

My Notes....

NATIONAL

NEAR-ISOTHERMAL FORGING TECHNOLOGY

The **Defence Research and Development Organisation (DRDO)** has announced a modest step towards **achieving the ultimate aeronautical challenge**, one that even resource-rich China is struggling to achieve: **Developing a jet engine with the thrust to power a fighter in combat**. The DRDO established the **near-isothermal forging technology** to produce **all the five stages of high-pressure compressor (HPC) discs** out of **difficult-to-deform, titanium alloy**, using its **unique 2000 MT (metric tonne)** isothermal forge press, announced the Ministry of Defence (MoD) on 28 May 2021.

What

1. This **technological breakthrough**, which involves **developing complex titanium and nickel-based alloys** that can **withstand temperatures of more than 1,000 degrees Celsius**, was achieved by the **DRDO's premier metallurgical laboratory**, the Hyderabad-based Defence Metallurgical Research Laboratory (DMRL).
2. With this development, **India has joined the league of limited global engine developers** to have the manufacturing capabilities of such critical **aero-engine components**.
3. **Using the isothermal forge press facility** available at DMRL, Hyderabad, DMRL & MIDHANI have jointly produced **200 HPC disc forgings pertaining to various compressor stages**.
4. These have been supplied to HAL's Engine Division in Bengaluru for fitting into the Adour 804/811 and 871 engines that power the **Indian Air Force's (IAF's) Jaguar/Hawk Aircrafts**.
5. The **Adour engine is overhauled by HAL**, Bengaluru under a licensed manufacturing agreement with Rolls-Royce, the **original equipment manufacturer (OEM)**.
6. A **fighter jet engine functions** by **sucking in a large volume of air, compressing it rapidly in several stages, injecting aviation fuel into the air** and then setting it alight **to create a high-pressure, high-temperature gaseous mix**. That is **expelled backward through the exhaust**, its reaction **propelling the aircraft forward**.
7. To achieve this, **jet engines have seven modules**, which from front to rear are: the **input fan, low pressure and high pressure compressors, the combustion chamber, high pressure and low pressure turbines** and the **exhaust**.

Flashback

1. An aero-engine requires finely tuned design and manufacture. For over three decades the **DRDO's Gas Turbine and Research Establishment (GTRE)** has spearheaded a multi-laboratory effort to design the so-called **Kaveri engine**, but with only limited success.
2. The **Kaveri's has achieved a thrust of just about 65 Kilo Newtons (KN)**, well short of the 95 KN that its premier rivals, the **Eurojet EJ200** and the General Electric GE-F414 develop.
3. The DRDO is now exploring the **possibility of using the Kaveri as a marine propulsion turbine for warships**.
4. To manufacture the discs in the volumes required, DMRL has transferred technology to **defence public sector undertaking (DPSU) MIDHANI** through a **licensing agreement for technology transfer (LAToT)**.

WORLD'S FIRST NANO LIQUID UREA

The **Indian Farmers Fertiliser Cooperative Limited (IFFCO)** on 31 May 2021 launched the **Nano Urea Liquid**, a nutrient to provide nitrogen to plants as an alternative to the conventional urea. IFFCO said that the “**World’s 1st Nano Urea Liquid**” was unveiled during its 50th annual general body meeting, which was held online-offline mode.

What

1. **IFFCO Nano Urea Liquid** is developed to replace conventional urea and it can curtail the requirement of the same by at least 50%.
2. It contains **40,000 ppm of nitrogen** in a 500 ml bottle which is equivalent to the impact of nitrogen nutrient provided by one bag of conventional urea.
3. The **Nano Urea Liquid**, developed by IFFCO’s scientists and engineers, will be available in 500 ml bottles.
4. IFFCO has priced Nano Urea at Rs 240 per 500 ml bottle for the farmers, which is **10% cheaper** than the cost of a bag of conventional Urea.
5. IFFCO said that **conventional urea is effective 30-40 per cent in delivering nitrogen** to plants, while the effectiveness of the **Nano Urea Liquid is over 80 per cent**.
6. IFFCO will start the production of Nano Urea Liquid by June 2021 and commercial rollout will start “soon thereafter.”

Flashback

1. According to IFFCO, Nano urea has been included in the **government's Fertiliser Control Order** after the field trials were undertaken under **National Agriculture Research System (NARS)**, 20 **ICAR research institutes**, **State Agriculture Universities** and **Krishi Vighyana Kendras** on 43 crops.
2. Nano Urea Liquid has been developed indigenously through **proprietary technology** at **IFFCO's Nano Biotechnology Research Centre (NBRC)** in Kalol, Gujarat.
3. **India is dependent on imports** to meet its urea requirements.

'BLACK FUNGUS' IS A NOTIFIABLE DISEASE

Mucormycosis or 'black fungus', which is **being found in a rising number of Covid-19 patients** across India, has been **declared a notifiable disease** under the **Epidemic Act 1897** in **many states**, including **Telangana** and **Uttarakhand**. It is a **rare but dangerous fungal infection** caused by a **group of moulds** known as **mucormycetes**, which are **present naturally in the environment**.

What is a notifiable disease?

1. A **notifiable disease is an illness** that is **required by law to be informed to government authorities**. This is **applicable to private establishments**.
2. This **helps the government to form a bank of data** about the disease and monitor it, which helps in **providing early warnings about outbreaks**.
3. As per the **World Health Organization's International Health Regulations, 1969**, the disease has to be flagged to the WHO to help with its global surveillance and advisory role.

4. The **responsibility to declare any disease as a 'notifiable' disease** lays with the **state governments**.
5. **Registered medical professionals need to notify such diseases in a proper form** within **three days**, or notify verbally via phone within 24 hours depending on the urgency of the situation.
6. This means that **all government hospitals, private hospitals, laboratories, and clinics** will have to report cases of the disease to the government.
7. This helps the government to **track the disease** and **formulate a plan of action to tackle it**.
8. Over the years, the **Centre has notified many diseases** including cholera, diphtheria, encephalitis, leprosy, meningitis, pertussis (whooping cough), plague, tuberculosis, AIDS, hepatitis, measles, yellow fever and malaria dengue.

CYCLONE 'TAUKTAE'

Cyclone Tauktae on 16 May 2021 **intensified into a "very severe cyclonic storm"** over **East central Arabian Sea**, the **India Meteorological Department (IMD)** said. The rescue teams have been deployed in **six states -- Kerala, Karnataka, Maharashtra, Tamil Nadu, Gujarat, and Goa**.

How is a Cyclone named?

1. **Cyclone Tauktae's** (pronounced Tau'Te) name **originates from a Burmese word** which translates to **gecko -- a "highly vocal lizard"**. The cyclone was **named by neighbouring country Myanmar**.
2. **Cyclones are officially named** by one of the **World Meteorological Organization's (WMO)** warning centres based across the globe.
3. The **WMO/United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) Panel on Tropical Cyclones (PTC)** includes **13 countries -- India, Bangladesh, Myanmar, Pakistan, the Maldives, Oman, Sri Lanka, Thailand, Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen**.
4. **In 2004**, the group, which **comprised eight countries** then, had **finalised a list of 64 names -- eight names from each country**.
5. **Amphan**, the **cyclone that hit India last year in May**, was the **last name on that list**.
6. **Nisarga**, another cyclone that **originated in the Arabian Sea** last year, was the **first name from the fresh list**. It was named by **Bangladesh**.
7. **In 2018**, the **WMO/ESCAP expanded the list to include five more countries**. Last year, a new list was released that has **169 names of cyclones**, a compilation of **13 suggestions each from 13 countries**.

INDIA DROPS PLASMA THERAPY

India on 17 May 2021 **removed plasma therapy** from its **clinical management protocol**; days after the **Randomised Evaluation of COVID-19 Therapy (RECOVERY) trial** by the University of Oxford showed that **it did not improve the survival rate** or any other **pre-specified clinical outcomes** in hospitalized patients. The decision by the **AIIMS-ICMR Covid-19 National Task Force** and the **Health Ministry** indicates that **convalescent plasma offers no therapeutic benefits** in patients admitted to hospital with

the disease.

What

1. The **treatment** has been **considered controversial for nearly a year** as most experts considered **plasma therapy to not show significant improvement** in patients though it was **expensive** and **not difficult to avail of**.
2. **India's own PLACID Trial conducted by ICMR** in over 11,000 patients last year concluded that **plasma therapy had no benefit on hospitalized covid patients**.
3. Despite early evidence, the therapy continued to be in **India's clinical management protocol till now**.

Flashback

1. **Plasma is the clear liquid portion of the blood** that **remains after red and white blood cells, platelets, and other cellular components** have been taken from it.
2. **Convalescent plasma** extracted from the blood of patients recovering from an infection is a **source of antibodies against the infection**.

CYCLONE YAAS

India is bracing for its second cyclone in May even as the **severe Tauktae sprays the northwestern and central parts of the country** with a final smattering of rain after weeks of **lashing waves** and **violent storms** along the **Arabian Sea coast**.

What

1. **Cyclone Yaas—named by Oman after the Jasmine tree—is likely to brew over the opposite side of the peninsula**, with a **low-pressure area** having already formed over **east-central Bay of Bengal** and will then concentrate into a depression, according to the **Indian Meteorological Department's (IMD) briefing on 22 May 2021**.
2. **Yaas is then likely to move north-northwestwards and strengthen into a severe cyclonic storm** by May 24 and a very severe cyclone in the next 24 hours.
3. The **National Disaster Response Force has already deployed 65 teams in service** of managing the weather event, with another 20 teams on standby.
4. **Cyclone Yaas is unlikely to rival last May's super cyclone Amphan**, which was also incidentally accompanied by **cyclone Nisarga** in the west, IMD meteorologists said.

ICG SAJAG COMMISSIONED

The Indian Coast Guard (ICG) Ship '**Sajag**' was commissioned by National Security Advisor, Ajit Doval on 29 May 2021. According to the official statement by **ICG, Sajag**, the **third in the series of 105 m offshore patrol vessels (OPVs)** was commissioned.

What

1. '**Sajag**' meaning '**Vigilant**' is a projection of Indian Coast Guard's will and commitment '**Ready, Relevant and Responsive**' towards the maritime interest of the nation.
2. ICG said that this **state-of-the-art ship** has been **designed and built** indigenously by **Goa Shipyard Limited** and is fitted with **advanced technology, navigation and communication equipment, sensors and machinery**.

3. The **vessel is fitted with a 40/60 Bofors gun** and two 12.7 mm SRCG guns with FCS.
4. The ship is also **equipped with an Integrated Bridge System (IBS), Integrated Platform Management System (IPMS), Power Management System (PMS) and High Power External firefighting (EFF) system.**
5. The ship is designed to carry **one twin-engine helicopter** and **four high-speed boats** including two inflatable boats for boarding operation, Search and Rescue, Law Enforcement and Maritime Patrol.
6. The ship is also capable of **carrying pollution response equipment** to contain **oil spills at sea.**
7. The ship, on joining the Coast Guard fleet will be **based at Porbandar.** She will be deployed **extensively for EEZ surveillance and other duties** as enshrined in the Coast Guard charter.

Flashback

1. Presently, the **Indian Coast Guard has a fleet of 157 ships and 62 aircraft.**
2. Further, **34 surface platforms** are at various stages of construction at different Indian Shipyards and **16 Advance Light Helicopters** are under production at **HAL, Bengaluru** which will provide the **added strength to the surveillance capabilities of ICG** to deal with the **ever-dynamic maritime challenges.**

ESSENTIAL COVID-19 DRUGS IN INDIA

The **government is monitoring the supply of various essential drugs** used in the **treatment of Covid-19**, ministry of chemicals and fertilisers said on 19 May 2021. The ministry noted that **all drugs used in the management of Covid-19 were now available in India** by ramping up production and increasing the imports.

Protocol drugs

1. Remdesivir
2. Enoxaparin
3. MethylPrednisolone
4. Dexamethasone
5. Tocilizumab
6. Ivermectin

Non-protocol drugs

1. Favipiravir
2. Amphotericin
3. Apixaban

INTERNATIONAL

INDIA ABSTAINS ON UNHRC IN GAZA VIOLENCE

India on 27 May 2021 **abstained on a resolution** at the UN Human Rights Council proposing to **set up a Commission of Inquiry into violations surrounding the latest violence in Gaza**, but also of “systematic” abuses in Palestinian territories and inside Israel. **India was joined by 13 other members who abstained**. With **24 voting in favour** and **nine against**, the resolution was **adopted in Geneva**.

What

1. **India has dropped** its stock phrase of its strong support to the “**just Palestinian cause**” in its statement at the UNHRC on 27 May 2021 — which **used to be part of Indian statements in the past**. This **signals a slight nuanced shift away from Palestine**, and **towards Israel**.
2. The last time the **Permanent Representative (PR) of India** to the UN made a statement in New York at the UN Security Council on 16 May 2021, the statement had said, “I reiterate **India’s strong support to the just Palestinian cause** and its unwavering commitment to the **two-State solution**.”
3. This omission of the phrase “**strong support to just Palestinian cause**” was first made on 20 May 2021, when India’s PR to the UN made a statement at UNGA, where he did not mention the phrase.
4. New Delhi has **always voiced its support for the Palestinian cause** in an explicit manner, and this shift has been **perceived by many diplomats**.
5. Among **other countries that abstained** are **France, Italy, Japan, Nepal, Netherlands, Poland** and **South Korea**.
6. Among those **voting in favour of the resolution** are **Pakistan, China, Bangladesh, Russia**, while **Germany, the UK, Austria, among others, voted against it**.

ISRAEL, HAMAS AGREE TO CEASE-FIRE

Israel and Hamas agreed to a cease-fire on 20 May 2021, halting a **bruising 11-day war** that caused **widespread destruction in the Gaza Strip**, brought life in much of Israel to a standstill and left more than 200 people dead. Like the **three previous wars** between the bitter enemies, the latest round of fighting ended inconclusively.

What

1. **Israel claimed to inflict heavy damage on Hamas** but once again was unable to halt the Islamic militant group’s nonstop rocket barrages.
2. **Hamas, the Islamic militant group** sworn to Israel’s destruction, also **claimed victory**. But it now faces the daunting challenge of rebuilding in a territory already **suffering from poverty, widespread unemployment** and a **raging coronavirus outbreak**.
3. Netanyahu’s office said his Security Cabinet had unanimously accepted an **Egyptian cease-fire proposal** after recommendations from Israel’s military chief and other top security officials.

INDIA, ISRAEL SIGN PROGRAMME FOR AGRICULTURE

India and Israel have signed a **three-year joint work programme till 2023** with an **aim to enhance cooperation** in the **field of agriculture**, Agriculture Minister Narendra Singh Tomar said on 24 May 2021. So far, **four such joint work programmes** have been successfully completed. Under this programme, **Centres of Excellence (CoEs) were set up to train farmers about Israeli farm and water technologies.**

What

1. However, **under the new work programme, Villages of Excellence (VoE) -- a model ecosystem in agriculture** -- will be created across **eight states** alongside **13 CoEs within 75 villages** and **will promote the increase of net income** and better the livelihood of the individual farmer, **transforming traditional farms** into modern-intensive farms based on **IIAP standards.**
2. **India and Israel** have had **bilateral relations since 1993** in the agricultural sector.
3. This is the **5th Indo-Israel Agriculture Action Plan (IIAP).** So far, we have successfully completed **four action plans**, an official statement quoted Tomar saying at the work programme signing ceremony.
4. This **new work programme** will **further strengthen the bilateral relations** and **mutual cooperation** between the two countries in the field of agriculture for the benefit of the farming community.
5. Asserting that the **CoEs set up under these Israeli-based action plans** are playing an important role in **doubling farmers' income**, Minister said the exchange of technology between India and Israel will greatly improve the productivity and quality of horticulture, thereby increasing the income of farmers.
6. **So far, 29 Centres of Excellence (CoEs)** are operational in **12 states in the country.**
7. Every year, **these CoEs produce more than 25 million quality vegetable seedlings**, more than 3,87,000 quality fruit plants and train more than 1.2 lakh farmers about the latest technology in the field of horticulture.

SYRIA'S ASSAD RE-ELECTED FOR 4TH TERM

Bashar al-Assad has been **re-elected for a fourth term as president** of war-ravaged **Syria**, official results showed on 27 May 2021, despite Western accusations the polls were "**neither free nor fair**". The controversial vote extending Assad's stranglehold on power was the second since the start of a decade-long civil conflict that has killed more than 388,000 people, displaced millions and battered the country's infrastructure.

What

1. The parliamentary speaker announced that **Assad garnered 95.1 per cent of the votes cast**, trouncing two virtually unknown challengers.
2. On the eve of the election, the **US, Britain, France, Germany and Italy** said the poll was "**neither free nor fair**", and Syria's fragmented opposition has called it a "farce".
3. In the last multi-candidate poll in 2014, **Assad won 88 per cent of the vote.**
4. The **vote took place amid the lowest levels** of violence since the **war erupted in 2011** -- but with the economy in free fall.
5. **Assad was first elected by referendum in 2000** after the death of his father **Hafez**

al-Assad, who had ruled Syria for 30 years.

NEW OCEAN OBSERVATION SATELLITE HAIYANG-2D

China on 19 May 2021 successfully sent a new **ocean-monitoring satellite** into orbit as part of its effort to build an all-weather and round-the-clock **dynamic ocean environment monitoring system** which would provide **early warning on marine disasters**. The satellite was launched by a **Long March-4B rocket** carrying the **Haiyang-2D (HY-2D) satellite** from the **Jiuquan Satellite Launch Centre** in northwest China.

What

1. The **HY-2D** will form a **constellation with the HY-2B and HY-2C satellites** to build an all-weather and round-the-clock **dynamic ocean environment monitoring system** of high frequency and medium and large scale.
2. The constellation will support the country's early warning and **prediction of marine disasters, sustainable development and utilisation of ocean resources**, effective response to **global climate change** as well as **ocean research**.
3. The **HY-2D** was developed by the **China Academy of Space Technology**, and the carrier rocket by the Shanghai Academy of Spaceflight Technology. This launch was the **370th by the Long March rocket series**.
4. **China's space programme** made significant advancements last week when **it landed a spacecraft on Mars**, becoming the **second country after the United States** to have a **rover on the red planet**.

Flashback

1. **Currently**, ISRO has **three dedicated satellites in the orbit** viz. **Oceansat-2, SARAL and SCATSAT-1** for **oceanographic observations**.
2. The data from these satellites is used to generate information on **Photo-synthetically Active Radiation, ocean primary production, aerosol optical depth, total suspended sediments**, suspended sediment concentration, ocean surface winds, ocean altimetry and ocean state forecast.

CHINA'S 1ST MARS ROVER STEPS OUT

China's first Mars rover on 22 May 2021 **drove down from its landing platform** to the **Martian surface** to start **exploring the surface of the red planet**. The **six-wheeled solar-powered rover** named **Zhurong**, resembling a **blue butterfly** and with a mass of 240 kg, slowly trundled off a ramp on the lander to hit the red, sandy soil of Mars, starting its journey to explore the **fourth planet from the Sun**.

What

1. **China's Tianwen-1 mission**, consisting of an **orbiter**, a **lander** and a **rover**, was launched on 23 July 2020.
2. The **lander carrying the rover** touched down in the **southern part of Utopia Planitia**, a vast plain on the northern hemisphere of Mars, on 15 May 2021.
3. Chinese spacecraft landed on Mars three months after the successful landing of the US space agency **NASA's Perseverance rover** which is busy exploring the red planet's surface with a **helicopter hovering around**.

4. With an expected **lifespan of at least 90 Martian days** (about three months on the Earth), **Zhurong will record the Martian landscape with high-resolution three-dimensional images**, analyse the material composition of the planet's surface, **detect its subsurface structure and magnetic field, search for traces of water, ice** and observe the **surrounding meteorological environment**.
5. It carries various **scientific instruments**, including **terrain camera, multi-spectral camera, subsurface exploration radar, surface-composition detector, magnetic-field detector** and **meteorology monitor**.

ECONOMY

INDIA LOSES FARZAD-B GAS FIELD

India on 17 May 2021 **lost the ONGC Videsh Ltd-discovered Farzad-B gas field** in the **Persian Gulf** after Iran awarded a contract for developing the **giant gas field to a local company**. The **National Iranian Oil Company (NIOC)** has **signed a contract worth \$1.78 billion** with Petropars Group for the development of **Farzad B Gas Field in the Persian Gulf**, the Iranian oil ministry's official reported.

What

1. The **deal was signed** on 17 May 2021, in a ceremony held in the presence of Iranian minister of petroleum Bijan Zangeneh in Tehran.
2. The **field holds 23 trillion cubic feet of in-place gas reserves**, of which about **60 per cent is recoverable**.
3. It also holds gas condensates of about **5,000 barrels per billion cubic feet of gas**.
4. The **buyback contract** signed on 17 May 2021 envisages **daily production of 28 million cubic meters of sour gas** over five years.
5. **ONGC Videsh Ltd (OVL)**, the overseas investment arm of state-owned **Oil and Natural Gas Corp (ONGC)**, had in 2008 discovered a giant gas field in the **Farsi offshore exploration block**.
6. **OVL and its partners** had offered to invest up to \$11 billion for the development of the discovery, which was **later named Farzad-B**.

FIRST INDIA ELECTED AS PRESIDENT OF INCB

Jagjit Pavadia, a **retired officer of the Indian Revenue Service (Customs)**, has been **elected as the president** of the Vienna based **International Narcotics Control Board (INCB)**. It is for the **first time** that an **Indian is heading INCB** and **second women in INCB history to head it**.

What

1. The **Board will pay particular attention** to the **timely supply of and access to controlled drugs** during emergency situations.
2. It will also continue its work on the development of guidelines for the control and **monitoring of cannabis and cannabis-related substances**.
3. **INCB monitors the compliance of UN Member States** with the **three international drug control conventions** and the **functioning of the international drug control system**.

LOGISTICS DATA BANK SERVICES EXTENDED

NICDC Logistics Data Services (NLDS), a joint venture between the **Government of India**, represented by the **National Industrial Corridor Development and Implementation Trust**, and **NEC Corporation**, a leader in the integration of IT and network technologies, on 17 May 2021 announced **extension of its Logistics Data Bank (LDB) services at 9 major Special Economic Zones (SEZ)** across India to improve last mile container visibility.

What

1. **Major SEZs** include **Visakhapatnam, SEEPZ Mumbai**, Surat, MEPZ Chennai, Cochin, Kandla, Noida, Mangalore and Dahej SEZ.
2. With container **tracking services now live** at these locations, exporters and importers will be **able to get near real-time location information** on container movement from ports to SEZs.
3. The **idea for NLDS' service extension** was **first proposed during NLDSL's Logistics Data Bank (LDB)'s Open House Session** held in **January last year**.
4. During the Session, **stakeholders in the EXIM industry** requested to **install RFID readers at industrial zones, manufacturing hubs and SEZs**, which would enable them to receive timely updates on last-mile cargo and improve supply chain efficiency.
5. Subsequently, **NLDS proposed to install RFID readers** through various consultations and discussions with key stakeholders from industry and the **Ministry of Commerce & Industry**. NLDSL approached individual SEZs separately to conduct site surveys prior to the RFID system going live.

Flashback

1. A **special economic zone (SEZ)** is an area in a country that is **subject to different economic regulations** than other regions within the same country.
2. The **economic regulations of special economic zones (SEZs) tend to be conducive** to—and attract—foreign direct investment (FDI).
3. **Special economic zones (SEZs)** are typically created in order to **facilitate rapid economic growth by leveraging tax incentives** to attract foreign investment and spark technological advancement.

SCIENCE AND TECHNOLOGY

RT-PCR test kit 'ViraGen' launched

Drug major Cipla on 20 May 2021 announced the commercialisation of its **RT-PCR test kit 'ViraGen'** for **COVID-19 in India**, in partnership with **Ubio Biotechnology Systems**. This launch will help **address the current testing services** and capacity issues while reaffirming the company's ongoing expansion in the **diagnostic space**. **Cipla** will launch **ViraGen test kit** in the country in partnership with **Ubio Biotechnology Systems**.

What

1. **'ViraGen'** is a **polymerase chain reaction (Covid-19 RT-PCR) test** for Covid-19 in India.
2. **ViraGen** is the **company's third offering in the Covid-19 testing** segment. Cipla

- already has partnerships for antibody detection kit and antigen test.
3. **ViraGen is a real-time detection kit** approved by the **ICMR (Indian Council of Medical Research)** and is based on **multiplex PCR technology**.
 4. It helps to **identify and detect SARS CoV-2 N Gene** and **ORF Lab Gene** with the **sensitivity of 98.6%** and the **specificity of 98.8%** as compared to a standard ICMR test.
 5. This test is designed for the **qualitative detection of nucleic acid from SARS-CoV-2** in the **upper and lower respiratory specimens** from individuals suspected of COVID-19.

SPACECRAFT FOR NEW SPACE STATION

China's cargo spacecraft has docked with the **country's new space station**, carrying **fuel and supplies for its future crew**, the Xinhua state news agency reported on 30 May 2021. **Tianzhou-2** or "**Heavenly Vessel**" blasted off via a **Long March-7 Y3 rocket** from the Wenchang spaceport on the southern Chinese island of Hainan on 29 May 2021. Its journey to the **Tianhe station took approximately eight hours**.

What

1. **Tianzhou-2** was supposed to be launched last week but liftoff was delayed at the last minute due to a technical fault.
2. The **spacecraft is the second of 11 cargo missions** needed to complete **China's first self-developed space station**, due to **completed in 2022**, and follows the launch of the key module **Tianhe in late April**.
3. In order to complete the Chinese space station, **two laboratory modules, each weighing a good 20 tons** each will need to be brought into space.
4. This mission is also a **preparation for the flight of three astronauts**, who will be launched from the Jiuquan launch center in the **Gobi Desert** next month. They are due to stay aboard the core module for three months.
5. Several other **cargo flights and manned missions** are planned over the next year.

Flashback

1. When the **International Space Station (ISS) ends its mission in 2030**, **China** is on course to be the **only country to have a permanent outpost in space**.
2. The **ISS is a collaboration** of the **US, EU, Russian, Japanese, and Canadian space programs** and **15 countries**, but **China was barred from participating by Washington**.
3. NASA says it is relying on private companies to create, launch and support a future ISS project.
4. **Russia**, meanwhile, has **mooted its own space station** but some analysts doubt **whether it will be ready by 2030**.

SPACEX LAUNCHES 60 MORE STARLINK SATELLITES

SpaceX, on 26 May 2021, **executed its second launch of Falcon 9** first stage booster with **60 Starlink satellites to orbit**. The same two-stage-to-orbit previously launched the **Sentinel-6A mission**. Elon Musk's Aerospace Company launched the **60 Starlink satellites from Space Launch Complex 40 (SLC-40)** at Cape Canaveral Space Force Station in Florida.

What

1. This was the **13th Starlink launch of the year for SpaceX**. The company's Dragon propulsion engineer Youmei Zhou expressed his happiness by adding that every launch closely connects people from across the world.
2. The successful liftoff of its **Falcon 9 rockets** marked the **fourth time SpaceX** launched a **batch of Starlink satellites** within four many weeks, as the company works to expand its **flourishing broadband constellation**.
3. This was the **85th landing of SpaceX's reusable launch system** development program. To fully facilitate a **rapid reusable launch of space vehicles**, the aerospace company has been developing the technologies over several years.
4. **Vehicle's first stage** generally does not return back after a launch but SpaceX has developed a technology where it returns for reuse after a few hours of the mission.
5. SpaceX will recover both halves of the orbit after they collapse in the Atlantic Ocean.
6. **Go Searcher** and **Go Navigator**, the same vessels that **recover SpaceX's Crew Dragon capsules** will be used as its recovery boats.
7. With this launch, **SpaceX now has about 1,600 satellites orbiting the Earth** providing internet to multiple countries, including in the **U.S. and Canada**.

ONEWEB LAUNCHES LEO SATELLITES

OneWeb, a Low Earth Orbit (LEO) satellite communications operator, **co-owned by Bharti Global and the UK government**, launched another **batch of 36 satellites** by **Arianespace** from the Vostochny cosmodrome in Russia. The latest launch takes **OneWeb's total in-orbit constellation to 218 satellites**. These would form **part of OneWeb's 648 LEO satellite fleet** that will **deliver high-speed, low-latency global connectivity**.

What

1. This represents the **fourth in a five-launch programme** to fulfil the **'Five to 50'** service, which will enable OneWeb to offer connectivity across the UK, Alaska, Northern Europe, Greenland, the Arctic Seas and Canada.
2. The service is expected to be **switched on before the end of the year** and OneWeb intends to make global services available in 2022.
3. The **company's satellites are built by OneWeb Satellites**, a **OneWeb and Airbus** joint venture facility in Florida that can produce two satellites a day.
4. The latest satellites launch comes just a month after **Bharti-backed OneWeb** announced plans to raise \$550 million (Rs 4,103 crore) by selling a 24% stake to **Eutelsat Communications**, bringing its total funding to \$1.9 billion and taking it closer to launching a **first-generation fleet of 648 satellites next year**.
5. **Bharti Global is the overseas arm of Bharti Enterprises** -- the **holding company of Bharti Airtel, India's second-largest telco**.

FIRST NON-FOUNDING NATION TO JOIN SKAO

France has officially joined the international consortium that will build the **Square Kilometre Array Observatory (SKAO)**, proposed to be the **world's largest radio telescope**. The announcement was made by French President Emmanuel Macron on 28 May 2021. With this, **France has become the first non-founding country to join the**

SKA consortium. The founding **member-nations** are **Australia, South Africa, the United Kingdom, Italy, Netherlands, Portugal** and **China**.

What

1. **India**, through the **Department of Atomic Energy**, is also **one of the participating members of SKA**, but is **yet to become a SKAO member**.
2. The proposal in this regard is presently under review, after which **India will announce its share of funding grant for SKA** and officially join the consortium. A decision is expected by the end of 2021.
3. Some of the **other participating countries** are **Canada, Germany, Japan, South Korea, Spain, Sweden** and **Switzerland**.
4. For the project, there will be **197 dishes**, each **measuring 15 metres in diameter**, placed in **South Africa's Karoo region**.
5. The **telescope in Australia** will have **1, 31,072 antennas** and **will be installed on the campus of the Murchison Radio-astronomy Observatory** operated by the **Commonwealth Scientific and Industrial Research Organisation**.

MISCELLANEOUS

GENETICALLY MODIFIED MOSQUITOES

The **World Health Organization** has **issued a new set of guidelines** to shepherd the research and **development of genetically modified (GM) mosquitoes**. Research and field trials are currently under way to determine the **efficacy of using GM mosquitoes to control diseases** like **malaria, Zika, dengue and yellow fever**, which sicken and kill millions around the globe annually, with young children particularly vulnerable.

What

1. **GM mosquitoes**, which **suppress populations without the use of insecticides**, could be an **innovative tool in reducing the human and economic toll of these diseases**.
2. Disease experts agree that **new strategies are needed to limit the transmission of mosquito-borne illnesses**, especially due to the increasing threat of insecticide resistance.
3. Interventions that can effectively control outdoor biting are also sought, with research suggesting **GM mosquitoes** could be a powerful and cost-effective tool to supplement existing interventions.
4. The **guidance framework for testing GM mosquitoes** was developed **under a partnership** between **WHO, TDR and the GeneConvene Global Collaborative**, an initiative of the Foundation for the National Institutes of Health.

VESAK FESTIVAL

Vesak is one of the most important Buddhist festivals. It is also known as **Wesak or Buddha Day**. It is a celebration of Buddha's birthday (26 May 2021) and, for some Buddhists, marks **his enlightenment** (when he discovered life's meaning). **Vesak is the most sacred day** for Buddhists around the world. It is also known as **Buddha Purnima** and **Buddha**.

What

1. The day commemorates **birth, enlightenment and Death** (or Parinirvana) of **Lord Buddha**, the founder of Buddhism, all of which is said to have taken place on the same day.
2. Vesak, falls on the full moon day (Purnima) of the month Vaishakha (May), hence the occasion is referred to as Buddha Purnima in India.
3. The **General Assembly** in 1999 **recognized internationally the Day of Vesak**.
4. It was done to acknowledge the contribution that Buddhism made to humanity.

IAU APPROVES CHINESE NAMES ON MOON

The **International Astronomical Union (IAU)** has **approved eight Chinese names** for features around the area on the Moon where **China's spacecraft Chang'e-5 probe landed last year** to collect samples from the **lunar surface and return to Earth**. The **Chang'e-5 space mission is China's maiden attempt to retrieve materials** from an extra-terrestrial body. It was launched on 24 November last year.

What

1. It was the **first attempt to bring the lunar samples** in **over 40 years** after the US sent astronauts to the Moon to collect samples.
2. The **IAU Working Group for Planetary System Nomenclature** has approved **eight names for features on the Moon** in the **vicinity of the Chang'e-5 landing site: Mons Hua, Mons Heng, Pei Xiu, Shen Kuo, Liu Hui, Song Yingxing, Statio Tianchuan, and Xu Guanqui**.
3. **China has been naming geographical entities** on the **Moon since 2010**.
4. **In September 2010** China's Ministry of Civil Affairs published the official Chinese names for places on the **Earth's moon**, in a **first that eliminates confusion** and will help the **nation's lunar exploration efforts**. The ministry published the Chinese names for 468 places.
5. Later, in February 2019 **five more geographical entities on the moon** have been given Chinese names, based on **discoveries from China's latest Chang'e-4 mission**.
6. The China National Space Administration, Chinese Academy of Sciences and the IAU named the **landing site of the Chang'e-4 probe** as **Statio Tianhe**, and three annular pits around the landing site are called **Zhinyu, Hegu and Tianjin**.
7. The central peak in the **Von Karman Crater is referred to as Mons Tai**.
8. **Tianhe**, another **name for the galaxy in ancient China**, implies that the Chang'e 4 probe served as a pioneer in the history of human lunar exploration.

Flashback

1. According to the **IAU naming rules**, the **landing site name has the prefix of Statio** in Latin.
2. And **so far only two places have such a prefix**, the first being the **landing site of Apollo 11, Statio Tranquillitatis**.
3. **Mount Tai is one of the five most famous mountains in China** in East China's Shandong province.
4. **Naming entities on lunar surfaces started in the 17th century in Europe** and in the 20th century the United States and the former Soviet Union had the most names due to their lunar explorations.