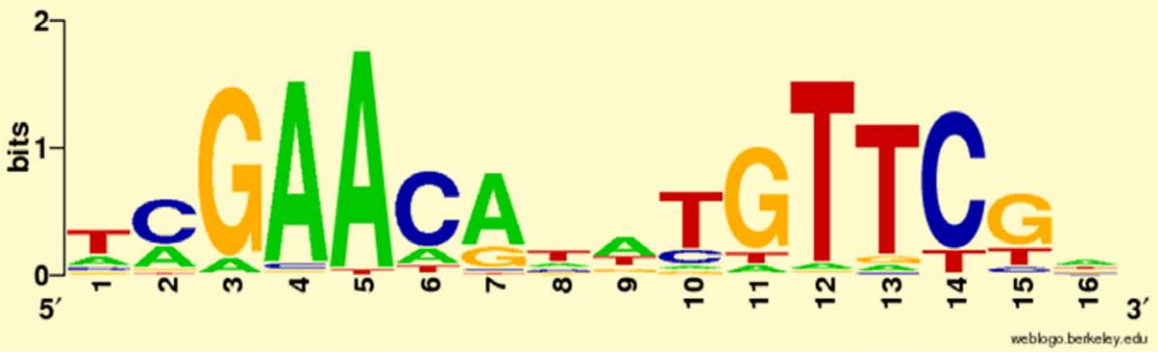
To advance the treatment options available for patients, the functional consequences of protein variants involved in Glioblastoma need to be evaluated. But functional validations to distinguish **driver mutations** (disease-causing mutations) from all the observed variants would be difficult. The GBMDriver was specifically developed to identify driver mutations and **passenger mutations** (passenger mutations are neutral mutations) in Glioblastoma.

In order to develop this web server, a variety of factors were taken into account, such as

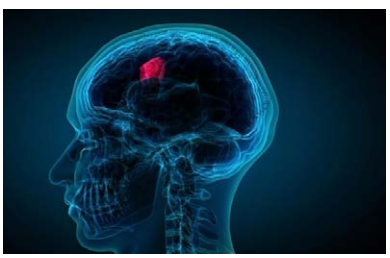


A **position weight matrix (PWM),** also known as a **position-specific weight matrix (PSWM)** or **position-specific scoring matrix (PSSM),** is a commonly used representation of (motifs) patterns in biological sequences.

PWMs are often derived from a set of aligned sequences that are thought to be functionally related and have become an important part of many software tools for computational motif discovery.



Conservation scores are calculated per base, indicating how many species in a given multiple alignment match at each locus (position).



Position Specific Scoring Matrices (PSSM), amino acid properties, di- and tri-peptide motifs and conservation scores. 9386 driver mutations and 8728 passenger mutations in glioblastoma were analysed in this study. In a blind set of 1809 mutants, driver mutations in glioblastoma were identified with an accuracy of 81.99 %, which is better than existing computational methods. This method is completely dependent on protein sequence.

Smt Sumathi Ramakrishnan

Shipping service between Tuticorin and Maldives launched

DO YOU KNOW ?

MSS Galena has a capacity of 421 TEUs (A twenty-foot equivalent unit). The vessel arrives at PSA SICAL Container Terminal and is loaded with 270 TEUs of containers at PSA SICAL Container Terminal before starting for Male from Tuticorin. It is scheduled to operate three calls per month between the two countries.

An MoU has been signed between India and Maldives to reaffirm the mutual understanding between the two nations. Direct shipping service is now being offered between Tuticorin and Male. This is also consistent with the "neighbourhood-first policy" and the regional vision of security and growth for all.

Shipping service was launched on 5th May, as part of an agreement between India's Ministry of Port, Shipping and Waterways and Maldives' Ministry of Transport and Civil Aviation.

The first ship was purchased by Maldives State Shipping (MSS). India's Minister Shantanu Thakur inaugurated the vessel 'M V MSS Galena' from V O Chidambaranar Port.

This will further give impetus to bilateral trade between India and Maldives. Earlier, the bulk cargo bound to Maldives from Tuticorin was routed through Colombo via barges and sail ships.

With the launch of direct shipping service, logistics and other costs are cut, along with enhanced connectivity and reduced transportation time. Thus, it will lead to greater trade and economic opportunities and enhanced maritime trade links with a renewed vigor between the two countries.

Shri Nagarajan R

Border Haat between India and Bangladesh

Haats have created job opportunities as well as knowledge sharing and promoted people-to-people connectivity.

Haat - market regularly held especially in a rural area.

A new border haat between India and Bangladesh was inaugurated in Bholaganj under Companiganj upazila of Sylhet on 6th May 2023. Expatriates' Welfare and Overseas Employment Minister of Bangladesh Imran Ahmed and Assistant High Commissioner of India Niraj Kumar Jaiswal jointly inaugurated it.

The haat will function between 10am to 4pm on Wednesdays and Saturdays. A total of 26 Indian stalls and 24 Bangladeshi stalls are allowed to operate in the haat. People living within 5 km of the border can use this for which a special card is issued to allow entry. **Items sold at the haat are duty free.** This is the fourth border-haat in Sylhet division out of which three are currently functional. Three more border haats are planned to be opened in the Sylhet division.

A study by the Observer Research Foundation (ORF) says that the border haats have enabled people from both sides to revitalise old family bonds. These have created job opportunities as well as knowledge sharing and promoted people-to-people connectivity which is an essential building block in cementing ties between the two neighbouring countries. Currently activities of 13 border haats are on between the countries.

Kum Pavithra S

SAKSHAM

Learning Management Information System launched

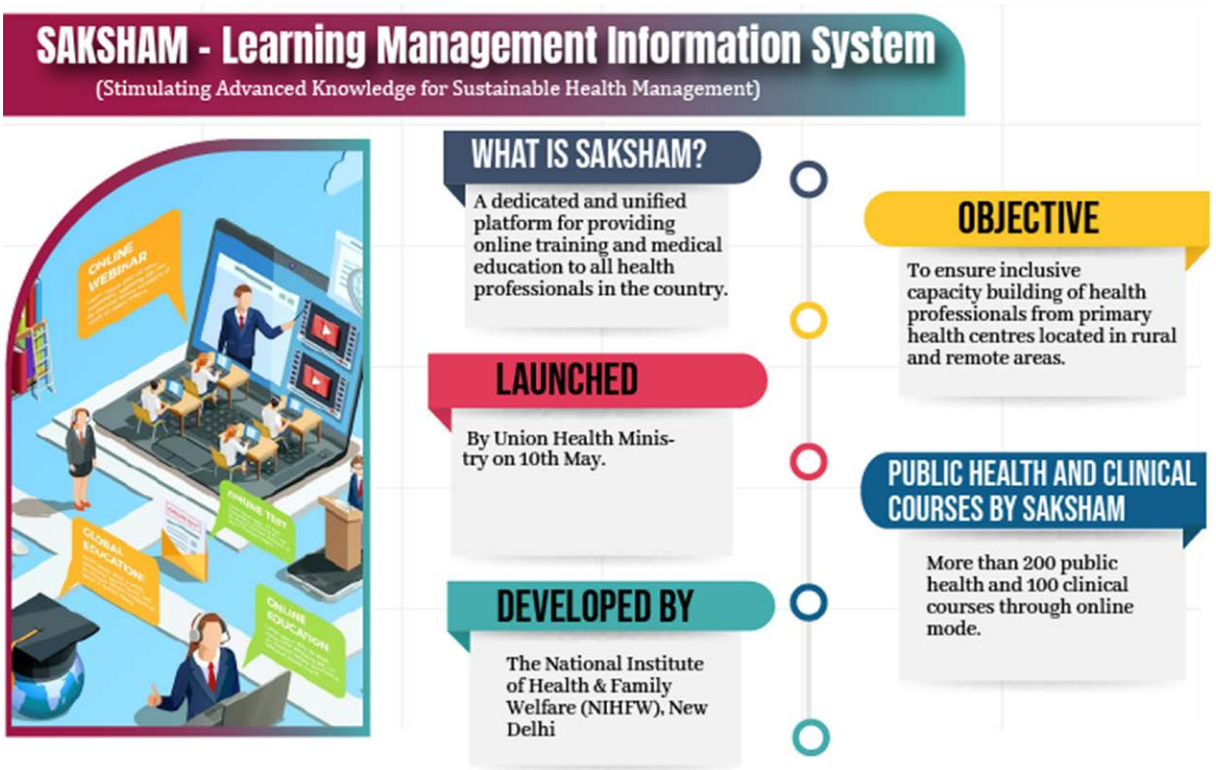
The platform will act as a central database of trained healthcare professionals in India and will also serve as an enabler for case-based learning in the sector.

On 10th May, 2023, Union Health Ministry launched a learning management information system 'SAKSHAM' (Stimulating Advanced Knowledge for Sustainable Health Management) which was inaugurated by the Health Secretary Rajesh Bhushan.

Developed by the National Institute of Health and Family Welfare (NIHFW), New Delhi, the digital platform is envisioned to be utilised for all blended learning programmes in the future.

The platform will act as a central database of trained healthcare professionals in India and will also serve as an enabler for case-based learning in the sector.

It is a dedicated and unified platform for providing online training and medical education to all health professionals in India. It is designed in such a way that it positively impacts healthcare professionals by helping them acquire globally relevant knowledge. This is an inclusive digital learning platform which will ensure capacity building and upskilling of health professionals



The courses offered in the portal have been peer reviewed, approved and developed in collaboration with global healthcare agencies and domain experts, including WHO, UNICEF, UNDP and reputed national and international institutes.

from primary health centres located in rural and remote areas all the way up to tertiary care and corporate hospitals in metropolitan cities.

Presently, the platform **offers more than 200 public health and 100 clinical courses through online mode.** The courses offered in the portal have been peer reviewed, approved and developed in collaboration with global healthcare agencies and domain experts, including WHO, UNICEF, UNDP and reputed national and international institutes. Health professionals can register for these courses through the LMIS portal of The National Institute of Health and Family Welfare and get certification after undergoing the requisite training and qualifying the required assessment criteria.

Smt Shyamala Viswanathan

School Health Program introduced in UP

Health insurance worth ₹ 25,000 is provided. If a child is admitted to the hospital due to illness, then he /she can be treated through a health cover cashless card of ₹ 25,000.

The Urban Development Department and Lucknow Smart City have collaborated to launch a pilot project called the "School Health Program" which involves the creation of a digital health card for each child. **At present, no school in India has digital health report card or health insurance facility for children.**

Highlights

- Digital health report card for the overall physical and mental well-being of 1,765 municipal school students is also being prepared.
- Health insurance worth ₹25,000 is provided. If a child is admitted to the hospital due to illness, then he /she can be treated through a health cover cashless card of ₹ 25,000.
- This programme is a slightly better version than the earlier one for the health of children. In this, school mapping is done and the health department team visits schools for check-up of children under National Child Health.
- Three municipal schools, including Aminabad Inter College, Kashmiri Mohalla Girls Inter College and Kashmiri Mohalla Montessori School have been given the responsibility of health check-up of 1,765 children.
- Workshops are conducted on topics like child psychology, first aid, health and hygiene.

Proposed framework

- The team is making digital health cards by doing desk to desk examinations of the child.
- A unique ID card for each

School Health Promotion Activities	•Age appropriate incremental learning for promotion of healthy behavior and prevention of various diseases •Delivered through school teachers/Health and Wellness Ambassadors trained in each school
Health Screening	•The screening of children for 30 identified health conditions for early detection, free treatment and management through dedicated RBSK mobile health teams.
Provision of Services	•Provision of IFA and Albendazole tablets by teachers through WIFS and NDD programme respectively. •Provison of sanitary napkins •Age appropriate vaccination
Electronic Health Records	•Electronic health record for each child
Imparting skills of emergency care	•Training of teachers on basic first aid

LUCKNOW SMART CITY
ART CITY TO SMART CITY

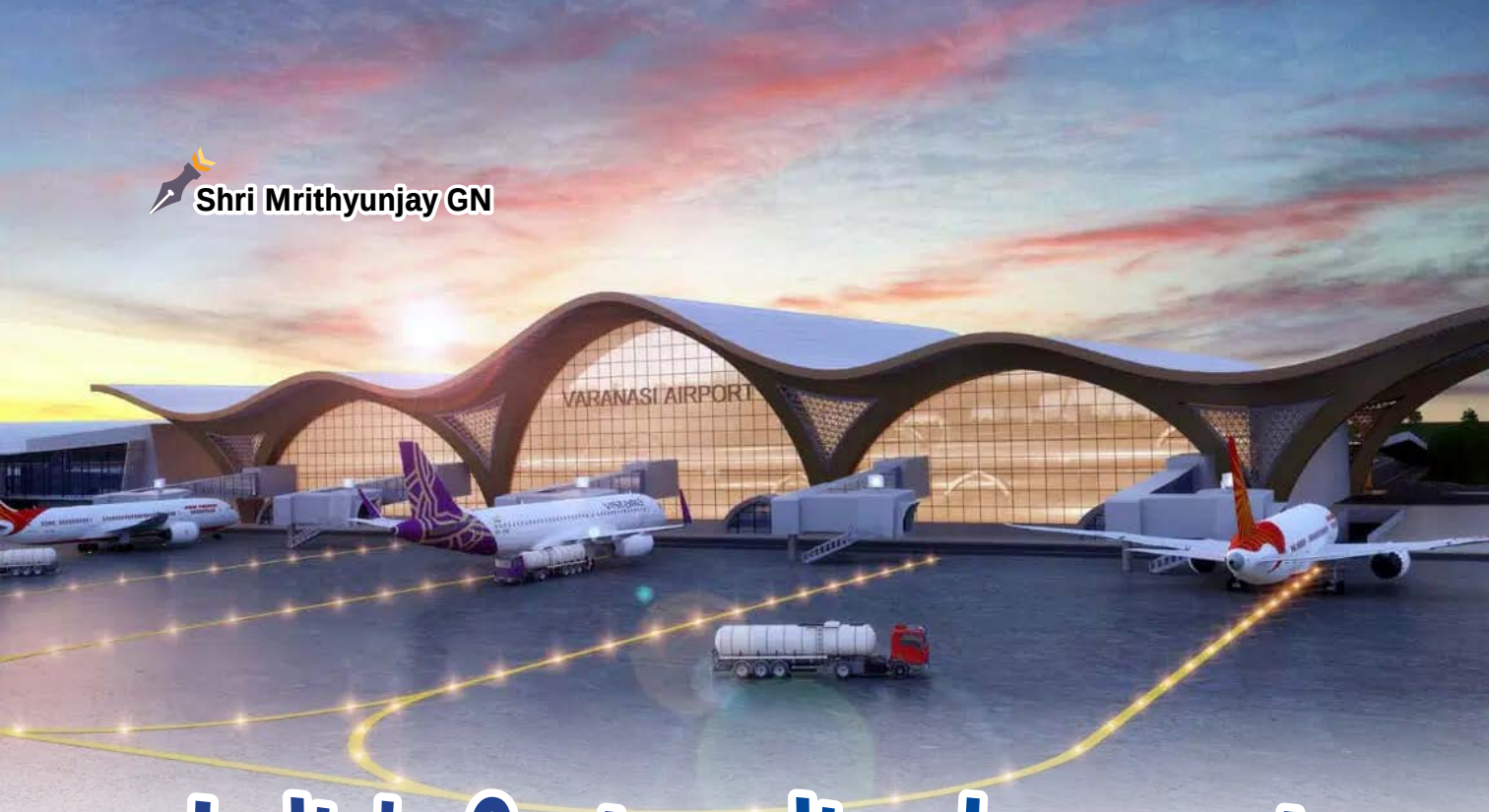
child, through which the child's parents, school and administrative officials can download this health card.

- Follow-up of the Digital Health Report is done every six months.
- Report is prepared based on 130 parameters including endurance, stamina, posture and others.

Colour blindness, eye diseases encompassing vision care, dental and oral health of children as well as abilities to listen and speak are included as part of this initiative.

This unique initiative would not only detect diseases occurring in children and improve their academic performance but also their future prospects.

Shri Mrithyunjay GN



India's first reading lounge at Varanasi International Airport

The reading lounge caters both to Indian and international travellers, especially ones seeking to expand their discovery of the city of Varanasi.

Airports across India cater to passengers across various economic backgrounds. This is reflected through private lounges and access to special amenities based on the passengers' affordability.

Breaking this restrictive access to luxuries is the Lal Bahadur Shastri International Airport in Varanasi. All passengers will have access to a reading lounge stocked with books from across the country, with a special focus on books published under the Prime Minister's Yuva Yojana Scheme.

The lounge has been established with the assistance of National Book Trust (NBT), an Indian publishing house and autonomous body under the Union Ministry of Education.

Inaugurated by Avanish Awasti, advisor to the UP Chief Minister, it is expected to be the first of many to be opened across Uttar Pradesh. The reading lounge caters both to Indian and international travellers, especially ones seeking to expand their discovery of the city of Varanasi.

Authors published under the PM - YUVA Scheme, one designed to provide mentorship for young Indian writers, will have dedicated shelves; bringing more publicity to the works of budding authors.

The lounge includes books in a variety of Indian and International languages. Set in a hub of transit, where international becomes national, this reading lounge is sure to become a place where the literary heritage of our country can be truly celebrated.

Kum Kavya R

Tungnath Temple
a national monument

Tungnath temple is considered to be the highest Shiva temple in the world. And fittingly, the name literally translates to 'Lord of the peaks'.

The Indian government has declared the Tungnath temple as a monument of national importance, as per the request of the Archeological Survey of India (ASI). The ASI officials appraised the central government to include the shrine in the protected list of monuments. Accordingly, the government began the process of including it as a national monument and had issued a notification seeking objections from the public as a matter of procedure.

Located in the Rudraprayag district of Uttarakhand, Tungnath temple is considered to be the highest Shiva temple in the world. And fittingly, the name literally translates to **'Lord of the peaks'.** The temple is one of the Panch Kedar temples located in the Garhwal Himalayas region and has rich legends linking it to the Pandavas from the Mahabharata epic.

A recent study by ASI revealed that the Tungnath temple, located at an altitude of 12,800 feet above sea level, is tilting around five to six degrees. A ten-degree tilt can be observed in the smaller structures within the temple complex.

ASI officials are investigating the root cause of the tilt and the possibilities of immediately repairing it. Manoj Kumar Saxena, the superintendent archaeologist of ASI's Dehradun circle, said that a

DO YOU KNOW ?

Panch Kedar Temples

(panch in Hindi means five)

1. **Kedarnath**
2. **Madhmaheshwar**
3. **Tungnath**
4. **Rudranath**
5. **Kalpnath.**

According to the epic Mahabharata, the legend goes that Lord Shiva was hiding from the Pandavas by taking the form of a bull but was identified by Bhima, one of the five Pandava brothers. On being recognised, the deity disappeared and manifested himself in five different locations in the Himalayas. It is said the each of these sites is dedicated to a part of the Lord - Kedarnath (the hump of Lord Shiva), Madhmaheshwar (His belly button), Tungnath (His arms), Rudranath (His face), Kalpeshwar (His jata or hair).

detailed work programme would be prepared after a thorough inspection of the shrine.

The ASI report said that the possibility of land subsidence has not been ruled out. Subsidence is the sinking of Earth's surface due to geological or man-induced causes. Uttarakhand's towns of Karnaprayag, Landour and Joshimath are some of the concerning cases of land subsidence noticed earlier this year.

If needed, the damaged foundation stones of the temple might be replaced after consulting the experts. Currently, they have fixed glass scales to the walls of the main temple to measure its movement.

Kum Kavya R

Deepika Misra

First IAF woman officer receives Gallantry Award

Despite the deteriorating weather, strong winds and the nearing sunset time, her efforts helped save 47 lives including those of women and children.

The Indian Air Force's (IAF) Wing Commander Deepika Misra has made history by becoming the first woman officer to receive the Gallantry Award. She was conferred the Vayu Sena Medal (VSM) by Indian Air Force Chief Air Marshal VR Chaudhari on 20th April 2023. She was among the 58 personnel who received the gallantry award which included 57 Air Force personnel and one from the Indian Army.

Wing Commander Misra, a helicopter pilot from Rajasthan was awarded the medal for an exceptional act of courage displayed during a flood relief operation in Madhya Pradesh in August 2021. The rescue operation included low hover pick-ups and winching, and lasted for an exhaustive eight days.

Despite the deteriorating weather, strong winds and the nearing sunset time, her efforts helped save 47 lives including those of women and children. They also stated that her efforts of bravery and courage during the rescue operation instilled a sense of safety amongst the common populace in the flood-affected area.

According to the IAF officials, her initial aerial reconnaissance and inputs from the flood-impacted area proved to be instrumental in planning the entire rescue operation by the IAF, the National Disaster Response Fund (NDRF), State Disaster Response Fund (SDRF) and other civil authorities.

This is a proud and memorable moment for India. Though women from the IAF have received awards in the past, it is for the first time that a gallantry award has been conferred to a woman officer.

Smt Sandhya Nair

Women officers in Artillery Regiment

The Supreme Court of India in 2020, upheld the right of serving Short Service Commission (SSC) women officers to be granted Permanent Commissions (PC) just like their male colleagues.

Five cadets of the Officers Training Academy, Chennai made history when they became the first women inducted into the Indian Army's Regiment of Artillery at their passing out parade. Three of the WOs have been posted to units along the northern border and the other two to locations in the western theatre.

Lt. Mehak Saini has been commissioned into a SATA regiment, Lt. Sakshi Dubey and Lt. Aditi Yadav into field regiments, Lt. Pious Mudgil into the medium regiment and Lt. Akanksha into the rocket regiment.

The Supreme Court of India in 2020, upheld the right of serving Short Service Commission (SSC) women officers to be granted Permanent Commissions (PC) just like their male colleagues. This judgment was based on the case filed by 17 SSC officers who were denied a permanent commission despite serving for 14 years.

The appointment of these women into the Indian Armies artillery forces regiment signifies a significant step towards gender inclusivity and highlights the expanding roles of women in the military.

The Regiment of Artillery is a major combat support arm and it has around 280 units that handle various gun systems including Bofors howitzers, Dhanush M- 777 howitzers and K-9 vajra self-propelled guns.

Col Shashidhar M V (Retd)

1st test trial of indigenous ADC-151

Sahayak NG is a lightweight air droppable container fitted with a parachute system designed to carry critical engineering stores up to 50 kg for distressed naval ships at mid sea.

The trials of indigenously designed and Air Dropped Container (ADC) – Sahayak NG from IL 38SD aircraft off Arabian Sea with a payload of 50 kg capability were carried out on 8th January 2019 and on 20th December 2020 respectively to validate the operational logistics capabilities of the Navy by providing critical engineering support (support & spares) to those ships either deployed or " in distress" mode more than 2000km from own maritime coast.

Maiden Test Trial

Recently on 27th April 2023, the first successful maiden test trial of 'ADC-150' from IL 38SD aircraft off the coast of Goa was carried out with now an enhanced payload of 150 kg capacity with significant contributions from three DRDO laboratories – Naval Science & Technological Laboratory (NSTL), Visakhapatnam; Aerial Delivery Research & Development Establishment (ADRDE), Agra and Aeronautical Development Establishment (ADE), Bengaluru.

Sahayak ADCs

Sahayak NG is a lightweight air droppable container fitted with a parachute system designed to carry critical engineering stores up to 50 kg for distressed naval ships at mid sea. It is dropped from a fixed wing aircraft near the vicinity of the ship in sea. The glass fibre reinforced polymer (GFRP) containers are designed to withstand water entry shocks and are completely water tight. The parachute system helps to control the rate of

SAHAYAK-NG has a Satellite Based Reporting Terminal (SBRT) which provides precise location enabling the ships in distress to pick up critical stores.

descent of the container. The system had a P4M Pyro Cutter Mechanism, designed and developed by NSTL for separation of pilot parachute from main parachute.

- It can be dropped from heavy aircraft and is GPS enabled.
- It is an advanced version of SAHAYAK Mk I.

- SAHAYAK-NG has a Satellite Based Reporting Terminal (SBRT) which provides precise location enabling the ships in distress to pick up critical stores.

Production of Sahayak ADC-150 containers and parachutes will soon be undertaken since the product has high export potential giving another major impetus to our 'Make in India' initiative.

- They are designed to withstand water entry shocks.
- The SAHAYAK-NG was designed by DRDO and Avantel, a private company.

With the success of this test trial, series production of Sahayak ADC-150 containers and parachutes will soon be undertaken since the product has high export potential giving another major impetus to our 'Make in India' initiative besides placing our nation's interest in a pole position in the global defence industry.

Col Shashidhar M V (Retd)

VTOL Loitering Munition

ALS-50 can carry out precision strikes on designated ground targets and in high altitude accurately over a range of 50 km without putting personnel in danger.

Modern technology has made warfare more advanced and complex. Loitering munition drones are the latest in modern warfare. These drones are a cheaper alternative to armed drones for short-distance precision strikes. Capable of carrying a warhead and loitering over the battlefield to identify targets and crashing on it thus causing damage and destruction. Drone actions were seen recently during the Nagorno-Karabakh (Azerbaijan – Armenia) war in 2020 and also in the ongoing Russia-Ukraine war in anti-personnel, anti-armoured operations and to destroy military installations.

While USA, Israel, Iran and China are dominating this technology, India, UAE and Turkey have also joined this race.

ALS-50 Vertical Take-off and Landing (VTOL) Loitering Munitions

Tata Advanced Systems Limited (TASL) delivered the first batch of indigenous ALS-50 Vertical Take-off and Landing (VTOL) loitering munitions (commonly known as a suicide drone) to the IAF.

This autonomous system has successfully demonstrated its capability to carry out precision strikes on designated ground targets and in high altitude accurately over a range of 50 km without putting personnel in danger. This one-of-a-kind weapon can take off like a quadcopter and then switch to fixed-wing mode for long-distance travel. It has five flight modes—fully autonomous, semi-autonomous, loiter, attack and return home.

Piloted from a ground control

station, where the operator receives real-time footage of the theatre of operations enabling him to choose an assault option. The system's precision has been tested to less than 2m which is sufficient for precise blows.

The system's precision has been tested to less than 2m which is sufficient for precise blows.

Features

ALS-50 is a VTOL unmanned aerial vehicle (UAV) having a length of 2.4 m, a wingspan of 3.8 m, and maximum take -off weight of 50 kg. Other features include:

- Cruise speed of 100 km/h, endurance >1hour, operating range > 50 km.
- Can carry a range of anti-personnel and anti-armour warheads weighing up to 6 kg including explosively formed penetrator (EFP).
- Rectangular fuselage with rounded edges, shoulder-mounted straight wings and a conventional tail configuration.
- Mounted with electro-optic/ infrared (EO/IR) turret, a rear-mounted engine and a fixed landing gear consisting of four landing legs.
- Operating temperatures vary from -30°C to +50°C. It can be launched and recovered at an elevation of 3000 m above mean sea level (AMSL), with a service ceiling of 4000 m AMSL.
- Works in GPS denied environment.
- Anti-jamming capability.
- Has an abort recovery feature enabling it to re-attack the same or a different target.

The system is useful in both surveillance and combat roles.

Loitering munition can be used to destroy enemy targets that may be beyond line of sight, including high value targets like command centres and missile launchers and armoured columns without endangering personnel.

The system is useful in both surveillance and combat roles. Our armed forces are inducting loitering munitions in various categories with the artillery regiments to receive loitering ammunition under emergency procurement contract soon.

Currently, many Indian companies are developing and testing loitering munitions, micro-munitions carrying drones and micro-munitions. Apart from TASL's ALS-50, loitering munitions are being developed by other Indian defence companies like ALFA-S by New Space Research and Technologies, Achuk by Redon Systems, Archer by PARAS Aerospace, BEL and Bharat Dynamics etc.

Financial Planning and Management

Demat and share trading accounts

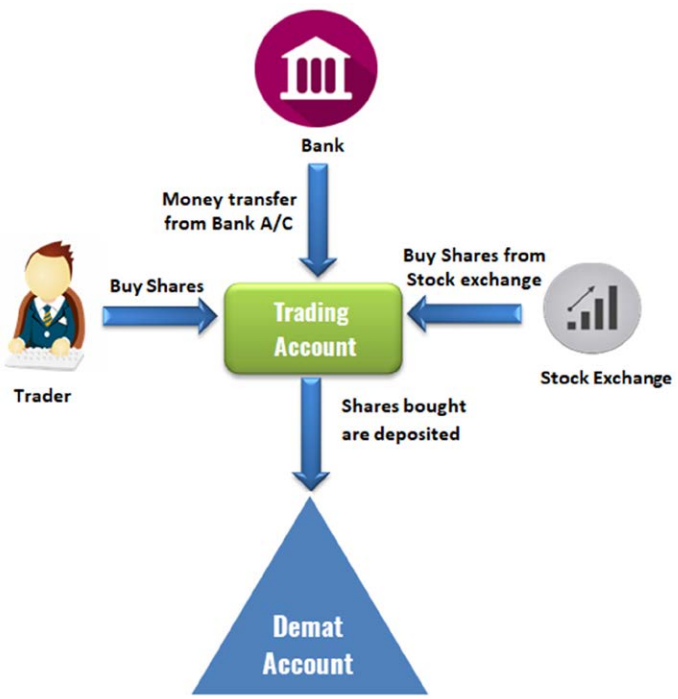
It is good to have different types of shares that offer different benefits in our investment portfolio.

Shravan and Gita went out with grandpa to buy fruits for guests.

Grandpa picked up a dozen mangoes, few apples, pomegranates, grapes and a big water melon.

Grandpa's fruit platter was a great hit with the guests.

After lunch the children sat with grandpa for their financial literacy session.



Shravan said, "I loved the mangoes. I was surprised that people chose other fruits from the buffet."

Grandpa smiled. "People have different tastes. Each fruit has a unique taste, a set of nutrients and health benefits."

Gita observed, "I saw that the water melon was over in no time."

Grandpa nodded. "Just like it is good to have a basket of different fruits, it is good to have different types of shares that offer different benefits in our investment portfolio. This will help diversify the risk. If the shares of one company fall in value, it will be balanced by the growth in the shares of other companies."

Gita: "Grandpa, tell us how do you invest in shares? Is it through your bank account?"

Grandpa explained.

Demat account

Shares are held in electronic form in an account called "Demat account." (Short form for dematerialised account.)

Initially, when people bought

Just like when you deposit cash into your bank account it is shown as a credit balance in your statement or passbook, shares are deposited into demat account and shown as credit balance in the demat account.

shares in companies, they were issued physical share certificates. In the year 1996, dematerialisation of shares was introduced. Dematerialisation means conversion of physical shares into electronic form.

Just like when you deposit cash into your bank account it is shown as a credit balance in your statement or passbook, shares are deposited into demat account. They are shown as credit balance in the demat account.

Shravan: "Where can we open demat accounts?"

Grandpa: "In India, demat accounts are maintained by two depository organizations: the National Securities Depository Limited and the Central Depository Services Limited. These depositories serve investors through intermediaries called Depository participants. (DPs). The DPs are authorised to open demat accounts for investors.

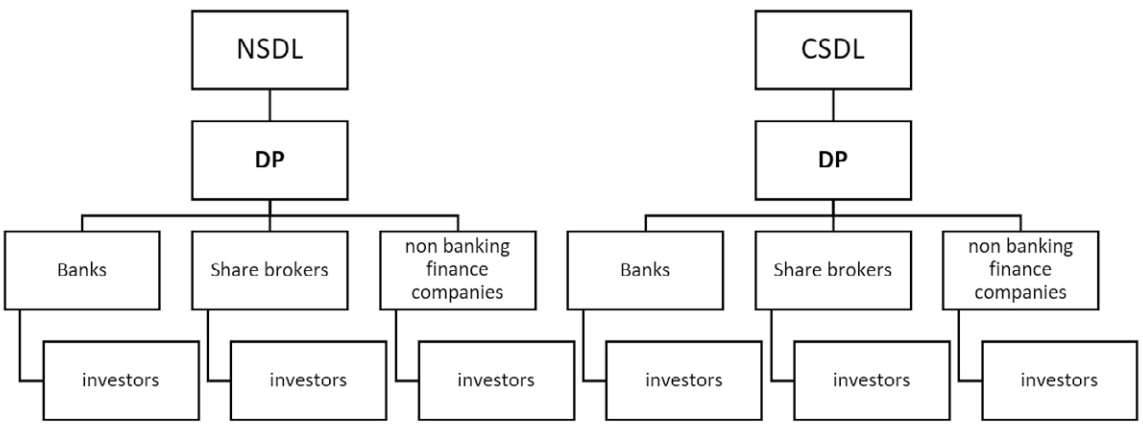
Who are the DPs?

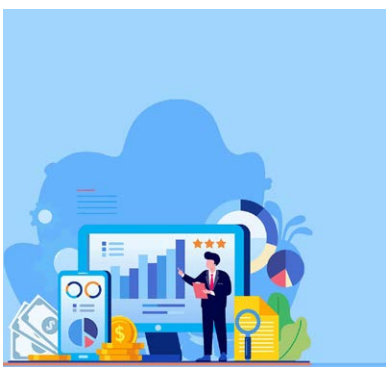
Banks, share broking companies and some non-banking finance companies registered with SEBI (Securities and Exchange Board of India) are authorised to function as DPs.

Investors can open their demat account with any of the authorised DPs.

Institutional framework for opening and operating demat accounts in India

Each DP will have a unique 8-digit DP ID. When you open a demat account, you will be allotted a 16-digit id. The first 8 digits will be your DP ID and the next 8 digits will be your unique client id with the DP.





This 16-digit demat account ID will be the identification number used for crediting or debiting shares to an investor's account.

Shravan:"How do we operate the demat account to buy and sell shares?"

Online Share Trading account

Demat accounts are required to hold your shares in electronic form. However, to buy and sell shares, you need a trading account.

Many banks now offer a 3 in 1 account – A savings account, demat account and an online trading account. The three accounts are linked.

To open a demat account and share trading account, we need to submit our documents and also sign an agreement form with the DP.

Once the online trading account is opened, we would be given a login id and password.

Buying shares of a company

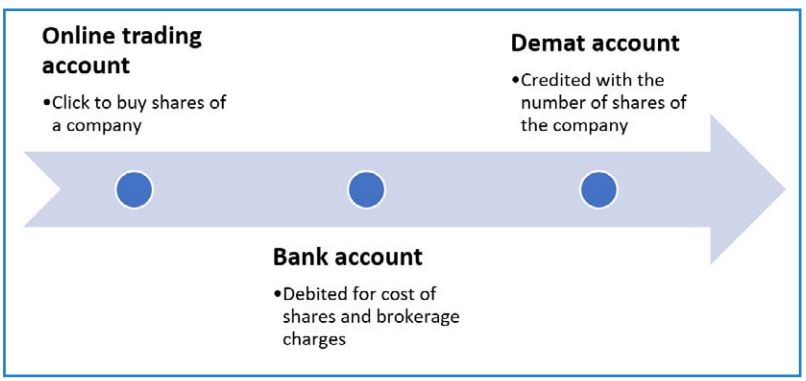
1. Log into your online trading account.
2. Give online instruction to buy shares of a particular company in your online trading account.
3. The trade is executed online.
4. The cost of the shares plus brokerage charges is immediately debited to your bank account.
5. The number of shares you bought is credited at the end of the trading cycle (say on the second/third day) to your demat account.

To open a demat account and share trading account, we need to submit our documents and also sign an agreement form with the DP.

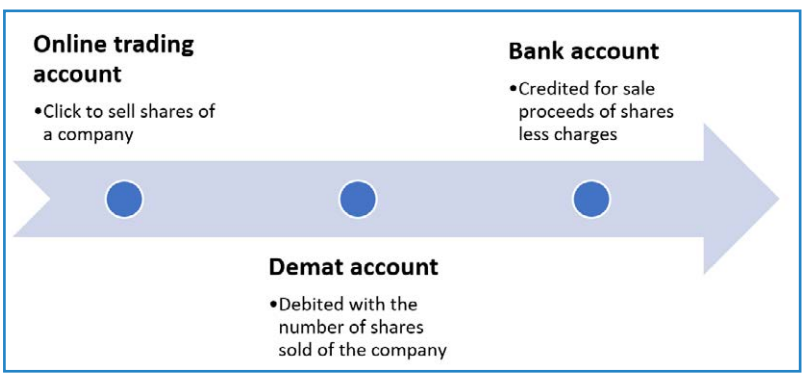
Selling shares of a company

1. Give online instruction to sell shares of a particular company in your online trading account.
2. The trade is executed.
3. The number of shares you sold is debited from your demat account.
4. The sale proceeds of shares minus charges are credited to your bank account at the end of the trading cycle (On the second/third day).

How it works - Buying shares through online trading account



How It works - Selling shares through online trading account



Grandpa continued. The shares of companies are listed on stock exchanges. **There are two stock exchanges online. BSE – the Bombay Stock Exchange and NSE – the National Stock Exchange.**

The market prices of the shares of listed companies are reflected on the stock exchanges. When you click on a particular company, the market price at that moment pops up. You can click on "buy" or "sell" and submit the instruction online.

Shravan:"Grandpa, can Gita and I open a demat and share trading account and start trading?"

Grandpa smiled. "Minors cannot open a share trading account. You need to complete 18 years of age to open a share trading account and start buying and selling shares. **However, a demat account can be opened in the name of a minor, to be operated by father and guardian."**

Shravan sighed. "What is the use of demat account if we cannot trade?"

Grandpa replied. "The demat account of a minor is useful for transferring shares to the account of a minor. Also, the father and guardian can invest in IPOs (initial public offer) in the name of his minor children. The shares allotted in the IPO can be credited to the minor's demat account. However, to sell these shares, a trading account is needed. It can be done only after the child attains the age of 18."

Gita nodded. "I remember brother Hari saying that he opened a share trading account on his 18th birthday."

Grandpa replied. "Yes. You can open a share trading account once you turn 18."

Shravan: "Do you trade in shares grandpa?"

Grandpa: "I do have a 3-in-1 account with the bank – a savings account linked to demat and online trading account. I have invested in a few good stocks and I stay invested to get the benefits. I don't follow the stock market every day or actively buy and sell shares."

"Investors have different risk appetites. Older people like me prefer to take lower risks and expect safe returns. **We invest in shares of companies that have a good track record of performance.** We get dividends regularly as return on investments. We also have the comfort that our investment has increased in value and that we can sell the shares anytime we need funds.

There are others like Hari who are active traders. They look for short term gains and are willing to take risks. They actively trade every day – they buy shares if they expect prices to increase, closely follow the market and sell when the prices rise. They aim to make quick profits."

Gita: "What if the price of shares doesn't increase as per expectation or if it falls down?"

Grandpa: "These traders would sell off the shares at a loss and move on. Sometimes they make profits, sometimes they incur losses. That's why I said one needs to have the ability and attitude to take risks if you want to get into active share trading."

Gita: "When I complete 18 years, I'd like to open a share trading account. I think I'd like to play safe and buy a few good stocks."

Grandpa: "We can also invest in mutual funds, bonds and other securities through the online trading account."

Shravan exclaimed, "Thanks, Grandpa. I'll start saving more money in recurring deposits and fixed deposits and accumulate enough so that I can start share trading when I become 18."

LAW OF CONTRACT

The law of contract, as the name suggests, is the law which governs contractual relationships between parties. In India, contracts and contractual obligations are governed by the Indian Contract Act, 1872.

A contract and its elements

Under the Act, a 'contract' is an agreement enforceable by law. Section 10 of the Act states that all agreements are contracts if they are made by the free consent of parties competent to contract, for a lawful consideration and with a lawful object, and are not hereby expressly declared to be void.

There are some essential elements of contracts which are:

(i) **Competence of parties:** The parties to the agreement must be eligible to enter into contracts. This means that they must be of the age of majority, of sound mind and not disqualified by the laws to which they are subject.

(ii) **Offer:** This is the starting point of an agreement, wherein one party makes some proposal to another party.

(iii) **Acceptance:** In order to convert a proposal into a promise, the acceptance must be absolute and unqualified.

(iv) **Lawful consideration:** This refers to a measurable ***quid pro quo*** between the parties. Further, the consideration must be lawful.

Quid pro quo is a Latin term which means "something for something". In the context of agreements, it means that there must be a reciprocal exchange in order for it to be a valid agreement.

(v) **Legality of object:** The object for which the agreement is proposed must be one that is lawful.

(vi) **Free consent:** The element of mutual agreement or 'meeting of the minds' is essential for an agreement to be valid. Consent must be free and not one that is a result of coercion (threat), undue influence (pursuant to the dominant position of one of the parties), mistake, misrepresentation or fraud.

Void and voidable contracts

Void contracts are generally those which are null or unlawful due to some illegality. Such contracts are considered to be void ***ab initio***, which means they are deemed to be unlawful from the time they were entered into. For example, if both the parties are under a mistake regarding a fact essential to the agreement, the agreement is void.

Voidable contracts are those which can be claimed to be unlawful by one of the parties at a time after they are entered into, due to some defect. For example, when the consent given by one party is not free consent, the contract is 'voidable' by that party.

Breach of contract

As per Section 37, parties to a contract must perform or offer to perform their promises, unless such performance is excused under the provisions of this Act or of any other law. **If a party commits a breach of the contract, the party who suffers by such breach is entitled to receive compensation from the defaulting party for loss or damage caused to him due to the breach, as laid down in Section 73 of the Act.**

The Act also deals with certain specific categories of contracts which will be discussed later.

Dr. Annapurni Subramaniam, Director, IIA

Her amma was the only working woman among her siblings. Seeing the kind of confidence she exuded in the society definitely made an impact on the young Annapurni.

That quiet night, *Soundarya Lahari* verses in praise of goddess Tripura Sundari were reverberating in the streets of Palakkad! "Annapurni… can you record these songs in that new tape recorder? Have you written down musical notes for these verses? I feel blissful to hear them in your voice, kanna!". Getting such compliments from her mother, who was a professor in the music college or from her father who was a guru to many musicians motivated the young girl to dedicate herself passionately to everything she chose. Be it a presentation on Halley's comet in her class or songs she planned to play on violin for *kolu* or a research paper– perfection was the goal.

No wonder, Dr.Annapurni, Director, Indian Institute of Astrophysics (IIA) has led her team to set up the Indian Astronomical Observatory atop Mt. Saraswati in the dry cold desert of Hanle Valley, Ladakh at an altitude of 4,500 m above sea level. This is the first dark sky reserve of our country and one of the best sites in the world for optical, infrared, sub-millimetre, and millimetre wavelengths.

The Himalayan Chandra Telescope (HCT), High Energy Gamma Ray telescope (HAGAR), Major Atmospheric Cherenkov Experiment Telescope (MACE) and GROWTH-India are prominent telescopes located there.

Her *amma* was the only working woman among her siblings. Seeing the kind of confidence she exuded in the society definitely made an impact on the young Annapurni. In fact, this made her join skill-based courses available locally those days, be it stitching or type-writing, that would help her be economically independent in future. She was always solution-oriented

and enjoyed the process of finding viable solutions, be it real life or academic. She owes this quality to her neighbour Murthy who taught her to use mathematics as a tool to solve problems. During college days, Prof. Sudharshan Kumar helped hone her observation skills.

Annapurni joined IIA as a research scholar in 1990 and received Ph.D. degree on studies of star clusters and stellar evolution. In those days, without digital repositories, she had to pour over on research articles in libraries and many times these involved travel. She had to be at observatory day and night, for which, a lot of support and understanding had to come from family members.

She points out that it is important for anyone to communicate and make their family, friends to know how important their passion is. While recollecting an interesting anecdote she chuckles, "I still remember my mother asking me to take up research on sun rather than stars. I was initially intrigued by her suggestion. Later, I understood her motherly concern behind this. If I take up research on sun, she thought I would be in the observatory during day time, instead of staying all night. I was deeply touched by this.

So, I took my parents to observatory and showed them how safe the place is, I saw her sigh of relief. After this, she was the one who stood like a pillar supporting my career while bringing up my two children. I must thank my research supervisor Prof. Ram Sagar who was understanding and very supportive." She continues, "Even now when I go home, I talk about my research and share my joy with them. They may not be able to understand the content, but they will be able to understand you are passionate and happy about your work and that helps our journey. **Also train your family members and children to share household chores and other responsibilities.** This helps me focus better on job as well strengthens the family ties. The thought of quitting never occurred to me!"

After obtaining Ph.D., she took a break to focus on her child's health. Striking a balance within us as an individual, before and after marriage is tough many times. This is where some women give up dreams and ambitions. When asked how she could sustain her research interest and be on par with international peers, she says, "When I got into job after this break, many eyebrows lifted up! I tried to take up bigger challenges, worthy of time and I was intense about completing it.

The bigger the vision, the bigger is the inspiration that you get from yourself which will help you to handle trivia. Never give yourself a chance to slip away from your dreams. Start building your skill-set necessary for your career and personal life, because there is no escape route.

Also don't give much importance to the criticism which can deter your journey. Just do what you think is correct and do it now because now is the time!"

Dr.Annapurni was a pioneer researcher in observational astrophysics using space and ground-based telescopes understanding stars in the nearby galaxies. This includes study of star clusters, star formation, galactic structure, Magellanic clouds and stellar population.

She has been involved in our country's major astronomy projects:

1) India's first multi-wavelength astronomy satellite, ASTROSAT.
2) Thirty Meter Telescope, the next generation optical-infrared observatory in Hawaii.
3) Mission Aditya L1.
4) Indian Spectroscopic and Imaging Space Telescope (INSIST) 5) mission to study Exoplanets.
6) Astrostay dark night sanctuaries.

According to her, one must continuously introspect to check if we are in the right path. Apart from being one of the greatest astrophysicists, she nurtures her passion for music and performs violin kutcheris on stage. **She suggests the most important skill one should develop to be a good leader is meticulous planning and rehearsing in mind before execution.**

Shri Sridhar P

The threat of rising sea levels

The extreme weather events sometimes occur in cycles, giving us some breathing space.

It is an undeniable fact that manmade global warming is responsible for catastrophic conditions like prolonged drought, excessive rainfall in a short period, flash floods, increasing ferocity and frequency of hurricanes, extreme cold weather etc. The extreme weather events sometimes occur in cycles, giving us some breathing space. But the threat of rising sea levels due to man-made global warming is truly the worst disaster unfolding.

The world meteorological organization (WMO) in its latest report titled "State of the global climate 2022" warns that the world's sea level is rising at an unprecedented rate, which portends disastrous consequences for the world's agriculture, ground water and coastal regions. Monstruous tidal surge will render societies living in coastal areas without a home. The report also discusses heat waves and droughts occurring in every continent.

How is global mean sea level (GMSL) rise measured:

Since the 1990s scientists have been measuring GMSL using satellite altimeters. Data collected from different points, over a period of time is then used to assess the rise in GMSL for that corresponding period.

How much has the sea level gone up?

GMSL rose 19 cm between 1901 and 2010. The rise in GMSL has doubled in recent years from 2.27mm/year in the 1992 to 2002 period to 4.62mm/year in the period 2013 to 2022. Estimates vary in assessing the rise in GMSL by the year 2100, from a low of 0.3m to a high projection of 2.4m.

Factors contributing to GMSL rise:

Climate change due to man-made global warming is singularly responsible for the current rise

Erosion of coastal land, flooding, salt water ingress in the coastal aquifers would render agriculture difficult.

in GMSL. The earth's mean temperature has gone up by 0.8 degree in the last century and efforts are underway to limit it to less than 2.5 degrees by 2100, when compared to the preindustrial era.

Thinning of Antarctica's sea ice due to excessive melt, glacier melt in Greenland are often in the news but the single biggest factor behind the rise in GMSL is thermal expansion of water in the open oceans. The oceans absorb the excess heat and the water expands. Thermal expansion of sea water is not uniform. The biggest expansion is seen in shallow waters and hence the threat to coastal communities.

What is to be expected due to the rise in sea level? It is now known that 40% of the world's population live very near to a coast. Rising sea levels with high tides could render them homeless and the governments will need to spend billions on relocating them permanently.

Erosion of coastal land, flooding, salt water ingress in the coastal aquifers would render agriculture difficult. That will precipitate food shortage and food riots. Many inhabited islands are barely a metre above sea level and hence will vanish in a few decades.

Fresh white snow reflects 90% of sunlight that falls on them. Loss of snow, ice, retreating glaciers will result in oceans taking up the excess heat.

A warming ocean will put more energy into the atmosphere that will increase the frequency and ferocity of hurricanes, the world over. All this will result in a new class of perpetual environmental refugees.

Smt Ramamani N

BAL PURASKAR AWARDS

Rishi Shiv Prasanna

In the last edition we saw the innovation of a 17-year-old young boy, now we shall get enlightened about the youngest genius.

It was really astonishing to see a sweet little boy joining hands with namaste *mudra* when a private channel interviewer offered to shake his hands with him. Rishi Shiv Prasanna, a born genius makes everyone startle with his extraordinary knowledge.

DO YOU KNOW ?

The usual range of IQ is between 85 and 115.

Rishi, an eight-year-old boy from Bengaluru, has been awarded the prestigious Pradhan Mantri Rashtriya Bal Puraskar Award for developing 3 android applications at the young age of 8.

When he was 3 years old, he started narrating about the solar system, planets, numbers, shapes and so on.

Rishi's parents identified his intelligence when he started reading newspapers and other books clearly at the age of 2. His school teacher, after seeing Rishi's special behaviour, insisted on an IQ test. Notably, Rishi's IQ (180) is even higher than Albert Einstein's score of 160.

He learnt coding at the age of 5. He has been awarded the civilian honour under the category of Innovation for designing three major applications:

1. 'IQ test app' for kids
2. 'Countries of the world' and
3. 'Covid helpline Bangalore'.

He has also written two books, 'Learn Vitamins with Harry Potter' and 'Elements of Earth'.

'Learn Vitamins with Harry Potter' tells about vitamins and their source of food to help children to understand the importance of eating healthy. He has used Harry Potter characters to make it interesting.

'Elements of Earth' has five basic elements of the earth explained with fictional characters to make it interesting and humorous.

Rishi is the youngest member of Mensa International, the most prestigious society of people with high IQs.

Smt Meenakshi S

Linthoi Chanambam and Rekha Singh

Linthoi is one of the most promising medal prospects for our country in the future and is expected to win several medals at the Cadet Asian and World levels in the near future.

Hailing from Manipur, Linthoi Chanambam became the first Indian to win a gold medal in the 2022 World Judo Cadets Championships that was held at Sarajevo in the 57 kg women's event. She had earlier won a gold medal at the Asian Cadet and Junior Judo Championships, held in Bangkok. This young prodigy proved her strength and power when she won a gold medal at the Sub-junior National Championship when she was just eleven years old.

In 2017, Linthoi was spotted in Telangana by Mamuka Kizilashvili, the head coach of the judo programme at the Inspire Institute of Sport (IIS), Karnataka. Since 2017, she received training from her coach, Mamuka Kizilashvili from Georgia. Mamuka talked about Linthoi and stated that the very first time he saw her, he instantly knew that she had something in her that would make her a world class athlete. Linthoi's coach recommended her to the Sports Authority of India (SAI) and they started funding her when she was thirteen years old. She is one of the most promising medal prospects for our country in the future and is expected to win several medals at the Cadet Asian and World levels in the near future.

.....

A savage brawl between Indian and Chinese forces in the Galwan river valley in Ladakh which is a disputed Himalayan

Lieutenant Rekha Singh is set to go to eastern Ladakh, where she will oversee the supply chain of equipment, clothing and ammunition of the Army at a forward location along the Line of Actual Control.

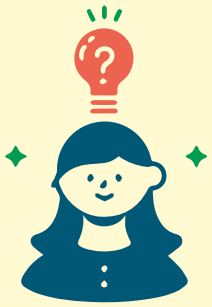
border region had left at least 20 Indian soldiers dead. Three years after losing her husband Naik Deepak Singh, Rekha Singh was commissioned as an officer in the Army Ordnance Corps which is responsible for providing material and logistical support to the forces during wartime.

Lieutenant Rekha Singh is set to go to eastern Ladakh, where she will oversee the supply chain of equipment, clothing and ammunition of the Army at a forward location along the Line of Actual Control.

Lt Rekha's journey began when she cleared the Services Selection Board (SSB) early last year and began training in May. Wives of soldiers killed in action are exempt from appearing for the Combined Defence Services Examination, which is conducted by the Union Public Service Commission (UPSC), a prerequisite for the SSB interview.

Smt Archana Sundar

CURIOSITY CORNER



MATHEMATICS

1. What is 90 degrees in terms of pi?
2. If two equations with two variables are to be solved together, what are they called?
3. You are given a 3-digit number. The second digit of this number is four times bigger than the third digit. The first digit of the number is 3 less than the second digit. What is the number?
4. An object is thrown into the air. After a while, it falls back to the earth. What shape does the flight path of the object trace?
5. At a party, everyone shook hands with everyone else. There were a total of 66 handshakes that happened during the party. How many people were present?
6. A clock strikes once at 1 o'clock, two times at 2 o'clock, three times at 3 o'clock, and so on. In 24 hours, how many times in total will the clock strike?

a) 125 b) 156 c) 179

LOGICAL REASONING

1. Look at this series: 7, 10, 8, 11, 9, 12, … What number should come next?

a) 7 b) 12 c) 10

2. Which word does NOT belong with the others?

a) glossary b) chapter c) book

3. Complete: Melt: Liquid:: Freeze :_____

a) Ice b) Solid c) Condense

4. Arrange the words given below in their ascending order.

A. Weekly, B. Golden jubilee, C. Century, D. Bi-annual, E. Diamond jubilee

5. Two adjacent portions of a big cube are painted in yellow and other two portions in pink and the rest of the two portions in blue. The cube is segmented into 512 tiny and equal cubes. How many tiny cubes will be formed having all the three colors?

6. I. Travel & Tourism creates livelihoods and opportunities for everyone in society.

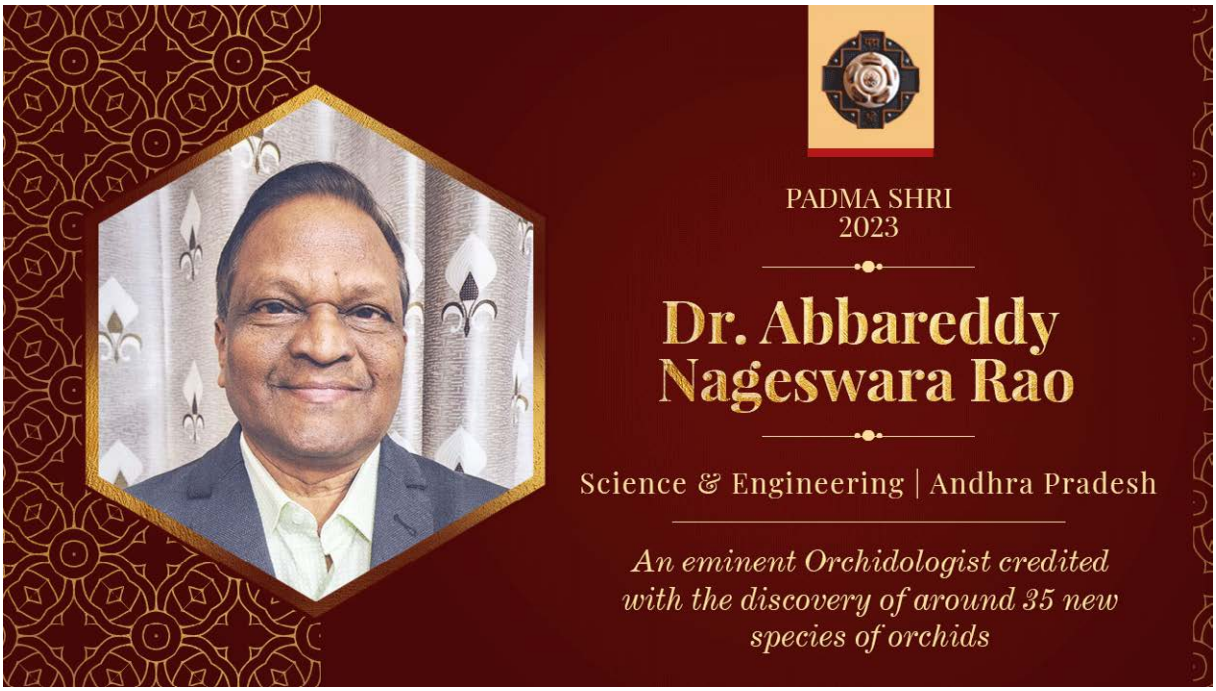
II. Women work in 65% of the travel and tourism jobs in Australia and Germany.

a) Statement I is the cause and statement II is its effect.

b) Statement II is the cause and statement I is its effect.

c) Both the statements I and II are independent causes.

Answers on page 62



Some of Dr Rao's outstanding contributions to Indian Orchidology are the discovery of 35 new species, 46 new distributional records to India and 65 new records to Northeast India.

Dr Abbareddy Nageswara Rao is widely known as the **Orchid Man of India** in the botanical world for his contributions to orchid taxonomy and conservation in India. He has discovered a maximum number of 35 orchid species from India.

Born on 19th June 1954, Dr Rao obtained an M.Sc degree in Botany (1977) from Andhra Pradesh University, Waltair. Later, with the Research Fellowship from the Department of Science and Technology, Government of India, he worked on Orchid Flora of Arunachal Pradesh for his PhD thesis in Botanical Survey of India, Shillong from 1978 to 1982 and submitted to Andhra University and was awarded PhD degree in 1985.

Dr Rao served for 30 years in the Department of Environment and Forests, Government of Arunachal Pradesh as Orchidologist at State Forest Research Institute, Itanagar. Later for 4 years, he served as the Project Director at the Centre of Orchid Gene Conservation of the Eastern Himalayan region, Hengbung in the Senapati district of Manipur.

During the 38 years of his experience in the field of orchid research, he has carried out several diligent explorations in the virgin forest areas of Northeast Indian states.

Some of his outstanding contributions to Indian Orchidology are the discovery of 35 new species, 46 new distributional records to India and 65 new records to Northeast India. To his credit, he has more than 200 research papers on various aspects of Orchidology published in various national and international journals.

DO YOU KNOW ?

- ***Ex-situ* conservation is conserving biological diversity outside their natural habitats. Eg. zoos, captive breeding, aquarium, botanical garden and gene bank.**
- **DUS Test incorporates testing Distinctness, Uniformity and Stability**

As a part of his *ex-situ* conservation, he enriched several orchid gene-banks in N.E India. He imparted training in orchid propagation and cultivation to many women self help groups.

During his service period, he was also the ex-officio Chairman of the Orchid Task Force to form DUS Test Guidelines, Protection of Plant Varieties & Farmers Right Authority, Ministry of Agriculture; Member of the Orchid Specialists Group, Indian Sub-continent (SAARC Region), and many such state organisations to ensure the conservation of orchids.

Accolades

- Dr T.M Hynniewtta Biodiversity Gold Medal (2014) by the Eastern Himalayan Society of Spermatophyte Taxonomy.
- Suraj Prakash Vij Memorial Award (2016) by Orchid Society of India, Chandigarh.
- Indian Record by Limca Book of Records(2020) for discovering the maximum number of orchid species(35) from India.

ANSWERS of page 60

MATHEMATICS

1. Pi/2
2. Simultaneous equations
3. 141
4. A parabola
5. 12
6. 156

LOGICAL REASONING

1. Option C. It's an alternating addition and subtraction series. 3 is added in the first pattern, and then 2 is subtracted.
2. Book. Rest are all parts of a book.
3. Solid
4. Weekly> Bi-annual> Golden jubilee> Diamond jubilee> Century
5. The number of corners is 8 hence answer for tiny cubes which have all the three colours are related to 8 corners.
6. Statement I is the cause and statement II is its effect.

AMLA

Amla **has the highest concentration of vitamin C among fruits. 100 g of gooseberry contains 600 mg of vitamin C, which is twenty times that of orange juice.**

Indian gooseberry or ***Amla,*** also known as "Dhatri" meaning mother, is a storehouse of medicinal and nutritional properties. Although small in appearance, gooseberry occupies a significant position in terms of benefits. It has the highest concentration of vitamin C among fruits. 100 grams of gooseberry contains 600 mg of vitamin C, which is twenty times that of orange juice. Gooseberry also has the characteristic that vitamin C is not lost through oxidation like in other fruits. Older fruits contain more vitamin C than unripe ones.

Gooseberry is also a good source of iron and calcium-B-group minerals. No other herb has been given as much importance in Ayurveda as gooseberry. According to Ayurveda, gooseberry relieves rheumatism, *pitta,* phlegm, sourness, biliousness (condition due to disorder of the liver), diabetes, fever, body emaciation, hair-loss, loss of taste, indigestion, eyesight, and nervous disorder.

Some home remedies using Amla as the main ingredient:

1. ***Amla*** **juice** mixed with a pinch of turmeric powder and honey, served daily in the morning, helps reduce diabetes.

2. Regular consumption of gooseberry with jaggery relieves *pitta,* menstrual pain, urinary obstruction, impotence, anaemia and increases body strength and energy.

3. ***Amla*** **hair oil** :Take a handful of dried Indian gooseberry and soak them in sesame oil overnight. Heat the oil mixture in a pan for 5-10 minutes. Let it cool and then strain the oil. Use this oil to massage your scalp and retain for 45 minutes; it fights hair loss, premature greying, and promotes strong hair growth.

Mix *Amla* powder with honey and ginger and take it twice a day to help alleviate cough and cold symptoms.

4. ***Amla* powder for cough and cold:** Mix Amla powder with honey and ginger and take it twice a day to help alleviate cough and cold symptoms.

5. ***Amla* mouthwash:** Boil 1 cup of water with 1 tablespoon of dried Amla pieces and 1 teaspoon of cloves for 10-15 minutes. Strain the mixture and let it cool. Use this

mouthwash to rinse your mouth after brushing your teeth. *Amla* mouthwash can help prevent bad breath, gum disease, and tooth decay.

6. ***Amla* tea for weight loss:** Grind together one *amla* and a piece of fresh turmeric in half a glass of water. Consuming this drink in the morning on an empty stomach aids faster metabolism and helps in weight loss.

7. **For relief from acidity** and acid reflux, grind two or three gooseberries without the seed and mix it with half a glass of milk; drink it daily.

8. **To remove urinary obstruction,** grind 8-10 gooseberries and apply the paste on the lower abdomen.

9. Consuming gooseberry facilitates bowel movements and relieves constipation. However, it may cause mild diarrhoea if consumed in excess.

10. Bathing in water boiled with gooseberry powder removes skin wrinkles and provides cooling effect to the body.

In conclusion, Indian gooseberry is a superfood packed with nutrients and health benefits. It is a versatile ingredient that can be used in a variety of dishes, and easy to incorporate into your diet.

Whether you are looking to boost your immune system, reduce inflammation, or simply add some flavour to your meals, Indian gooseberry is definitely worth trying.

Smt Vaishnavi V

Undavalli Caves

During the initial phase these caves served as a Buddhist monastery and later taken over by the Jain monks.

Located in the Guntur district of Andhra Pradesh, Undavalli caves is a perfect place for architecture enthusiasts. Archaeological Survey of India protects this structure.

Confluence of different religions

This monolithic structure dates back to around 4th century and is a fine example for the work of *Vishwakarma sthapathis* (architects/craftsmen). Inscriptions in the caves also date to the time of the Kondavidu Reddys and the Vijayanagara Empire (12th to 14th centuries) depicting that the patronage has been continued for a longer period.

Some sculptural specimens attribute to the Chalukyan period as well.

During the initial phase these caves served as a Buddhist monastery and later taken over by the Jain monks. Thus, few elements inside the caves such as the pillared halls represent Buddhism and Jainism whereas under the patronage of the Vishnukundin rulers, the sculptures were dedicated to the Hindu Gods - *Brahma, Vishnu* and *Shiva.*

Structure

The caves have been cut from the northern slope of a hill facing the Krishna River and has four storeys.

- The ground floor which served as a *Vihara* (Buddhist monastery) is an unfinished single pillared hall consisting of roughly-cut rock cells. There are faces at the entrance of the caves believed to be donors who paid for the construction and maintenance.
- The first floor has more and finer structures dedicated to the Hindu Gods.
- The second floor consists of detailed spectacular sculptures in a narrow room. The principal deity Lord *Vishnu* lying on a serpent is carved out of a single block. This floor opens out to a terrace which exhibits *rishis* seated on a platform.
- The third floor was intended to be a triple shrine but remains an unfinished structure.

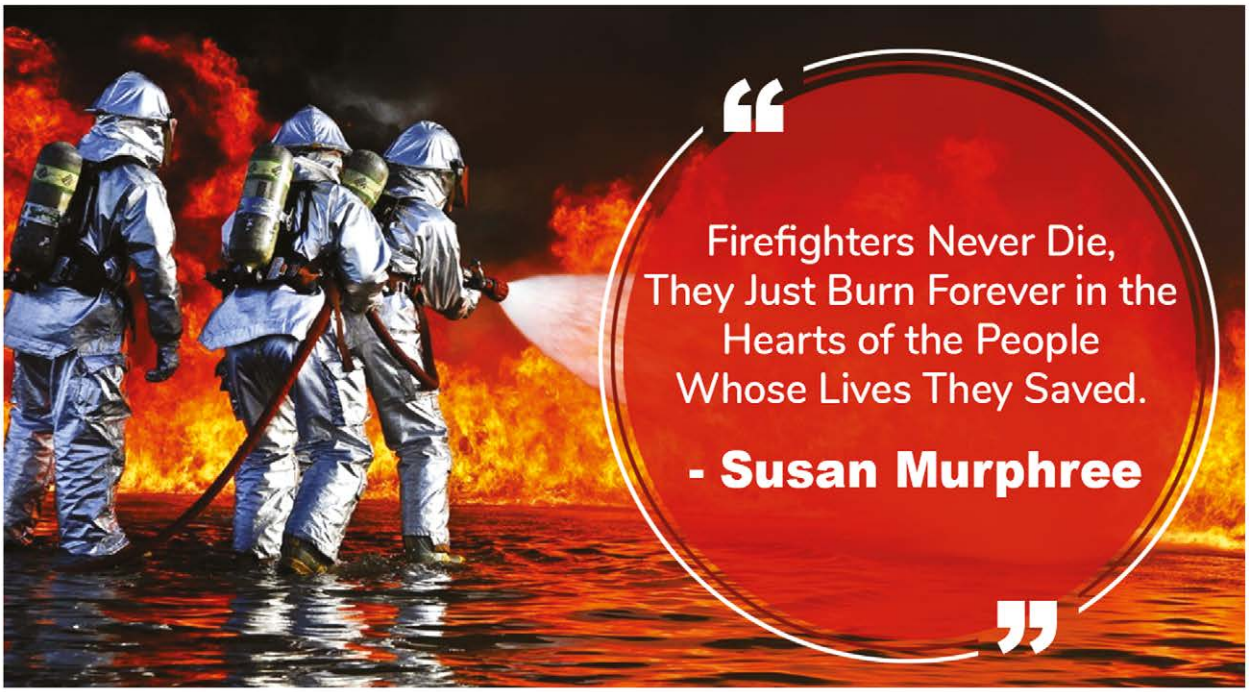
It is only 10 km from Vijayawada and does not require a detailed planning to make a visit. This rock cut structure is a perfect picnic place for family where history can be learnt, the lush mesmerising view of the caves cherished and the serene view of the Krishna river enjoyed with boating and water activities.

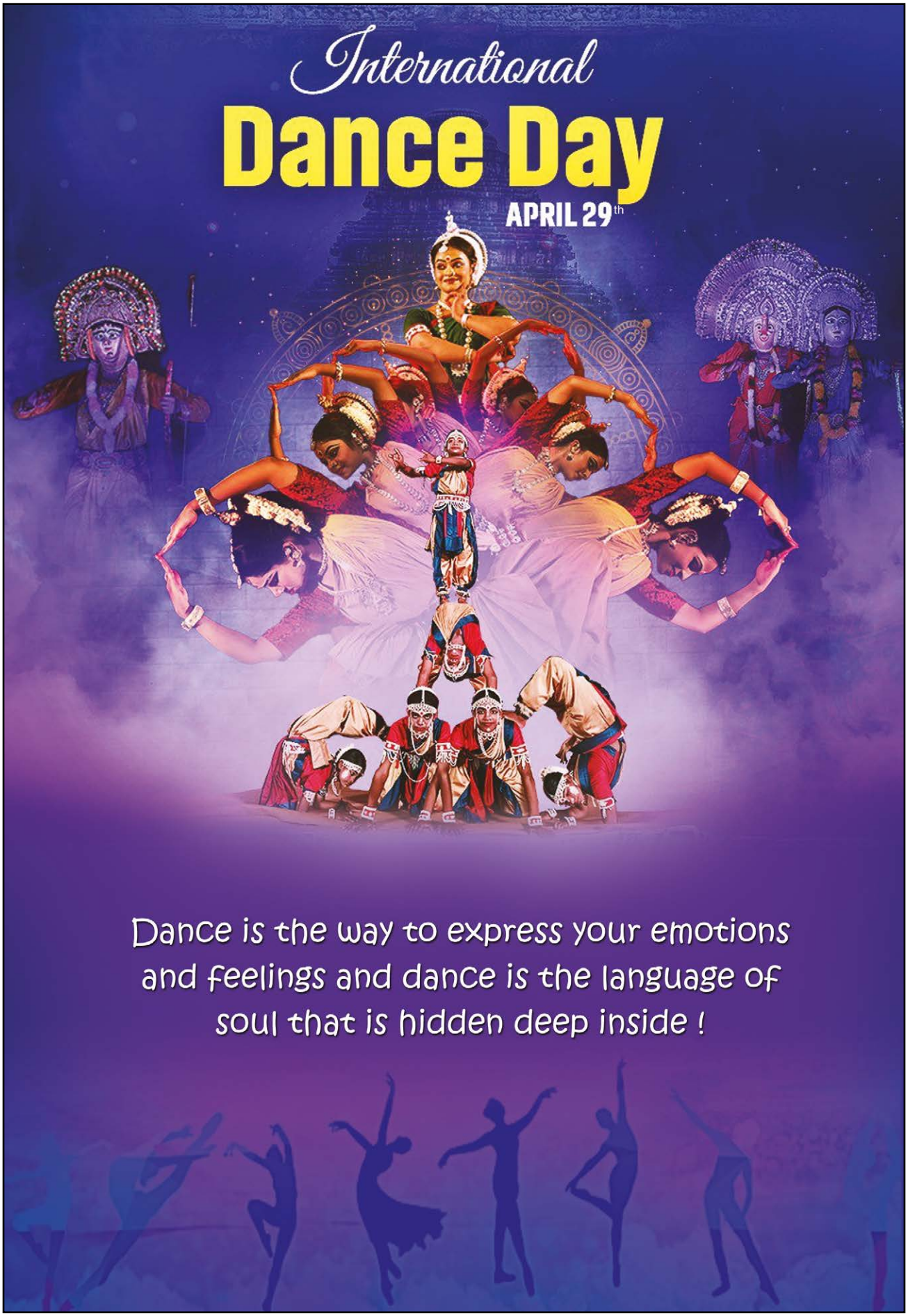
Thank you all firefighters, for all your bravery and courage of saving lives.

WORLD FIREFIGHTER DAY

4th MAY

They are the fearless souls who never give up and save lives like no one else. ...




International
Dance Day
APRIL 29th
Dance is the way to express your emotions and feelings and dance is the language of soul that is hidden deep inside !