

February - 25

TNPSC BITS

- ❖ India's first indigenously designed 3GPP compliant modem system-on-chip (SoC), developed by WiSig Networks under the government's Design Linked Incentive (DLI) scheme, faces production challenges despite significant funding.
- ❖ The IIIT-Delhi has developed an artificial intelligence-based platform, AgeXtend, designed to identify molecules that could promote healthy ageing.
- ❖ The International Energy Agency (IEA) has hosted a Global Conference on AI and Energy in Paris.
- ❖ Punjab National Bank (PNB) becoming the first Indian bank to implement Clari5's National Cybercrime Reporting Portal (NCRP) Integration Solution.
- ❖ The upgraded Primary Health Centre (PHC) in Nandivaram (Chengalpattu District) became the first PHC in Tamil Nadu's to start a dialysis centre.
- ❖ The state Government of Kerala, in collaboration with the Remidio, has launched Nayanamritham 2.0, an AI-assisted program for screening chronic eye diseases.
- ❖ 20-year-old Vishvaa Rajakumar from India has been crowned as the winner of the Memory League World Championship.
- ❖ John McFall of British, a former Paralympian with a prosthetic leg, becomes the first astro naut with a disability approved for ISS missions.
- ❖ Hyderabad recently hosted the International Art Exhibition 2025.
- ❖ AI chipmaker Nvidia and its research partners have created a new AI system, called Evo 2 which can read and design genetic code across all forms of life.
- ❖ India's first 'bio bank' known as 'frozen zoo' in a zoo is up and running at Padmaja Naidu Himalayan Zoological Park, better known as Darjeeling Zoo in West Bengal.
- ❖ The Former Reserve Bank of India Governor Shaktikanta Das has been appointed Principal Secretary to Prime Minister.

NATIONAL

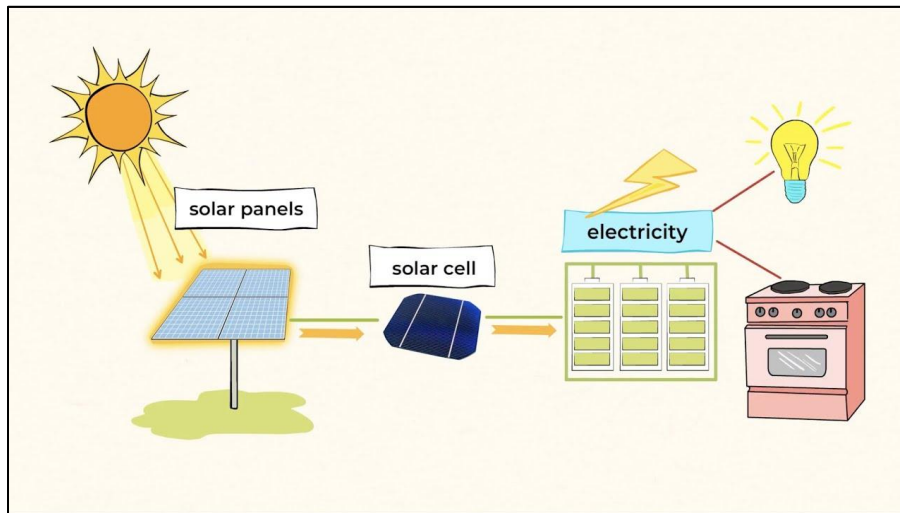
Mass Drug Administration (MDA) campaign

- ❖ Centre has launched the Annual Nationwide Mass Drug Administration (MDA) Campaign for Lymphatic Filariasis (LF) Elimination.
- ❖ The campaign covers 111 endemic districts across 13 States with door-to-door administration of filaria prevention medications.

- ❖ The MDA campaign is a core component of India’s LF elimination strategy, led by the National Center for Vector Borne Diseases Control (NCVBDC).
- ❖ Lymphatic Filariasis (Haatipaon) is commonly known as elephantiasis.
- ❖ It is caused by infection with parasites classified as nematodes (roundworms) of the family Filariodidea.
- ❖ It is a priority disease reported in 345 districts across 20 states and the union territories, with 90 per cent of the total cases reported across eight states.



Energy Storage for Future Solar Projects

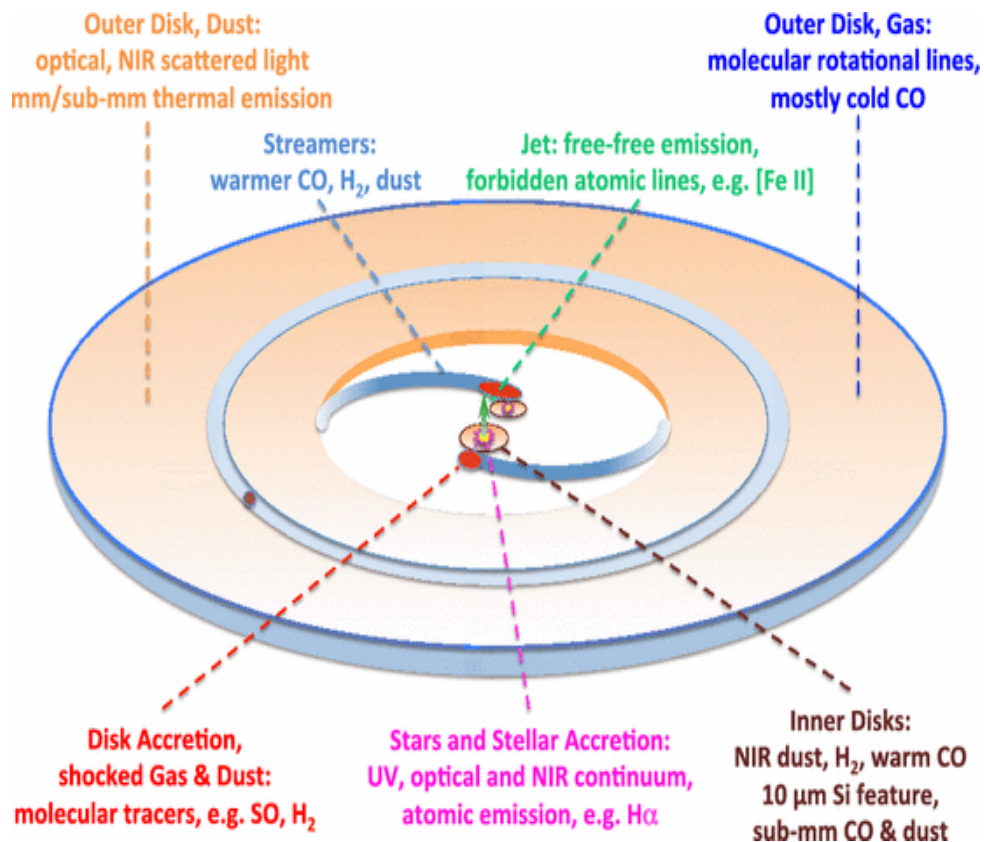


- ❖ The government has Mandated all future solar project tenders to include energy storage systems.

- ❖ All renewable energy implementing agencies (REIAs) and state discoms are now advised to incorporate a minimum of two-hour co-located energy storage systems (ESS), equivalent to 10 per cent of the installed solar project capacity, in future solar tenders.
- ❖ It will mitigate intermittency issues and provide critical support during the peak demand periods.
- ❖ This will help enhance the capacity utilization of renewable energy assets as India scales up to 500 GW of non-fossil capacity by 2030.

SCIENCE AND TECHNOLOGY

GG Tau A System



- ❖ Indian astronomers discovered a unique triple-star system known as GG Tau A.
- ❖ It is located approximately 489 light-years from Earth.
- ❖ This region, known as a birthplace for young planets, features a protoplanetary disk—a swirling ring of gas and dust.
- ❖ The "mid-plane" of the disk's temperatures were found to drop as low as 12 K to 16 K—far below the freezing point of carbon monoxide.

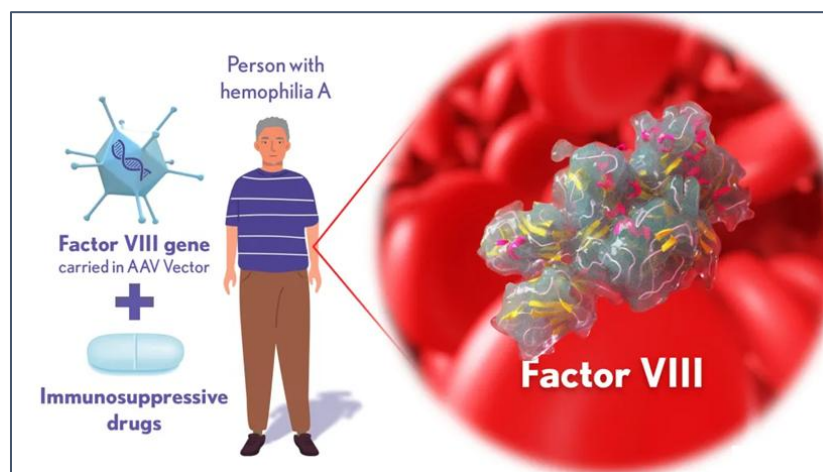
- ❖ The GG Tau A system is part of a triple-star setup, is estimated to be between 1 and 5 million years old.

VSHORADS Trials

- ❖ DRDO has successfully conducted three successive flight-trials of Very Short-Range Air Defence System (VSHORADS).
- ❖ VSHORADS is a Man Portable Air Defence system designed and developed indigenously.
- ❖ The missile system has the capability to meet the needs of all the three branches of the Armed Forces, viz. Indian Army, Navy and Air Force.



Human Gene Therapy for Hemophilia

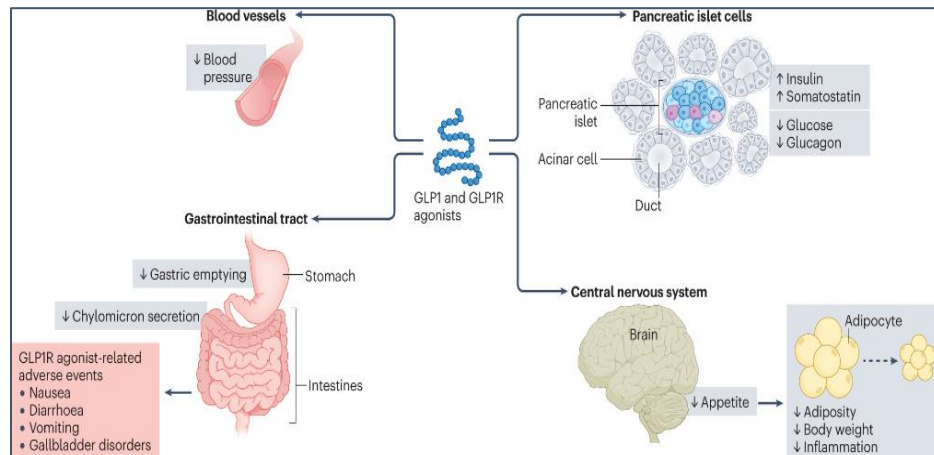


- ❖ The Christian Medical College (CMC), Vellore have successfully executed a first-in-human gene therapy using lentiviral vectors for the disease.

- ❖ Haemophilia is a severe bleeding disorder caused by the deficiency of clotting Factor VIII.
- ❖ It is leading to spontaneous internal and external bleeding episodes.
- ❖ India bears the world's second-largest burden of haemophilia.

GLP-1 receptor agonists

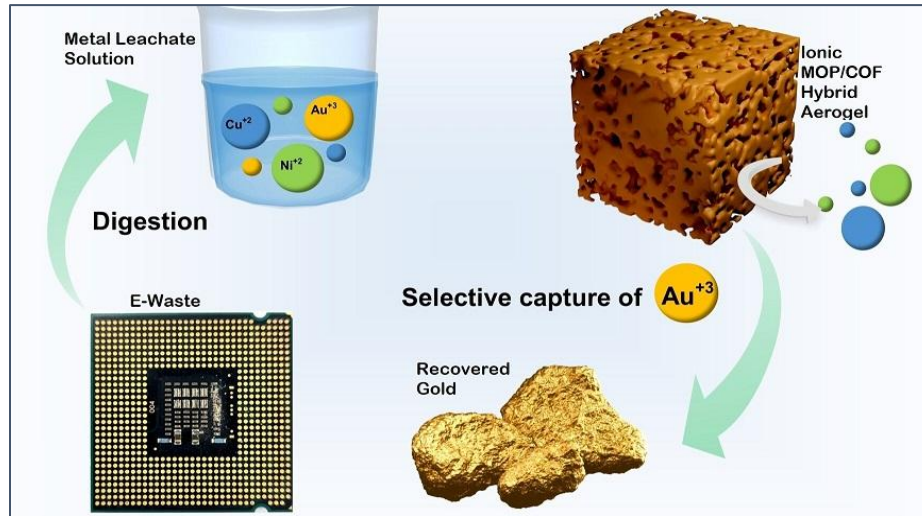
- ❖ Glucagon-like peptide-1 receptor agonists (GLP-1RAs) are novel drugs approved for diabetes and obesity.
- ❖ They are originally developed for treating diabetes, work by stimulating insulin secretion and suppressing glucagon release, thereby helping regulate blood sugar.
- ❖ Now, these drugs also act on the brain's reward system, an area deeply involved in addiction.



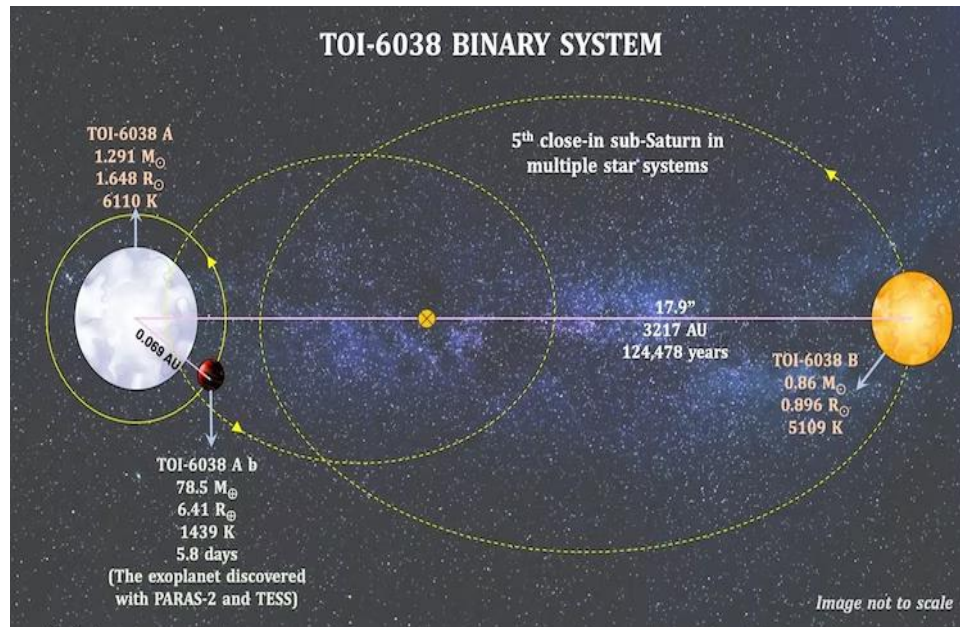
Hybrid aerogel to extract gold

- ❖ Researchers from IISER Pune have developed a novel hybrid aerogel capable of easily extracting gold from electronic waste.
- ❖ It could potentially be useful in addressing e-waste management besides lowering the burden on the hazardous mining practices.
- ❖ In daylight, the hybrid aerogel could extract 1689 mg/gram of e-waste and 2349 mg / gram under blue light.
- ❖ India's electronic waste generation has been rising exponentially in recent years, even though its global share is just 6.4 per cent.
- ❖ Between 2020 and 2022, the e-waste generation grew by 131 per cent.

- ❖ The global e-waste monitor 2020 report has projected an increase of e-waste from 9.2 million tons to 74.7 million tonnes by the end of this decade in India.



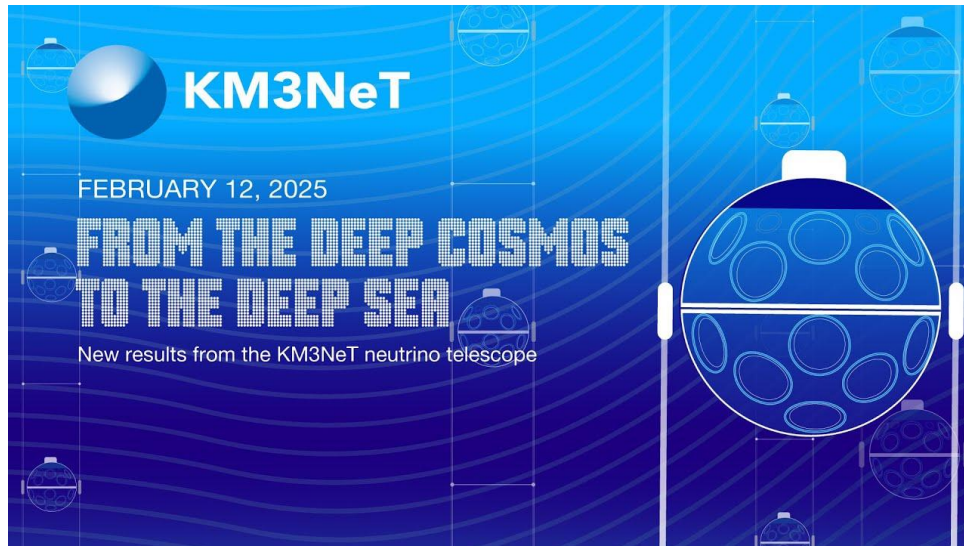
TOI-6038A b



- ❖ A team of the scientists from the Physical Research Laboratory in Ahmedabad discovered a giant planet that is bigger than Earth but smaller than Saturn.
- ❖ The planet, dubbed TOI-6038A b, is a dense sub-Saturn size with a mass of 78.5 Earth masses and a radius of 6.41 Earth radii in a wide binary system.
- ❖ TOI-6038A, is part of a binary system along with a K-type companion star, TOI-6038B

- ❖ The planet orbits a bright, metal-rich F-type star every 5.83 days in a circular orbit.
- ❖ An F-type star is a type of star that is hotter and brighter than our Sun but not as extreme as the hottest stars in the universe.
- ❖ It falls between A-type (hotter) and G-type (like our Sun) in the star classification system.
- ❖ It is the fifth exoplanet discovery facilitated by the combined efforts of the PARAS-1 and PARAS-2 spectrographs.
- ❖ India's growing proficiency in the astronomical instrumentation is highlighted through PARAS-2.
- ❖ PARAS-2 is the most precise stabilized radial velocity (RV) spectrograph in Asia.

KM3NeT Collaboration



- ❖ Recent developments in neutrino research have come from the KM3NeT (Cubic Kilometre Neutrino Telescope) Collaboration.
- ❖ It is an international effort focused on constructing deep-sea observatories.
- ❖ The KM3NeT Collaboration unites more than 360 experts from 68 institutions in 21 countries.
- ❖ This team is constructing observatories deep beneath the Mediterranean Sea.
- ❖ Neutrinos are subatomic particles that are electrically neutral and have a very small mass.
- ❖ They recently recorded a ghost particle in the Mediterranean Sea with the ARCA detector of the KM3NeT project.
- ❖ The astounding neutrino, named KM3-230213A.

- ❖ Researchers estimate its energy at about 220 million billion.
- ❖ KM3NeT composed of two detectors called ARCA and ORCA.
- ❖ ARCA is located about 50 miles from Portopalo di Capo Passero, Sicily, at a depth of 11,319 feet.
- ❖ ORCA is positioned near Toulon, France, at a depth of 8,038 feet.

STATES

Bathouism - Official Religion in Assam's BTR

Bathouism



- ❖ The government of the Bodoland Territorial Region (BTR) in Assam now includes 'Bathouism' as an official option in the religion column of the various application forms.
- ❖ Bathouism is the traditional faith of the Bodos, the largest plains tribe of Assam.
- ❖ It has been the ancestral faith of the Bodos, though the Bodo society has seen reformist movements like that of Kalicharan Brahma.
- ❖ The faith system is based on five elements: Bar (Air), San (Sun), Ha (Earth), Or (Fire) and Okhrang (Sky).
- ❖ The Bathou faith is centred on the Sijou plant (*Euphorbia splendens*).

IMPORTANT DAYS

Mizoram Foundation Day 2025 - February 20

- ❖ Mizo National Front (MNF) was formed in 1967 to demand a separate Mizo state.
- ❖ Mizoram was declared as a separate UT in 1972 under the Northeast Areas (Reorganisation) Act, 1971.

- ❖ The Mizoram Accord was signed between the Government of India and the Mizo National Front in 1986.
- ❖ It became the 23rd state of India in 1987 after the 53rd Amendment to the Indian Constitution.
- ❖ The state has 85.4% Forest Cover of its total geographical area (Highest in India).
- ❖ It also has a 91.58% literacy rate, which makes it one of the most educated states in India.



Arunachal Pradesh Foundation Day 2025 - February 20



- ❖ The Treaty of Yandaboo - 1826 brought the region under the British control after the First Anglo-Burmese War.

- ❖ The region was known as the North-East Frontier Agency (NEFA) and was also administered by Assam under British rule.
- ❖ After India's independence, NEFA was placed under the administration of Assam.
- ❖ NEFA was officially renamed Arunachal Pradesh in 1972 and granted the status of a Union Territory.
- ❖ Arunachal Pradesh became the 24th state of India in 1987 under the State of Arunachal Pradesh Act.

International Mother Language Day 2025 - February 21



- ❖ The year 2025 marks the 25th anniversary of International Mother Language Day.
- ❖ It was approved at the 1999 UNESCO General Conference and has been observed throughout the world since 2000.
- ❖ This milestone highlights a quarter-century of dedicated efforts to preserve the linguistic diversity and promote the use of mother tongues.
- ❖ There are 7,000 languages spoken worldwide—but only 351 are used in the education.

MISCELLANEOUS

AIMC system

- ❖ The Ministry of Road Transport & Highways (MoRTH) has accelerated the use of Automated & Intelligent Machine-aided Construction (AIMC) system.
- ❖ This will provide real-time data on the status of each project, with a survey going hand-in-hand with construction at every stage of the road-building process.



- ❖ The generated data will be sent on a real-time basis to stakeholders.
- ❖ The NHAI is implementing AIMC on a pilot basis in the 63-km long under-construction Lucknow-Kanpur Expressway Project.
- ❖ India presently has about 1.46 lakh km in its National Highways network.
- ❖ Out of this network, about 3,000 km comprises high-speed corridors.
- ❖ India has a vision to construct a further 45,000 km till 2047.

What is AIMC?

- **Automated & Intelligent Machine-aided Construction (AIMC) system** provides real-time data on highway construction progress.
- It uses **GPS-aided Motor Graders, Intelligent Compactors, and Vibratory Rollers for: Earthworks Subbase** and base compaction Layer pavement using **GNSS (Global Navigation Satellite System)**.



Why AIMC is Needed

- **Traditional Challenges:**
- Manual construction methods often led to delays and errors.
- Modern Efficiency:
- **AIMC systems ensure**
- Faster project completion.
- Increased durability and longevity of highways.
- Enhanced precision through real-time documentation.
- Reduced manpower dependency.

