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BusinessLine



1. Next 3 PSLV Missions Will Carry 14 Small Foreign Satellites

Why in News?

The upcoming 3 Polar Satellite Launch Vehicle (PSLV) missions of the Indian Space Research Organisation (ISRO) will carry 14 small spacecraft of four international customers:

- Analytical Space Inc
- iQPS
- Kleos Space
- Spire Global
- The customer satellites will be sent to their respective orbits on the PSLV-C47 (where ISRO's own Cartosat-3 is the main payload), C48 & C-49 in November and December.
- New Space India Limited (NSIL) is the commercial arm of Indian Space Research Organisation (ISRO).
 - It promotes and commercially markets the products and services emanating from the Indian Space Programme.

About CARTOSAT

- The Cartosat satellites are a series of Indian earth observation satellites built and operated by the Indian Space Research Organisation (ISRO).
- The Cartosat series is a part of the Indian Remote Sensing Program.
- They are used for Earth's resource management, defence services and monitoring.

Cartosat 3:

- It is an advanced cartography satellite.
- It will be launched using PSLV rocket.
- It will also have strategic applications with better pictures.

About PSLV

- Polar Satellite Launch Vehicle (PSLV) is the third generation launch vehicle of India.
- It is the first Indian launch vehicle to be equipped with liquid stages.
- PSLV is known as the workhorse of ISRO.
- The vehicle successfully launched two spacecraft – Chandrayaan-1 in 2008 and Mars Orbiter Spacecraft in 2013.
- PSLV has gained credence as a small satellite launcher due its numerous multi-satellite deployment campaigns with auxiliary payloads usually ride sharing along an Indian primary payload.
- Another notable feature was launch of PSLV C37 in 2017 successfully deploying 104 satellites in sun-synchronous orbit.

2. Nutraceuticals

Why in News?

According to a recent report, the Indian dietary supplements industry, inclusive of herbal medicine, was pegged at \$3.5 billion in 2018.

- With an anticipated compound annual growth rate (CAGR) of 12.7%, it is expected to reach \$4.4 billion by 2023.

What are Nutraceuticals?

- Nutraceutical is the hybrid of 'nutrition' and 'pharmaceutical'.
- Nutraceuticals are food or part of food playing a significant role in modifying and maintaining normal physiological function that maintains healthy human beings.
- The food sources used as nutraceuticals are all natural and can be categorized as:
 - Dietary Fibre
 - Probiotics
 - Prebiotics
 - Polyunsaturated fatty acids
 - Antioxidant vitamins
 - Polyphenols
 - Spices
- Nutraceuticals are found in a mosaic of products emerging from the food industry, herbal and dietary supplement market, pharmaceutical industry, and the newly merged pharmaceutical/agribusiness/nutrition conglomerates.
- It could refer to products that range from isolated nutrients, dietary supplements, herbal medicines, functional foods, medical/ specific diets and beverages.
- In India, the FSSAI regulates the nutraceuticals through Food Safety & Standards (FSS) Act and the regulations framed thereunder.

Reasons for the Growth of Nutraceuticals Market

- Malnutrition status in India and micronutrient deficiency.
- Increasing costs of hospitalization are driving consumers towards health supplements and nutraceuticals.
- Affluence of working population with changing lifestyles and dietary patterns and increase in disposable income.
- Increasing concern about nutrition, awareness and access to information has led to an increase in the use of health supplements and nutraceuticals.
- Nutraceuticals help in combating some of the major health problems such as obesity, cardiovascular diseases, cancer, osteoporosis, arthritis, diabetes, cholesterol etc.

3. DRDO Boosting Endurance Of Submarines

Why in News?

DRDO has conducted a successful operation of the indigenous Air Independent Propulsion (AIP) system's land-based prototype.

- AIP system fuel cell has a force multiplier effect on lethality of a diesel electric submarine as it enhances the endurance of conventional submarines, allowing submarines to remain submerged for a longer duration.
- All Scorpene submarines of the Navy will be equipped with an AIP module.

Air Independent Propulsion (AIP) System

- Air-independent propulsion is an umbrella term that refers to a range of propulsion solutions that allow conventional submarines to operate without using atmospheric oxygen.
- Conventional 'diesel-electric' submarines use diesel engines to move on the surface of the sea and also charge their electric batteries, which are then used for moving underwater.
- While the batteries are quiet in operation and offer stealth, their endurance is limited to around 2-4 days depending on the speed of the submarines. The submarine would need to rise to the surface to run the diesel engines, which needs air, to recharge the batteries.

Scorpene Submarines:

- Scorpene Class submarines are diesel-electric attack submarines.
- Scorpene submarines are one of the most sophisticated submarines, capable of undertaking multifarious missions including:
 - Anti-surface ship warfare
 - Anti-submarine warfare
 - Intelligence gathering
 - Mine laying
 - Area surveillance
- Under 'Project-75' Indian Navy is indigenously building six Scorpene Class attack submarines.

4. Joint Exercise SHAKTI - 2019

Why in News?

The bilateral exercise SHAKTI between India and France will be conducted from 31st October 2019 to 13th November 2019 in Rajasthan, India.

About Exercise Shakti

- Series of 'Exercise SHAKTI' between India and France commenced in year 2011.

- It's a biennial exercise and is conducted alternately in India and France.
- In 2019, it will be conducted at Foreign Training Node at Mahajan Field Firing Ranges, Rajasthan.
- Objectives:
 - Counter Terrorism operations in backdrop of semi-desert terrain under United Nations Mandate.
 - Focus on high degree of physical fitness, sharing of drill at tactical level and learning of best practices from each other.
 - Enhancing understanding, cooperation and interoperability between the two Armies.

5. Edge Computing

Why in News?

According to the global research and advisory firm Gartner, by 2025, companies will generate and process more than 75% of their data outside of traditional centralised data centres — that is, at the “edge” of the cloud.

About Edge Computing

- Edge computing is the practice of processing data near the sources of data or where the data is being generated, instead of in a centralised data-processing warehouse.
- In edge computing, data is processed by the device itself or by a local computer or server, rather than being transmitted to a data centre.
- Edge computing enables data to be analysed, processed, and transferred at the edge of a network.
- The idea is to analyse data locally, closer to where it is stored, in real-time without latency, rather than send it far away to a centralised data centre.
- The global edge computing market is forecasted to reach more than \$ 8 Billion by 2025 valued growing at more than 32% between 2019-2025.

Difference between Edge Computing and Cloud Computing

- The basic difference between the two lies in where the data processing takes place.
- Edge computing manages the massive amounts of data generated by the Internet of Things (IoT) devices by storing and processing data locally.
 - The existing IoT systems perform all of their computations in the cloud using data centres.
- In edge computing, only important data is sent after being processed thus reducing the amount of data that travels over the network.

Advantages of Edge Computing

- Allows quicker data processing and content delivery.

- Helps in securing the network and improve overall data privacy because the data is processed without ever putting it into a public cloud.
- Reduces operational cost since an abundance of cloud storage is not required.
- Future technology enabled such as 5G wireless technology and artificial intelligence.
- Provides local storage and is data efficient as it reduces Internet bandwidth usage.

6. 2 Out of 3 Wild Poliovirus Strains Have Been Eradicated - WHO

Why in News?

In an announcement by the World Health Organisation on World Polio Day(WHO) - October 24, an independent commission of experts declared that wild poliovirus type 3 (WPV3) has been eradicated worldwide.

- This follows the eradication of smallpox and wild poliovirus type 2.

Wild Poliovirus Type 3

There are three individual and immunologically distinct wild poliovirus strains

- Wild Poliovirus type 1 (WPV1)
- Wild Poliovirus type 2 (WPV2)
- Wild Poliovirus type 3 (WPV3)
- Symptomatically, all three strains are identical, in that they cause irreversible paralysis or even death.
- But there are genetic and virological differences, which make these three strains three separate viruses that must each be eradicated individually.
- WPV2 and WPV3 have been eradicated globally but WPV1 remains in circulation in just two countries namely, Afghanistan and Pakistan.

7. Data Security Council Launches 'TechSagar'

Why in News?

The National Cyber Security Coordinator's office in partnership with Data Security Council of India has launched TechSagar – a platform to discover India's technological capability through a portal.

TechSagar

- It is a consolidated and comprehensive national repository of India's cybertech capabilities and provides actionable insights about capabilities of the Indian Industry, Academia & Research across areas like Internet of Things, Block Chain, etc.
- It facilitates opportunities to collaborate, connect and innovate, and also endeavours to provide direction for a strategic cyber roadmap of the country in R&D, industry development, and strengthening the preparedness of National Security.

Data Security Council of India

- It is a not-for-profit, industry body on data protection in India, setup by NASSCOM.
- It is committed to making cyberspace safe, secure and trusted by establishing best practices, standards and initiatives in cyber security and privacy.
- It engages with governments and their agencies, regulators, industry sectors, industry associations and think tanks for policy advocacy and capacity building.

National Cyber Security Coordinator

- In 2014, the Prime Minister's Office created the position of the National Cyber Security Coordinator.
- The NCSC office coordinates with different agencies at the national level for cyber security matters.

8. BHIM 2.0

Why in News?

The Ministry of Electronics and Information Technology (MeitY) has unveiled BHIM 2.0 that packs-in new functionalities, supports additional languages and has increased transaction limits.

Features: BHIM 2.0

- It includes
 - Donation Gateway
 - Increased transaction limits for high value transactions
 - Linking multiple bank accounts
 - Option of applying in Initial Public Offering (IPO).
 - Gifting money
- It also supports three additional languages — Konkani, Bhojpuri and Haryanvi.
- Under BHIM 2.0, the existing cap of Rs. 20,000 has been increased to Rs. 1,00,000, from verified merchants.

Bharat Interface for Money-Unified Payments Interface (BHIM-UPI)

- BHIM has been developed by the National Payment Corporation of India.
- It is an initiative to enable fast, secure, reliable cashless payments through the mobile phone.
- BHIM is based on Unified Payment Interface (UPI) to facilitate e-payments directly through bank.
- It is interoperable with other applications, and bank accounts.
- It is an instant payment system built over the Immediate Payment Service infrastructure and allows instant transfer of money between any two parties bank accounts.

9. The DNA Technology (Use and Application) Regulation Bill, 2019

Why in News?

Recently, the Parliamentary Committee on Science and Technology discussed the scope for violations of privacy in the proposed DNA data bank in DNA Technology (Use and Application) Regulation Bill, 2019.

- The Bill seeks to create a national data bank, and regional data banks which will have DNA samples of undertrials, suspects, missing persons and unknown deceased persons.
- It has proposed DNA sampling and profiling of citizens accused of crime or reported missing, and storing their unique genetic information for administrative purposes.

Provisions of the Bill

- Under the Bill, DNA testing is allowed only in respect of matters listed in the Schedule to the Bill.
 - These include criminal offences under the Indian Penal Code, 1860, and civil matters such as paternity suits.
 - Further, the Schedule includes DNA testing for matters related to establishment of individual identity.
- The Bill provides for the establishment of a National DNA Data Bank and Regional DNA Data Banks, for every state, or two or more states.
- Every Data Bank will be required to maintain indices for the following categories of data:
 - a crime scene index
 - a suspects' or undertrials' index
 - an offenders' index
 - a missing persons' index
 - an unknown deceased persons' index.
- The Bill provides for the establishment of a DNA Regulatory Board, which will supervise the DNA Data Banks and DNA laboratories.

- The Secretary, Department of Biotechnology, will be the ex officio Chairperson of the Board.
- The Board will comprise additional members including:
 - Experts in the field of biological sciences
 - Director General of the National Investigation Agency
 - Director of the Central Bureau of Investigation.
- Written consent by individuals is required to collect DNA samples from them. (*Consent is not required for offences with punishment of more than seven years of imprisonment or death*)
- The Bill provides for the removal of DNA profiles of suspects on filing of a police report or court order, and of undertrials on the basis of a court order. (*Profiles in the crime scene and missing persons' index will be removed on a written request*)

10. Spyware Pegasus

Why in News?

- WhatsApp, a popular messaging platform was used to spy on journalists and human rights activists in India earlier this year.
- The surveillance was carried out by using a spyware tool called Pegasus, which has been developed by an Israeli firm, the NSO Group.
- WhatsApp has sued the NSO Group in the United States, accusing it of using WhatsApp servers to send malware to approximately 1,400 mobile phones and devices for conducting surveillance of specific WhatsApp users.
- The surveillance was carried out on users in 20 countries across four continents.

Pegasus

- Pegasus works by sending an exploit link, and if the target user clicks on the link, the malware or the code that allows the surveillance is installed on the user's phone.
- Once Pegasus is installed, the attacker has complete access to the target user's phone.

Spyware

- Spyware is unwanted software that infiltrates computing device, stealing internet usage data and sensitive information.
- Spyware gathers personal information and relays it to advertisers, data firms, or external users.

Types of Spyware

- **Adware** - It tracks browser history and downloads, with the intent of predicting what products or services a person may be interested in.

- **Trojan** - This kind of malicious software disguises itself as legitimate software. Trojan malware is controlled by third parties. It can be used to access sensitive information such as Social Security numbers and credit card information.
- **Tracking cookies** - These track the user's web activities, such as searches, history, and downloads, for marketing purposes.
- **System monitors** - This type of spyware can capture just about everything you do on your computer. System monitors can record all keystrokes, emails, chat-room dialogs, websites visited, and programs run.



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