DAILY CURRENT AFFAIRS ANALYSIS

16 SEPTEMBER 2023

1 –About the Petition for counting all VVPAT slips during elections:

GS II

Election related Issues

- **Context:**

- The Association for Democratic Reforms (ADR) has requested that all ballots on the Voter Verifiable Paper Audit Trail (VVPAT) be counted.

- **Key information:**

- The Election Commission (EC) responded by warning the Supreme Court that if it were to count every ballot in every election, the nation would return to the era of manual voting.
- This would essentially be the indirect reintroduction of paper ballots.
- The ECI currently requires that all VVPAT slips be counted in five randomly chosen polling places for each Assembly constituency or sector.

- **How do VVPATs work?**

- Voter Verifiable Paper Audit Trail is known as VVPAT.
- The device aids in maintaining a paper audit trail of all votes cast.
- The name, serial number, and party symbol of the candidate are printed on a paper slip of the vote by this Election Commission of India machine.
- The voter sees the printed slip for seven seconds through a transparent window on the voting machine.
- The device is designed to be used by the voter as a means of confirmation to ensure that their vote was truly counted for the correct candidate.
- The printed slip enters a sealed ballot compartment inside the machine after being shown to the voter.
- Only poll workers have access to these VVPAT equipment.
- The Conduct of Elections Rules, 1961 were updated in 2013 to permit the attachment of a printer and drop box to an electronic voting machine.

- **What steps are used in the counting of VVPAT slips?**

- The Election Commission (EC) uses a random sample to carry out the process rather than counting and verifying each vote cast using a VVPAT and an EVM.
- The Supreme Court mandated that the EC check one in five EVM-VVPATs every assembly segment during the 2019 elections.

- The EC determined that the VVPATs will be counted chronologically.

- ***Source → The Hindu***

2 - Nipah virus:

GS II

Health related Issues

- **Context:**

- New Nipah virus cases have been discovered in Kerala.

- **Nipah virus information:**

- Nipah is a zoonotic illness, meaning it can spread to people through sick animals or tainted food.
- Direct contact with an infected person can also cause it to spread from one person to another.

- **Symptoms:**

- fever
- headache
- cough
- throat pain
- breathing challenges, and
- vomiting.

- In extreme circumstances, encephalitis (brain swelling), convulsions, disorientation, sleepiness, and death may occur.
- Nipah virus epidemics in humans were initially noted in Malaysia (1998) and Singapore (1999).
- The virus is named after the Malaysian village where the initial host of the virus died from the illness.

- **The Nipah virus spreads how quickly?**

- It is well known that the Nipah virus spreads much more slowly than SARS-CoV-2.
- The greatest worry, though, is its capacity for murder.
- Its mortality rate is over 68%.
- The Nipah virus has thus far only caused small, swiftly managed epidemics.

- The Nipah virus's low contagiousness and difficult human-to-human transmission are two of the key factors in an outbreak's relatively rapid end.
- In earlier Nipah virus outbreaks, the reproductive number (R0) was approximately 0.48.
- The R-value serves as a gauge for the rate at which a virus spreads through a population.
- A score less than one indicates that an already infected person is only infecting less than one more person.
- In this case, it is anticipated that the outbreak would end rather rapidly.
- The extremely high mortality rates also play a role in the low transmission.

- ***Source → The Hindu***

3 –About the Principle of Reciprocity:

GS III

Science and Technology

- **Context:**

- By simply swapping the locations of the source and destination, the principle states that if a signal can be transferred from Point A (the source) to Point B (the destination), it can likewise be conveyed from Point B to Point A.
- We frequently come upon this intuitive principle in daily life.
- For instance, if you can shine a torch at your friend, they can do the same for you.
- The same air that allowed the light to move one way between you two will have no problem allowing it to pass the other direction as well.

- **Applications:**

- The antenna may transmit signals in any direction in which it can receive signals thanks to reciprocity.
- Radars, sonar, seismic surveys, and magnetic resonance imaging (MRI) scanners are just a few of the devices that engineers employ to test and operate.
- trouble spots

- **Spying:**

- One would want their antenna to pick up every bit of data coming from an enemy base, but they also wouldn't want it to send any signals that would reveal their location.

- **Back reflection of a laser:**

- The purpose of a powerful laser is to send signals.
- The laser power may be reflected back towards the laser and, due to reciprocity, may enter the laser if there is any flaw in the transmission line.
- This back-reflection could be so intense that it harms the laser itself.
- In these situations, scientists require a system that only permits the transmission of signals in one direction, similar to a one-way road for sound, light, or other sorts of waves.

- **How to end the cycle of reciprocity:**

- **Quantum mechanics:**

- Many technologies rely on signal amplification and are therefore vulnerable to powerful back reflections.
- The usage of non-reciprocity will be advantageous to them all.
- Qubits, for instance, are used by quantum computers to carry out operations rather than semiconductors.
- By observing how they affect a probe signal, one can determine the quantum states of these objects.
- To be detected, the impacted signal must be amplified significantly.
- As a result, scientists are also actively investigating non-reciprocal devices that can function in the particular circumstances needed for quantum computing.

- **Modulation:**

- Continually altering a medium property, either in time or space, is how modulation operates.

- **Nonlinearity:**

- Due to nonlinearity, the characteristics of the medium are dependent on the incoming signal's strength, which in turn depends on the signal's propagation direction.

- **Miniaturisation:**

- Non-reciprocal devices are not an exception to the global technological trend of miniaturisation to nano- and micrometre sizes.
- They could ultimately be employed in self-driving automobiles, for instance, where the car would need to efficiently monitor a vast number of signals (from trees, people, other vehicles, barriers, and so on) to ensure safe driving.

- ***Source → The Hindu***

4 - Cynophobia and Cynophilia:

GS II

Social Issues

- **Context:**

- Dog lovers have flocked to the streets to protest the treatment meted out to street dogs in the lead-up to and after the recently finished G20 Summit in Delhi, causing India's canine warfare to continue.

- **Key information:**

- Due to recent dog bite and dog killing occurrences in the capital city, the authorities are on high alert.

- **What does cynophobia mean?**

- Cynophobia is an extreme aversion to dogs.
- When they think about, see, or come into contact with a dog, people with this anxiety condition experience severe fear and anxiety.
- In extreme circumstances, this phobia may lead people to avoid environments where dogs may be present.
- People can control cynophobia with the aid of exposure therapy and cognitive behaviour therapy (CBT).

- **What cynophilia means:**

- It denotes a friendship-based passion for canines.
- It can also signify interest in research of certain breeds, dog shows, and dog breeding.

- ***Source → The Hindu***

5 –About the Floodplain loss in India:

GS I

Geography related Issues

- **Context:**

- A recent study has created the first worldwide dataset that is publicly available and quantifies changes caused by humans in 15 million square kilometres of floodplains in 520 major river basins over the past 27 years (1992-2019).

- **Defining a floodplain:**

- Any area of land that could be swamped by floodwaters from any source is considered a floodplain.

- **Key conclusions of the study:**

- Human modifications of the global floodplains 1992-2019 was the title of the study.
- Over 460,000 square kilometres of floodplain land were reported to have been lost to agriculture during the research period, whereas 140,000 square kilometres were converted into new regions over the existing floodplain.
- **Loss across continents:**

- A little over 200,000 square kilometres of floodplains were destroyed on the Asian continent, the most of any continent.
- Africa (73,000 square kilometres) and South America (92,000 square kilometres) came next.

- **Specific changes to the floodplain:**

- The study focused on specific changes to floodplains, such as those in the Amazon and Yangtze river basins, which correspond to a proportional expansion of agriculture and a consequent reduction in forest acreage.

- **The Indian subcontinent has changed:**

- Irrawaddy experienced the greatest change relative to its river basin (4.6% loss).
- Although the Irrawaddy River primarily flows through Myanmar, its basin also includes certain areas of northeast India.

- The Tapi River Basin in the remainder of India experienced the greatest change, losing more than 3% of its floodplain due to human activity, followed by the Indus (3.2%) and Cauvery (2.7%).

- **How human modification was measured:**

- **The study evaluated three geographical datasets for the specified time span (1992–2019) in order to quantify human alteration:**

- First, they determined the size of the floodplain globally.
- They determined how land use change has developed throughout the appropriate time period from the aforementioned.
- In order to quantify the process for the rivers assessed in the study, they lastly employed river basin borders.

- ***Source → The Hindu***