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1. BHASHINI to remove language barriers in using internet (May 26, 2022)

A brainstorming session with researchers and start-ups was organised by the Ministry of Electronics and IT with an aim to shape the strategy for Digital India BHASHINI (Language Interface for India).

• About Digital India BHASHINI

- It is India's Artificial Intelligence (AI) led language translation platform.
- It will make available Artificial Intelligence (AI) and Natural Language Processing (NLP) resources to startups and innovators in the public sector.
- It is a part of the National Language Translation Mission.
- Its objective is to substantially increase the content in Indian languages on the Internet in the areas of governance and policy, science and technology etc.

• Significance of the initiative

- It will empower Indian citizens by connecting them to the country's digital initiatives in their own language.
- It will lead to digital inclusion.
- It will encourage participation of startups.
- It will create an ecosystem involving Central/State government agencies and start-ups, working together to develop innovative products and services in Indian languages.
- It will play an important role in realising the goal of digital government.
- It will Increase the Content in Indian Languages.

2. PARAM PORUL Supercomputer inaugurated at NIT, Tiruchirappalli (May 25, 2022)

PARAM PORUL, a state-of-the art Supercomputer was inaugurated on May 25, 2022 at NIT Tiruchirappalli.

- It has been dedicated to the nation under the National Supercomputing Mission (NSM).
- National Supercomputing Mission (NSM) is a joint initiative of the Ministry of Electronics and Information Technology (MeitY) and the Department of Science and Technology (DST).
- A Memorandum of Understanding (MoU) was signed between NIT Tiruchirappalli and Center for Development in Advanced Computing (C-DAC) on 12 October 2020 to set up this 838 Teraflops supercomputing facility under NSM.

- The system is equipped with a mix of CPU nodes, GPU nodes, high memory nodes, high storage and high performance Infiniband interconnects to meet the computing needs of various scientific and engineering applications.
- It is based on direct contact liquid cooling technology to achieve high power utilisation effectiveness and thereby reduce operating costs.
- This state-of-the-art computing system will prove to be of great importance to the research community.
- Under NSM, so far 15 supercomputers with compute capacity of 24 petaflops have been installed across the country.
- All these supercomputers are manufactured in India and are working with indigenously developed software stack.

3. Collaboration with The Ministry of Railways and Indian Institute of Technology (IIT) Madras (May 24, 2022)

The Ministry of Railways will collaborate with the Indian Institute of Technology (IIT) Madras in the development of an 'indigenous' Hyperloop system and will also help in setting up a Centre of Excellence for Hyperloop Technology at the Institute.

- The plan to develop Hyperloop technology was launched by the then Railway Minister Suresh Prabhu in the year 2017.
- Indian Railways has taken this important step in the direction of making rail travel fast, easy and modern in the country.
- This project will also help in the goal of reducing carbon emissions and energy consumption.
- According to the Ministry of Railways, a team of students of the Indian Institute of Technology (IIT) 'Team Avishkar Hyperloop' is working on this transport medium.
- The model proposed by Team Invention can achieve a top speed of over 1,200 kmph and is completely autonomous, safe and clean.
- **What is Hyperloop?**
- Hyperloop is a technology that uses a magnetic field in a low-pressure tube to move people and goods at high speed without friction.
- Specially designed capsules or pods will be used in this.
- The capsules and pods will be driven at high velocity inside a transparent tube pipe.
- In this, the pods will be driven above the ground in very large pipes on an electrical magnet, due to the effect of this magnet, the pods will rise slightly above the track, due to which the speed will increase and friction will be reduced.
- It will have a magnetic track on which the vacuum will be created. With this, the train will be able to move from one place to another very fast.

4. Development of battery-powered dual-mode locomotive 'Navdoot (May 19, 2022)

West Central Railway has developed a battery operated dual-mode locomotive named Navdoot.

- This engine runs on both the modes i.e. battery and electricity.
- Presently it is being used during shunting of trains at Jabalpur, Murwara and other stations on trial basis.
- This dual mode locomotive has also received the Best Innovation Award from the Railway Board.
- With this new locomotive, Railways will save 1000 litres of diesel per day and it will be used more after clearing all the trials.
- **About the Nav Doot**
- This e-engine can haul 18 coaches at a speed of 30 kmph.
- It has 84 batteries and currently has a towing capacity of 400 tonnes.
- It has been developed by the Electricity Department of New Katni Junction.
- After clearing all the tests, it will be used more widely for purposes like carrying goods, coal, oil tankers etc. to other stations.

5. Country's first '5G testbed' launched (May 18, 2022)

Prime Minister Narendra Modi inaugurated the country's first 5G testbed, which will enable industry players and startups to test and validate their products locally.

- This testbed has been set up at a cost of Rs 220 crore.
- This 5G testbed has been developed as a multi-institution collaborative project by 8 institutes led by IIT Madras.
- Due to no 5G testbed till now, startups and industry players had to go abroad to test and validate their products.
- This testbed will create a supportive ecosystem for the Indian industry and startups to help them validate their products, prototypes, solutions and algorithms in 5G and next-gen technologies.
- Other institutes involved in the project are IIT Delhi, IIT Hyderabad, IIT Bombay, IIT Kanpur, IISc Bangalore, Society for Applied Microwave Electronics Engineering and Research (SAMEER) and Centre of Excellence in Wireless Technology (CEWiT).

6. ISRO successfully test-fires 'Human-rated' solid rocket carrier (HS200) for Gaganyaan program (May 14, 2022)

The Indian Space Research Organisation (ISRO) successfully completed the static test of the 'Human-rated' solid rocket carrier (HS200) for the Gaganyaan program at the Satish Dhawan Space Centre (SDSC) in Sriharikota, Andhra Pradesh.

- The HS200 satellite launch vehicle is a 'human-rated' version of the GSLV Mk III S200 rocket carrier, popularly known as LVM-3.
- The 'human-rated' version is the process of certification of a spacecraft or launch vehicle to show that the vehicle is capable of carrying humans safely into space.
- The design and development of the HS200 carrier was completed at VSSC, Thiruvananthapuram and the propellant casting was completed at SDSC, Sriharikota.
- The S200 motor is the first stage of the LVM-3 launch vehicle, intended to launch a 4,000 kg class satellite into geosynchronous transfer orbit.
- After the success of this test, ISRO has moved one more step towards the Gaganyaan program.
- **Gaganyaan mission of india**
- Gaganyaan is a mission of the Indian Space Research Organisation (ISRO).
- Under this mission, three space missions will be sent into orbit, out of these three missions, 2 will be unmanned, while one will be a manned mission.
- In the first phase, Gaganyaan's unmanned mission will be G-1. After this a robot named Vyommitra will be sent at the end of 2022.
- Gaganyaan mission with crew will be launched for the first time in 2023.
- The human space flight programme, called the Orbital Module, will have three Indian astronauts, including a woman.
- The three-stage GSLV Mk III will be used for the launch of Gaganyaan, which is capable of launching heavy satellites. GSLV Mk III is also called Launch Vehicle Mark-3.
- With the launch of Gaganyaan mission, India will join the club of US, China and Russia.

7. The extended range version of the air-to-air BrahMos missile was successfully launched (May 13, 2022)

The extended range version of the air-to-air BrahMos missile was successfully launched from a Sukhoi-30 Mark-I fighter aircraft.

- During the test, the missile hit the target accurately in the Bay of Bengal.
- This was the first launch of the extended-range version of the BrahMos missile from a Sukhoi-30 Mark-I fighter aircraft.

- The advanced version of this missile has a range of around 350 kms while the original missile had a range of around 290 kms.
- Indian Defence Research Organisation (DRDO), Indian Navy, BAPL and HAL were involved in this test along with the Indian Air Force.
- **Sukhoi 30 MKI fighter aircraft**
- The Sukhoi 30 MKI is the flagship fighter aircraft of the Indian Air Force.
- This fighter aircraft is made in collaboration with Russia's military aircraft manufacturer Sukhoi and India's Hindustan Aeronautics Limited.
- It was inducted into the Indian Air Force in the year 2002 and since 2004, they have been manufactured in India by Hindustan Aeronautics Limited.
- This aircraft can attack at a distance of 3000 km.
- **About BrahMos missile**
- BrahMos is a short-range ramjet, supersonic cruise missile.
- It can be launched from submarines, ships, aircraft or even from land.
- It has been jointly developed by Russia's NPO Mashinostroyeniya and India's Defence Research and Development Organisation.
- Brahmos is named after the Brahmaputra of India and the Moskva river of Russia.
- **Features of BrahMos**
- It can change course in the air and can also hit the moving target.
- It can fly at a height of 10 metres and is not caught by radar.

8. Scientists discover almost 35 million years old rare snake fossil from Ladakh Himalaya (May 13, 2022)

Scientists have discovered for the first time the fossil of a Madtsoiidae snake from molasses deposits in the Ladakh Himalayas.

- This indicates its prevalence in the subcontinent for a longer period of time than previously thought.
- Madtsoiidae is an extinct group of medium-sized to gigantic snakes.
- It firstly appeared during the Cretaceous and mostly distributed in the Gondwanan landmasses.
- Although, their Cenozoic record is extremely scarce.
- The occurrence of Madtsoiidae from the Oligocene of Ladakh indicates their continuity at least to the end of the Paleogene (geologic period and system that spans 43 million years from the end of the Cretaceous Period 66 million years ago).

- The research was published in the Journal of Vertebrate Palaeontology.
- The newly discovered fossil specimen is housed in the repository of Wadia Institute, an autonomous institute of Department of Science and Technology.

9. ISRO's plan to make Venus mission special (May 7, 2022)

After the Moon and Mars mission, India is now going to participate in the journey of Venus along with America and other countries.

- The purpose of this campaign is to gather information about the atmosphere of Venus.
- The project report of 'Shukrayan-1', the name given to the Venus mission of ISRO, is ready and the budget has also been fixed for this.
- The cost of the Venus mission is likely to be between ₹500 crore to ₹1,000 crore, depending on the level of equipment.

• About Shukrayaan-I Mission

- Shukrayaan will be India's first orbiter mission to Venus.
- It will be similar to Moon and Mars missions.
- The mission aims to study the surface of the hottest planet in our solar system.
- It also aims to unravel the mysteries under the Sulphuric Acid clouds enveloping on Venus.
- Its atmosphere is highly toxic and corrosive.
- Studying the structure, composition, and dynamics of the atmosphere.
- ISRO is planning to launch orbital manoeuvres in December 2024 when Earth and Venus will converge.

• About Venus

- Venus is the second planet from the Sun and Earth's closest planetary neighbour. Mercury is closer to the Sun.
- Venus is the hottest planet in our solar system.
- The surface temperature on Venus is about 900 °F (475 °C), high enough to melt lead.
- Its dense atmosphere is filled with the greenhouse gas carbon dioxide, and contains clouds of sulfuric acid.
- Venus is sometimes called Earth's twin because it is similar in size and composition, but the planet differs greatly in other respects.

10. North Korea fires ballistic missile (May 5, 2022)

North Korea has test fired an intercontinental ballistic missile. Regarding the test of this missile, Kim Jong Un, describing it as a display of his nuclear power, said that it has been prepared to prevent any kind of military action from the US.

- Pyongyang, which is the nuclear arsenal of North Korea, has conducted 14 weapons tests since January, including firing an intercontinental ballistic missile at full-range for the first time since 2017.
- Last week, Kim oversaw a huge military parade, vowed to rapidly expand and improve his nuclear arsenal, and warned of possible attacks.
- North Korea fired the ballistic missile from the Sunan Airfield near Pyongyang, the site of recent ICBM tests.
- The missile flew 470KM (300 miles) and reached an altitude of 780KM, it was a "blatant violation of UN Security Council resolutions."
- The name of this intercontinental missile of North Korea is known as Hwasong-17.
- This ballistic missile is the largest liquid-fueled missile ever launched by any country from a road mobile launcher.
- **About Intercontinental Ballistic Missiles (ICBMs)**
- It is a land-based, nuclear-armed ballistic missile with a range of more than 5,600 km.
- The first ICBMs were deployed by the Soviet Union in 1958, the US followed the next year.
- India, Russia, the United States, China, Israel, the United Kingdom, France and North Korea are the only countries that have ICBMs.