

Current Affairs search results for tag: science-and-technology

1. Kenya Launched Its First Operational Earth Observation Satellite "Taifa-1" (April 19, 2023)

Kenya launched its **first operational Earth observation satellite "Taifa-1"** on a rocket of **Elon Musk's rocket company 'SpaceX'** from **Vandenberg Base in California** on 15 April 2023.

An Overview of the News

- The launch rocket carried **50 payloads** from various countries, including **Turkey, under SpaceX's 'rideshare programme'**.
- Taifa-1 was designed and developed by **SayariLabs and EnduroSat** and the satellite was built over two years at a cost of **50 million Kenyan shillings (\$372,000)**.
- The satellite's primary purpose is to collect agricultural and environmental data, including floods, droughts and wildfires, to help Kenya deal with disaster management and food insecurity.

Taifa-1

- It is an optical camera that can take pictures in both multispectral and panchromatic modes.
- The satellite can operate in and out of the visible light spectrum, allowing it to capture images even in low light conditions.
- **Taifa-1** is capable of capturing images in five different multispectral bands.
- The **Ground Sampling Distance (GSD) of Taifa-1 is 32 m** for the multispectral band and 16 m for the panchromatic band.

About Kenya

Republic - **12 December 1964**

Capital - **Nairobi**

Official languages - **Swahili, English**

Currency - **Kenyan shilling (Kesia)**

Government - **Unitary presidential republic**

President - **William Ruto**

Deputy President - **Rigathi Gachagua**

Senate President - **Amason Kingi**

Assembly Speaker - **Moses Wetangula**

Chief Justice - **Martha Koome**

2. Union Minister Dr. Jitendra Singh launches 'YUVA PORTAL' (April 18, 2023)

Union Minister Dr. Jitendra Singh launches 'YUVA PORTAL'

Union Minister for Science and Technology **Dr.Jitendra Singh launched the Youth Portal in New Delhi.**

An Overview of the News

- It aims to connect and identify **potential youth start-ups.**
- Science and Technology Minister **Dr Jitendra Singh** also launched the **One Week - One Laboratory programme.**
- The event emphasises the need for broad-based participation from stakeholders in the industry for startups to remain sustainable.
- **Each of the 37 CSIR (Council of Scientific and Industrial Research) laboratories** is dedicated to a different specialised area of work.
- The **One Week - One Lab program** will provide an opportunity to CSIR laboratories to showcase their work.

About Council of Scientific and Industrial Research (CSIR)

- The **Council of Scientific and Industrial Research, or CSIR**, is an **autonomous body** established by the Government of India in September 1942.
- Its primary goal is to **promote scientific and industrial research in India.**
- Its research activities cover a wide range of fields, including **aerospace, biotechnology, chemistry, earth science, electronics, engineering, information technology, materials science and physics.**
- It operates a network of laboratories and research institutes across India, which conduct **cutting-edge research** in their respective fields.

Establishment - **26 September 1942**

Founder - **Shanti Swaroop Bhatnagar, Arcot Ramasamy Mudaliar**

President - **Narendra Modi**

Director General - **Dr. N. Kalaiselvi**

Parent Organization - **Ministry of Science and Technology, Government of India**

Motto - **CSIR-The Innovation Engine of India**

3. New species of frog discovered in Meghalaya cave (April 12, 2023)

New species of frog discovered in Meghalaya cave

The **Zoological Survey of India (ZSI)** recently discovered a **new species of frog, Amolops siju**, in the **South Garo Hills district of Meghalaya**.

An Overview of the News

- Researchers found the frog inside a cave in Meghalaya and named it **Amolops siju** after the cave in which it was found.
- Three new species of **cascade frog (Amolops)** were also found in **Arunachal Pradesh**.
- **About Zoological Survey of India (ZSI)**
 - The Zoological Survey of India (ZSI) was **established in 1916** with the objective of survey, exploration and promotion of research on various aspects of animal life in India.
 - The primary objective of the ZSI is to study and document the biodiversity of India, including the **classification, distribution and abundance of animal species**.
 - ZSI is responsible for preparing national and regional animal databases, which serve as important tools for conservation planning and management.
 - Apart from its research activities, ZSI also plays an important role in providing taxonomic expertise and training to researchers, students and conservationists.
 - The **Ministry of Environment and Forests (MoEF)** is the administrative ministry of the ZSI, and it redefined the objectives of the ZSI in December 1987 to focus on the conservation and management of biodiversity.

Formation - **1 July 1916**

Objective - **Animal Classification and Conservation**

Headquarters - **Kolkata**

Place - **West Bengal, India**

Director - **Dr. Dhriti Banerjee**

Parent Organization - **Ministry of Environment, Forest and Climate Change**

4. A new Uranium Isotope 'Uranium-241' discovered (April 12, 2023)

A team of nuclear physicists of Japan has discovered a previously unknown uranium isotope with atomic number 92 and mass 241.

A team of nuclear physicists of Japan has discovered a previously unknown **uranium isotope with atomic number 92 and mass 241**.

An overview of the news

- The study has been published in the journal **Physical Review Letters** and the new isotope has been named **Uranium-241**.

How was uranium-241 found?

- To discover uranium-241, researchers accelerated **uranium-238 nuclei into plutonium-198 nuclei** using the **KEK Isotope Separation System (KISS)**.
- In a process called multinucleon transfer, **two isotopes exchange protons and neutrons**, resulting in nuclear fragments with different isotopes.
- The researchers identified uranium-241 and measured the mass of its nuclei using **time-of-flight mass spectrometry**.
- Theoretical calculations suggest that uranium-241 may have a **half-life of 40 minutes**.

Significance of the discovery

- The technique used by the team will help to better **understand the shape of large nuclei associated with heavier elements**.
- The method of discovery can be used for more information on other heavy isotopes.

About Uranium Element

- Uranium is a **naturally occurring chemical element** with the **symbol U** and **atomic number 92**.
- It is a **heavy metal** that is radioactive and is found in small amounts in rocks and soil around the world.
- Uranium has **many isotopes**, which are atoms that have the same number of protons but **different numbers of neutrons**.
- Uranium has three isotopes in its natural state, **U-234, U-235 and U-238**.
- Other isotopes that are not found in natural uranium are **U-232, U-233, U-236, and U-237**.

5. Union govt approves Indian Space Policy 2023 to enhance role of Department of Space (April 7, 2023)

Union govt approves Indian Space Policy 2023 to enhance role of Department of Space

The Union government has approved the **Indian Space Policy 2023** on 6th April.

An overview of the news

- The Union Cabinet also approved the **revised domestic gas pricing guidelines**.
- Information and Broadcasting Minister **Anurag Singh Thakur** said, the **price of natural gas should be 10 percent of the monthly average of the Indian crude basket**.
- This step has been taken to **ensure stable pricing** in the regime and to provide adequate protection to the producers from adverse market movements.
- This would provide an incentive to increase production.

Indian Space Policy 2023

- Its aim is **to boost the country's space department's role** and give a **larger participation to research, academia, startups, and industry**.
- The policy sets out the roles and responsibilities of the **Indian Space Research Organization (ISRO) and private sector entities**.
- The policy will enhance the **role of India's Department of Space, promote research, education, start-ups and industry**.
- The policy is expected to provide a framework for the **country's space sector for the next decade**.
- Within 3 years, the number of **startups has reached 150 in ISRO**.

India's progress in the field of space exploration

- India has been making significant progress in the field of space exploration in recent years, with the successful launch of the **Chandrayaan-2 mission** and the development of the **Gaganyaan mission**, which aims to send astronauts into space.
- The country is also working on developing its **own satellite navigation system, the Indian Regional Navigation Satellite System (IRNSS)**.

6. Skyroot Aerospace test-fires advanced fully 3D-printed cryogenic engine (April 5, 2023)

Skyroot Aerospace test-fires advanced fully 3D-printed cryogenic engine

In Nagpur, private space vehicle company **Skyroot Aerospace** test-fired its **3D-printed Dhawan II engine** for a duration of **200 seconds** on 4 April.

An overview of the news

- This is the second cryogenic rocket that has been successfully test-fired by **Skyroot**, following the **Dhawan-I engine that was tested in November 2021**.

- The achievement comes after the **November 2022 launch of Vikram-S**, making **Skyroot the first Indian private company** to send a rocket into space.
- The engine has been developed by the company for its heavy vehicle **Vikram II**.
- This cryogenic engine will be used as an **advanced stage of the updated version of Vikram-II**.
- The cryogenic engine series is named after **Dr. Satish Dhawan**, a renowned Indian rocket scientist who played a key role in the development of the Indian space programme.

Utilisation of Skyroot's cryogenic rocket engines

- Skyroot's cryogenic rocket engines use two **high-performance rocket propellants, liquefied natural gas (LNG) and liquid oxygen (LOX)**, which require cryogenic temperatures (below -150 °C) for storage and operation .
- Fully cryogenic engines are ideal for rocket upper stages due to their high specific impulse, which increases payload carrying capacity.

Skyroot Aerospace

- Skyroot Aerospace is a **spacetech start-up** that aims to address growing concerns in the global space industry.
- It provides **low cost launch solutions** to reach space in short time.
- The startup's three launch vehicles - **Vikram I, II and III** - can carry payloads ranging from **200 kg to 700 kg to low Earth orbit**.
- Currently, the team is testing a **3D printed liquid propellant engine** and a **fully composite (carbon fiber)** and high-performance solid rocket motor.
- Headquarters - **Hyderabad, Telangana**

7. Indigenous Anti Tank Guided Missile, Amogha-III tested successfully (April 4, 2023)

Indigenous Anti Tank Guided Missile, Amogha-III tested successfully

Bharat Dynamics (BDL) has successfully conducted a **field firing test** of its latest **3rd generation man-portable Anti Tank Guided Missile (ATGM), Amogha-III**.

About Amogha-III Missile

- The Amogha-III Missile has been **developed indigenously** under **Integrated Guided Missile Development Programme (IGMDP)**.
- It is a **third generation fire-and-forget Anti-Tank Guided Missile**.

- Developed by the **Research and Development Division of BDL**, the missile also
- has a dual-mode IIR seeker with a range of **200 to 2500 metres**.
- The missile can be fired in **lock-on-before launch (LOBL)** mode and its anti-armour tandem warhead can penetrate in excess of 650 mm beyond **Explosive Reactive Armour (ERA)**.

About Anti-tank Guided Missile (ATGM)

- An anti-tank guided missile is a guided missile **designed primarily to hit and destroy heavily armored military vehicles**.
- These missiles can be **carried by a single soldier** as a large tripod-mounted weapon.

8. New butterfly species discovered in Kerala (April 4, 2023)

New butterfly species discovered in Kerala

Recently, a group of researchers discovered a **butterfly subspecies** from the fringes of **Akkulam and Vembanad lakes in Kerala**.

An overview of the news

- The name of this subspecies of discovered butterfly is **Caltoris bromus Sadashiv**.
- It belongs to the skipper butterfly family of **Lepidoptera (moths and butterflies)**.
- It is the first Bromus swift butterfly to be documented in the **Western Ghats**.
- **Caltoris is an Indo-Australian genus** with more than **15 species** found in **Southeast Asia**.
- **Caltoris bromus** is one of them and its two other subspecies are **Caltoris bromus bromus** and **Caltoris bromus yanuka**.

About Vembanad Lake

- It is the **largest lake in Kerala and the longest lake in India**.
- The source of the lake is related to four rivers – **Meenachil, Achankovil, Pampa and Manimala**.
- The **Vallam Kali** (Nehru Trophy Boat Race) is a snake boat race held every year in August in **Vembanad Lake**.
- In the **year 2002**, it was included in the list of **wetlands of international importance as defined by the Ramsar Convention**.
- The Government of India has identified the Vembanad wetlands under the **National Wetlands Conservation Programme**.

9. NASA announces four-member team of astronauts to travel to the Moon (April 4, 2023)

NASA announces four-member team of astronauts to travel to the Moon

For the first time in five decades, **NASA** announced a team of **four astronauts for its human spaceflight mission to the Moon.**

An overview of the news

- The team of **four astronauts will fly around the moon for a 10-day mission next year.**
- NASA has announced the four astronauts who will go to lunar orbit and return with the Artemis 2 mission.

Who are these Artemis 2 astronauts?

- These four Artemis 2 astronauts are - **Reid Wiseman, Victor Glover, Jeremy Hansen and Christina Koch.**
- NASA's **Reid Wiseman** will be the commander of the **Artemis 2 mission.**
- **Victor Glover** will serve as the **pilot for Artemis 2.** Glover was previously the pilot of NASA's SpaceX Crew-1 mission.
- **Jeremy Hansen** will represent the **Canadian Space Agency** during the mission.
- NASA astronaut **Christina Koch** will be the **mission specialist for Artemis 3.**
- Koch visited the space station in 2019, where she was part of the first all-woman spacewalk in history.
- The Artemis II flight team will have three American and one Canadian astronauts, the first since the historic Apollo mission ended in 1972.

Artemis 2 mission

- The Artemis 1 mission will allow NASA to test the foundation of its **latest human space exploration capabilities.**
- This includes the **Space Launch System (SLS) rocket, the Orion spacecraft, and all associated ground systems.**
- Artemis 2 will be the first crewed mission to test all of these.

About NASA

- NASA was formed under the **National Aeronautics and Space Act** on July 19, 1948, in place of its predecessor, the National Advisory Committee for Aeronautics (NACA).

- NASA - **National Aeronautics and Space Administration**
- Headquarters- **Washington D.C.**
- Administrator - **Bill Nelson**

10. ISRO successfully conducts landing experiment of the Reusable Launch Vehicle (April 2, 2023)

ISRO successfully conducts landing experiment of the Reusable Launch Vehicle

The **Indian Space Research Organisation (ISRO)** on 2 April successfully conducted the **Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX)**.

An overview of the news

- The test was conducted at the **Aeronautical Test Range (ATR), Chitradurga, Karnataka.**
- A **Chinook Helicopter** of the Indian Air Force carried the launch vehicle to a **height of 4.5 kms** and released it in mid-air.
- The **RLV took off at 7.10 am and landed at the ATR airstrip at 7.40 am.**
- It is noteworthy that the rocket can be launched again with the help of a reusable launch vehicle.
- This has successfully achieved the autonomous precise landing of the Space vehicle.
- ISRO had developed the **navigation system, instrumentation and sensors** on its own.
- With this successful test, the dream of developing a reusable spacecraft in India can become a reality.

Indian Space Research Organization (ISRO)

- It was established on **15 August 1969.**
- It is the national space agency of India. It launches its space rocket from **Satish Dhawan Space Center in Sriharikota, Andhra Pradesh.**
- Headquarters: **Bengaluru**
- Chairman: **S Somnath**