WHAT ARE THE SUPREME COURT'S DIRECTIONS IN THE VVPAT CASE?

What has SC Ruled?

Presently, the Election Commission of India (ECI) conducts random matching of Voter Verifiable Paper Audit Trail (VVPAT) slips with EVMs at five polling booths per assembly constituency. A two-judge bench **rejected petitions seeking 100% verification of votes cast on EVMs using the VVPAT**. However, the court issued two directions to the ECI in this regard.

What is the SC's First Direction?

The court gave directions to the ECI **to seal and store the symbol loading units (SLUs)** for 45 days after declaration of results. **SLUs** are memory units that are first connected to a computer to load election symbols onto it, and then used to enter symbols of the candidates on the VVPAT machines.

What is the SC's Second Direction?

The SC has **enabled candidates to seek verification of the EVMs** - again a first. The burnt memory in the EVM microcontroller must be checked by a team of engineers - after results are declared - if candidates (placed 2nd and 3rd in the election) make such a request (within 7 days of declaration of results). **The expenses for this verification will have to be borne by the candidate** (which would be refunded in case the EVM is found to be tampered with)**.**

SC's Suggestion on VVPAT:

The ECI may examine the suggestion that **VVPAT slips can be counted using a counting machine**, rather than by humans. VVPAT slips could have a **barcode** printed on them, making it easier for machine counting.

Key Takeaways from the SC's Verdict: The apex court reposed faith in the electoral process, saying '**blindly doubting a system can breed skepticism**'. However, its directives and suggestions attempt to ensure that India's electoral process remains full proof.

WHAT IS ADVANCED COMPOSITE SOLAR SAIL SYSTEM (ACS3)?
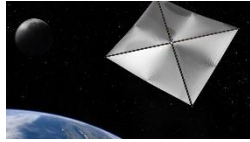
NASA successfully launched its Advanced Composite Solar Sail System spacecraft from New Zealand recently.

Advanced Composite Solar Sail System (ACS3) is a **NASA technology demonstration mission** designed to characterize **solar sail structures technologies** for future small spacecraft to engage in deep space missions requiring long-duration, low-thrust propulsion.

- Launched in 2024, ACS3 will **deploy a sail** about the **size of a small apartment** from a toaster oven-size spacecraft.
  - **At its core, ACS3 is a CubeSat**, a small satellite built to standardized dimensions. It **features** four 7 m long **deployable composite booms**.
- Just as a sailboat is powered by wind in a sail, **solar sails employ the pressure of sunlight for propulsion**, eliminating the need for conventional rocket propellant.
  - **Space missions** have **demonstrated** that **small spacecraft can use solar sails** to change their orbits, expanding their possible uses.
  - Future solar sail missions will need bigger sails and lighter materials to maximize their performance.
- ACS3 **uses lightweight carbon fiber sail booms** instead of traditional metal booms.
- This will be the **first test of this technology in space**.
- **What is solar sailing?**
  - Light is made up of particles called photons. **Photons don't have mass, but they have momentum.**
  - **As sunlight reflects off a shiny solar sail**, some of its **momentum gets transferred**, **giving the sail a small push**.
  - **This push is slight but continuous** and, **over time, can impart more thrust to a spacecraft** than traditional chemical rockets.
  - Solar sails **can reach unique destinations** that are difficult or impossible to access with other propulsion systems.
  - This may also be the **best option for interstellar travel.**

WHAT IS A PAYMENT AGGREGATOR (PA)?

The Reserve Bank of India (RBI) has floated two consultation papers seeking enhanced regulation of payment aggregators carrying out face-to-face transactions.

- A PA (also known as a **merchant aggregator**) is a **third-party service provider** that allows **merchants to accept payments from customers** by integrating them into their websites or apps.
- **PAs enable their clients** to accept **various payment methods** such as debit cards, credit cards, cardless EMIs, UPI, bank transfers, e-wallets, and e-mandates.
- PA provides a stack of multiple payment methods to merchants so that their **customers can pay using** their **preferred mode** of payment.
- Also, a payment aggregator **does fund settlement**, i.e., it moves the money from banks and other issuing entities to the merchants.
- Similarly, they **also enable disbursing payments to various stakeholders**, such as partners, employees, suppliers, and authorities.
- It **allows merchants** to **accept bank transfers without** setting up a **bank-based merchant account.** It means a merchant need not have a merchant account directly with the bank.
- A PA in India is **incorporated under** the **Companies Act 2013.**
- A PA can be a **bank or a non-bank entity**.
- Since a PA handles funds, it **requires a license from** the **RBI**.
- **Only non-bank PAs require unique authorization from RBI** as 'handling funds' is considered a part of the normal banking relationships for bank PAs.
- Examples: Amazon (Pay) India, Google India, Razorpay, Pine Labs, etc.

What is a Payment Gateway?

- It is a **software service** that **connects your bank account to** the **platform where you need to transfer your money.**

- It **authorizes** you to conduct **an online transaction through** different **payment modes** like net banking, credit card, debit card, UPI, or other online wallets.
- A Payment gateway plays the role of a third party that **securely transfers** your **money from** the bank account **to the merchant's payment portal.**

Payment Aggregator v/s Payment Gateway:

- A **payment gateway is a software** that **allows online transactions** to take place, while a **payment aggregator** is the **inclusion of all** these **payment gateways**.
- While a **payment gateway is an intermediary**, the **payment aggregator is the interface** where the payment gateway processes the transactions.
- Most **payment aggregators own payment gateways** to offer various exclusive services to their merchant customers.

Indian National Centre for Ocean Information Services (INCOIS)

Due to its vast economic benefits, it is essential to accurately forecast specific oceanographic parameters, says a recent study by the Indian National Centre for Ocean Information Services (INCOIS).

Indian National Centre for Ocean Information Services (INCOIS) was established as an **autonomous** body in 1999 under the **Ministry of Earth Sciences** (MoES) and is a unit of the **Earth System Science Organization (ESSO**).

- **Mandate**: To provide the best possible **ocean information and advisory services** to society, industry, government agencies, and the scientific community through sustained ocean observations and constant improvements through systematic and focused research.

  Activities:
  - Provides round-the-clock **monitoring and warning** services for the coastal population **on tsunamis**, **storm surges**, **high waves**, etc. through the **in-house Indian Tsunami Early Warning Centre (ITEWC).**

- ▪ The **Intergovernmental Oceanographic Commission** (IOC) of UNESCO **designated ITEWC as a Regional Tsunami Service Provider** (RTSP) to provide tsunami warnings to countries on the Indian Ocean Rim.

o Provides **daily advisories to fisher folk** to help them easily locate areas of abundant fish in the ocean while saving on both fuel and time used to search for the same.

Short-term (3-7 days) Ocean State Forecasts (waves, currents, sea surface temperature, etc.) are issued daily to fisher folk, the shipping industry, the oil and natural gas industry, the Navy, the Coast Guard, etc.

o Deploys and **maintains a suite of Ocean Observing Systems** in the Indian Ocean to collect data on various oceanic parameters.

o Conducts **systematic quality checks** and **archives all observational, satellite,** and other **oceanic data at the ESSO-INCOIS Data Centre,** and then makes such data available to students, researchers, and any other users.

o INCOIS has been **designated as** the **National Oceanographic Data Centre** by the International Oceanographic Data Exchange Programme (IODE) of the IOC.

o **Generates Global Ocean Analysis data** using mathematical models and observations **on a daily basis** to provide the initial conditions to ocean-atmosphere coupled models **used for the prediction of the monsoon** and to understand **oceanic processes**.

Established a national network (**Indian Seismic and GNSS Network (ISGN)**) that integrates Seismic and GNSS stations and **provides high quality data** for research and operational use.

o It **serves as** the **National Argo Data Centre, Regional Argo Data Centre**, and also the regional data centre and **clearing house for** the Indian Ocean region for the **Indian Ocean Global Ocean Observing System (IOGOOS) Programme**.

WHAT IS A MAGNETAR?

Scientists have now detected the most distant-known instance of eruptions, called a giant flare, from a magnetar residing in a galaxy called Messier 82.
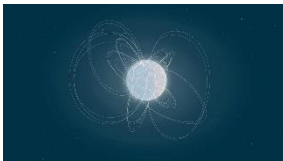
Magnetar is an exotic **type of neutron star** with the defining feature that it has an **ultra-powerful magnetic field.**

- The field is about 1,000 times stronger than a normal neutron star and about a trillion times stronger than the Earth's.

- Apart from ultra-powerful magnetic fields, magnetars also **release vast amounts of energy** in the form of **flares, X-rays and gamma-ray bursts.**

- They are therefore associated with extreme events in the universe, making them perhaps the most bizarre objects in the cosmos next to black holes.

- The magnetic field of a magnetar may be caused by a neutron star's interior – thought to be made up of neutrons, quarks and exotic states of matter such as Bose-Einstein Condensates – becoming a superconducting fluid.

- Thus, when the star rotates, it would behave like a huge dynamo, generating an immense magnetic field.

What is Messier 82?

- It is a galaxy nicknamed as **"cigar galaxy"** because when viewed edge-on it has an elongated and cigar-like shape. It is 12 million light-years from Earth in the **constellation Ursa Major.**

- The M82 giant flare was the most distant known but not the most energetic.

- A giant flare originates from a **reconfiguration and a reconnection of the magnetic field** of the magnetar.

WHAT IS PHI-3-MINI?

Recently, Microsoft unveiled the latest version of its 'lightweight' AI model – the Phi-3-Mini.

Phi-3-mini is believed to be the first among the three small models that **Microsoft** is planning to release.

- It has reportedly outperformed models of the same size and the next size up across a variety of benchmarks, in areas like **language, reasoning, coding, and maths.**
- It is the first model in its class to support a context window of **up to 128K tokens**, with little impact on quality.
- The amount of conversation that an AI can read and write at any given time is called the **context window**, and is measured in tokens.
- It is a 3.8B language model and is available on AI development platforms such as Microsoft Azure AI Studio, HuggingFace, and Ollama.
- Phi-3-mini is available in two variants, one with 4K context-length, and another with 128K tokens.

How is Phi-3-mini different from Large Language Models (LLMs)?

- Phi-3-mini is a **Small Language Model** (SLM).
- SLMs are more streamlined versions of large language models. When compared to LLMs, smaller AI models are also **cost-effective to develop and operate**, and they perform better on smaller devices like laptops and smartphones.
- SLMs are **great for resource-constrained environments** including on-device and offline inference scenarios and such models are good for scenarios where fast response times are critical, say for chatbots or virtual assistants.
- SLMs can be customised for specific tasks and achieve **accuracy and efficiency** in doing them. Most SLMs undergo targeted training, demanding considerably less computing power and energy compared to LLMs.

VIOLATION OF THE MODEL CODE OF CONDUCT (MCC)

What is the Model Code of Conduct (MCC)?

- The MCC for the guidance of political parties and candidates is **a set of norms which has evolved with the consensus of political parties**.
- Once the ECI announces the poll schedule, the MCC immediately comes into effect and remains operational until the conclusion of the electoral process.
- **Its primary objective** is to ensure that campaigns, polling, and counting proceed in an orderly, transparent, and peaceful manner.
- Additionally, it serves as **a mechanism to curb any misuse of state machinery and financial resources by the ruling party.**
- It was initially introduced by the ECI under the title of '**Minimum Code of Conduct**' during the Mid-Term Elections in **1968-69**.
- **Subsequent revisions** were made in 1979, 1982, 1991, and 2013, reflecting the changing dynamics of electoral politics in the country.
- Though the MCC has **no statutory backing** (only a moral obligation), it has grown in strength as a result of the ECI's strict enforcement since its implementation in the 1990s.

What Activities Are Prohibited After Implementation of MCC?

- **The MCC imposes several restrictions**, including prohibiting the ruling party from using its official position for campaigning purposes.
- Ministers and government authorities are **barred from announcing financial grants or launching projects** that may influence voters in favour of the ruling party.
    - Additionally, **the utilisation of official machinery** for campaign purposes is strictly prohibited.
- This code provides that **no party or candidate shall indulge in any activity which may aggravate existing differences** or create mutual hatred or cause tension between different castes, religious or linguistic communities.

- It also provides that there shall be **no appeal to caste or communal feelings for securing votes**. Mosques, churches, temples or other places of worship shall not be used as a forum for election propaganda.

The Unprecedented Move of the ECI:

- The notice served to the BJP President was regarding PM Modi's malicious election speech delivered at Banswara (Rajasthan).
- A similar notice was served to Congress president, concerning complaints related both to him and party leader Rahul Gandhi.
- ECI officials said **this is the first time in recent history** that the panel has taken cognisance of a complaint against a Prime Minister.
- **In the 2019 Lok Sabha polls**, the ECI had given a clean chit to Mr. Modi on complaints lodged by the Opposition parties.
    - Then-Election Commissioner Ashok Lavasa had submitted a dissent note on some of the decisions taken by the ECI regarding complaints against the Prime Minister.
- What is also unprecedented is the ECI issuing **notices to the respective party presidents instead of directly to the concerned individuals**.
- **In its notice to the BJP president**, the ECI asked him to bring to the notice of all-star campaigners of the party **to set high standards of political discourse** and **observe provisions of MCC in letter and spirit.**