

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

1. The developed drug gets DCGI approval (March 16, 2023)

The developed drug gets DCGI approval

Recently, **DCGI developed an important drug, developed by DRDO technology** that has been approved for **radiological and nuclear emergencies**.

An Overview of the News

- The drug is called '**Prussian Blue**' insoluble formulation and has been developed under the Technology Development Fund (TDF) scheme.
- It has got approval from the Drugs Controller General of India (DCGI).
- The drug has been developed by the industry based on technology from the Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, a laboratory of the Defense Research and Development Organization (DRDO).
- This drug will be available under the trade names **Pru-DecorpTM and PruDecorp-MG**.
- The formulation is used for the purification of Cesium and Thallium and its Active Pharmaceutical Ingredient (API).
- It is one of the important medicines listed by the **World Health Organization (WHO)** for radiological and nuclear emergencies.

About Drug Controller General of India (DCGI):

- The Drug Controller General of India (DCGI) is the head of the Central Drugs Standard Control Organization (CDSCO) in India.
- DCGI is also the **Central Licensing Authority for Medical Devices under the Medical Devices Rules 2017**.
- CDSCO is the Central Drug Regulatory Authority in India, overseen by the Drugs Controller General of India.
- CDSCO works under the Directorate General of Health Services, Ministry of Health and Family Welfare, which is part of the Government of India.
- The headquarters of CDSCO is located in New Delhi, and it also has six regional offices across the country.
- CDSCO's mandate is to ensure the safety, efficacy and quality of medical products manufactured, imported and distributed in India by promoting transparency, accountability and uniformity in its services.

About Defense Research and Development Organization (DRDO)

- The **Defense Research and Development Organization (DRDO)** is an agency of the Government of India responsible for the research, development, and manufacture of advanced technology systems in the fields of defense, aerospace, and security.

- It was **established in 1958** with the aim of designing and developing indigenous defense technologies to strengthen India's defense capabilities.
- It operates under the Ministry of Defense and consists of more than 50 laboratories, centers, and establishments spread across the country.
- Its primary mission is to provide technological solutions for the country's defense and security requirements, which includes developing new technologies, systems, and platforms for the Indian Armed Forces.

2. DRDO successfully flight tests indigenous power take off shaft on LCA Tejas in Bengaluru (March 15, 2023)

flight-test of power take off (PTO) shaft

A successful **flight-test of power take off (PTO) shaft** was conducted by **Defence Research and Development Organisation (DRDO)** on the **Light Combat Aircraft Tejas** in Bengaluru on 14 March.

An overview of the news

- First successful flight test of **PTO shaft on LCA Tejas Limited Series Production (LSP)-3 aircraft**.
- The PTO shaft has been indigenously designed and developed by the **Combat Vehicles Research & Development Establishment (CVRDE), Chennai** of the **Defense Research and Development Organization (DRDO)**.
- The PTO is an important device that transmits power from the **aircraft engine to the gearbox**.
- With this successful test, DRDO has **achieved a major technological achievement** with the realization of complex high-speed rotor technology that only a few countries have achieved.

Light Combat Aircraft (LCA) programme

- It was started by the center in **1984**.
- It replaced the **Mig 21 fighter planes**.
- It was Designed by **Aeronautical Development Agency under the Department of Defence Research and Development**.
- It was Manufactured by **State-owned Hindustan Aeronautics Limited (HAL)**.
- It features as the lightest, smallest and tailless multi-role supersonic fighter aircraft in its class.

About Light Combat Aircraft Tejas

- It is a **single-engine multirole light combat aircraft**.

- It was designed and developed by India's **HAL (Hindustan Aeronautics Limited)**.
- It replaced the ageing **Mig 21 fighter planes**.
- It is the lightest and smallest multi-role supersonic fighter aircraft in its class.
- It is designed to be **air-to-air, air-to-surface, precision guided and weapon-carrying**.

Variants of Tejas

- LCA Tejas Navy MK2
- LCA Tejas Mk-1A
- LCA Navy

3. ISRO drops 12-year-old satellite Megha Tropiques into Pacific Ocean (March 13, 2023)

Indian Space Research Organisation (ISRO)

The **Indian Space Research Organisation (ISRO)** recently successfully carried out a controlled descent of its **12-year-old low earth orbit satellite Megha Tropiques-1 (MT-1)** into the **Pacific Ocean**.

An overview of the news

- ISRO has informed that it is planning to bring this **satellite back to Earth**.
- Dropping this satellite on the earth was a very challenging task for ISRO, which ISRO successfully carried out.
- ISRO has been steadily reducing the distance of the satellite from Earth **since August, 2022**.
- For this, he was spending about **120 kg of fuel present in the satellite**.
- The booster of the satellite was turned on twice before reaching the earth.
- This process is called de-boost. The satellite started burning rapidly as soon as it entered the Earth's atmosphere and was completely destroyed by the time it reached the sea.

About Megha Tropiques Satellite

- This satellite was launched in **October 2011 by ISRO** in collaboration with the **French space agency CNES**.
- The satellite was designed to provide **weather information** for three years, but it served for **more than 10 years**.

Indian Space Research Organisation (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**

4. IAF develops indigenous data link communication: 'Vayulink' (Feb. 27, 2023)

In a major achievement, the Indian Air Force (IAF) has launched the **indigenously built jammer-proof communication platform 'Vayulink'**. This will help in maintaining contact with the base station even in bad weather.

An overview of the news:

- It is a highly secure communication system developed by the IAF.
- At Aero India 2023, IAF has given information about this and also organised a gallery for detailed information about this **'Vayulink platform'**.

Platform 'Vayulink':

- 'Vayulink' is an ad-hoc data link communication system that, when installed on an aircraft, transmits encrypted traffic data over a secure channel as well as the position of other aircraft.
- The jammer-proof platform 'Vayulink' data link communication uses the **Indian Regional Navigation Satellite System (IRNSS)**, also known as **NAVIC**.

Benefits of 'Vayulink':

- From this platform radio communication can be sent to the base station even in weak signal conditions.
- This system is very helpful for IAF. Because during a war situation when the aircraft are flying close to a friendly force, this system is helpful in telling the actual position of the aircraft.
- This helps the pilots to get accurate and precise information about the weather. In particular, it also helps in providing accurate communication to aircraft flying over hills.
- It helps prevent fratricide in case of war. Also it helps to know where our army is present.
- By this, mutual collision of fighter planes can also be prevented. Which provides an accurate teaming system service. It also helps in setting real time targets with the help of which multiple teams can attack the target simultaneously.

- The indigenous jammer-proof communication platform 'Vayulink' is helpful to all **the**
- **three services of the country.**

5. China launches Zhongxing-26 satellite (Feb. 27, 2023)

China has launched the **Zhongxing-26 satellite** in February 2023 at a cost of \$333 million.

An overview of the news

- The Zhongxing-26 satellite was launched on a **Long March 3B rocket**. The main objective of this satellite is to provide broadband connectivity for aviation and shipping related operations.
- Zhongxing-26 was launched by the China Academy of Space Technology (CAST). CAST plans to launch 60 more in 2023.
- The rocket uses **liquid hydrogen and liquid oxygen fuel** in the third stage. Liquid rocket fuel requires controlled temperature to remain in its form.
- China is about to launch more than 200 spacecraft in its 60 missions in the coming time.
- China plans to launch **Tianzhou-6**, a cargo craft, by the end of 2023.
- Also, to strengthen its **Tiangong Space Station**, there are plans to launch crewed missions like **Shenzhou-16 and Shenzhou-17**.

6. Russian space agency launches Soyuz spacecraft to bring back 3 astronauts stranded on ISS (Feb. 25, 2023)

Recently the **Russian space agency, Roscosmos** has successfully launched the **Soyuz spacecraft to bring back three astronauts stranded on the International Space Station (ISS)** following a **leak in the cooling system in their Soyuz capsule**.

An overview of the news

- Two **Russian and one American astronauts** will board the **empty Soyuz spacecraft to return to Earth**.
- The **Soyuz MS-23** spacecraft was launched from the **Baikonur Space Center in Kazakhstan and placed in orbit**.
- US astronaut **Francisco Rubio**, along with Russian cosmonauts **Sergei Prokopyev and Dmitry Petelin**, were due to return to Earth after their mission ended.
- But two months ago, it got stuck in space due to a leak in the cooling system of **Soyuz MS-22 capsule**.

- According to the Russian space agency Roscosmos, all three Soyuz will **return to Earth on the MS-23 vehicle in September.**
- The leak on the MS-22 spacecraft was **caused by a small piece of a micrometeoroid hitting the capsule.**

About International Space Station (ISS)

- It is a **multi-nation construction project** that is the largest single structure humans ever put into space.
- Its main construction was completed between **1998 and 2011.**
- It is not owned by a single nation and according to the **European Space Agency (ESA)** is a "**co-operative program**" between **Europe, the United States, Russia, Canada and Japan.**
- As of May 2022, **258 individuals from 20 countries** have visited the International Space Station.
- The top participating countries include the **United States (158 people) and Russia (54 people).**

7. Indian Council of Agricultural Research developed new variety of wheat named HD-3385 (Feb. 23, 2023)

The **Indian Council of Agricultural Research (ICAR)** has developed a **new variety of wheat** which is '**HD-3385**'.

An overview of the news

- It is capable of meeting the challenges arising due to **climate change and rising heat.**
- This new variety is suitable for **early sowing.** It can survive the wrath of heat and its crop can be harvested **before the end of March.**
- The Central Government had recently announced setting up of a committee to monitor the situation arising out of rise in temperature and its impact on the current wheat crop.
- ICAR has registered the new variety HD-3385 with the **Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA).**
- ICAR has also granted a license to Bioseed owned by **DCM Shriram Limited** to conduct multi-location trials and seed multiplication.

About Indian Council of Agricultural Research

- It is an **autonomous body** formerly known as the **Imperial Council of Agricultural Research.**

- Headquarters - **New Delhi**
- Established - **1929**
- The Union Minister of Agriculture serves as its president. Presently its president is **Narendra Singh Tomar**.
- ICAR is the largest network of agricultural research and education institutes in the world.

8. India first hybrid rocket launched in Chengalpattu (Feb. 22, 2023)

India's first hybrid rocket made by the school students from various states launched as part of **Dr APJ Abdul Kalam Satellite Launch Vehicle Mission 2023** from **Pattipulam Village in Chengalpattu, Tamil Nadu** on 19 February.

An overview of the news

- The reusable rocket has been made by the selected top **100 students**.
- The rocket can be used for research into **weather, atmospheric conditions and radiation**.
- Over **3,500 government school students** from classes VI to XII, including students from fishermen, tribal communities in Tamil Nadu and Puducherry, participated in the launch.
- Martin Foundation in association with Dr APJ Abdul Kalam International Foundation and Space Zone India successfully completed the Dr APJ Abdul Kalam Satellite Launch Vehicle Mission 2023.

What is a Hybrid rocket?

- It is a **bipropellant rocket engine** that uses propellants that are in two different states.
- These propellants are usually liquid and solid which react to form exhaust gases suitable for rocket propulsion.

India's first privately developed rocket Vikram-S

- India's first private rocket **Vikram-S** (Suborbital) was launched on 18 November 2022 from the **Satish Dhawan Space Centre, Sriharikota**.
- It was designed by the **Space technology startup Skyroot Aerospace** as a tribute to the father of the country's space programme, **Vikram Sarabhai**.

9. Sea ice cover reaches lowest level in Antarctica (Feb. 20, 2023)

In the study conducted by scientists, it has been told that the area of the **Antarctic Ocean** covered with ice has **shrunk to a record low level**.

An overview of the news

- According to the **National Snow and Ice Data Center in the United States**, Antarctica's sea ice extent was recorded at **2.2 million square kilometres** last week, down from **2.27 million square kilometres** as of February 24, 2022, the previous record.
- This is the lowest since records **began in 1979**.
- According to scientists, this is the second consecutive year when snow has melted up to **20 lakh square km** in a day.
- The coldest region on Earth, **99 percent of Antarctica is covered with ice**.
- About two thick layers of ice are frozen here. But now this ice is melting fast.
- According to scientists, due to the hot winds, the snow is melting rapidly, this year the temperature of the hot winds has been **1.5 degrees** above the average.

About Antarctica

- It is the **southernmost** continent and the **fifth largest continent on Earth**.
- Antarctica is uninhabited except for about **40 permanent stations** set up by many countries including India for scientific research.
- India has two research centres on the Antarctic continent - '**Maitri**' and '**Bharati**'.
- India has completed **40 scientific expeditions** here under the Antarctic program so far.

10. India's lunar mission Chandrayaan-3 achieves another milestone (Feb. 20, 2023)

Indian Space Research Organisation (ISRO) on 19 February said that the '**Chandrayaan-3**' lander has "**successfully**" underwent the **Electro-Magnetic Interference/Electro-Magnetic Compatibility (EMI/EMC) test** at the **U R Rao Satellite Centre**.

An overview of the news

- The EMI-EMC test is conducted for satellite missions to ensure functionality of the satellite subsystems in space and their compatibility with the expected electromagnetic levels.
- The purpose of this test is to ensure that the satellite's systems work properly in conjunction with the expected electromagnetic levels in space.

- This is an important step in preparing the test satellites.
- The test was conducted between January 31 and February 2 at the UR RAW Satellite Center in Bengaluru.
- During this test several points related to the post-landing phase of Chandrayaan's mission were checked.
- These include a number of tests including launch capability, polarisation of antenna for radio frequency systems and compatibility of lander and rover.
- All the systems performed satisfactorily during the test.
- The complexity of this operation relates to the establishment of radio frequency communication links between these modules.