

## Prelim Bits 24-01-2024 | UPSC Daily Current Affairs

### End To End Encryption (E2EE)

*In the digital era, information is wealth and so encryption is an important way to protect it.*

#### Encryption

- It is the act of *changing some consumable information into an inconsumable form* based on some rules.
- **Key** - A data using which a computer can '*unlock*' (*decrypt*) some '*locked*' (*encrypted*) *text*, knowing the set of rules used to 'lock' it.
- **Types** - Encryption-in-transit and E2E encryption.
- **Encryption-in-transit** - It is encryption before a message is relayed from the server to you (or vice versa).

- **E2E** - [End-to-End encryption](#) refers to encryption of particular locations between which information moves.
- Here, the message is ***encrypted both in transit and at rest*** i.e. when being relayed from your phone to the server (or vice versa) and when is inside the server.
- **Ways of encryption** - It depends on the level of secrecy and protection required.
- **Symmetric encryption** - A way of ***using the same key for encryption and decryption***, useful when the sender and the recipient are the same person.

*The Advanced Encryption Standard (AES) which is seen while setting your WiFi password, is also a symmetric encryption algorithm.*

- **Asymmetric encryption** - A way of using ***different keys for encryption and decryption***.
  - **Public key** - It is the encryption key
  - **Private key** - It is the decryption key.



*End to End Encryption (E2E) is a type of asymmetric encryption.*

- **Challenges** - A *potent malware can 'snoop'* on the messages by infiltrating the device and reading them before they are encrypted.
- In case of *man-in-the-middle (MITM) attack*, the attacker acquires the key by hacking either of end devices.
- *Illegal use of backdoor or exceptions* installed by the parent company for legal purposes.

## Hash Function

- It is responsible *for encrypting a message*.
- **3 functions** - It will accept an input message and produce an *encrypted version called the digest*.
- It should accept a message of any length and *produce a digest of a fixed length*, irrespective of how long or short the message is.
- It should produce *unique digests for unique messages*.

## Reference

[The Hindu | Working of End to End Encryption](#)

## Indian National Army (INA)

In 2024, January 23<sup>rd</sup> marks the 127th anniversary of Netaji Subhas Chandra Bose.

- **INA** - It is also known as ***Azad Hind Fauj*** (*Free Indian Army*).
- **Formation** - ***In 1942 by Mohan Singh***, mostly comprised Indian prisoners of war (PoWs) captured by the Japanese during their Southeast Asia campaign during WWII.
- **Aim** - To secure Indian independence from British rule.
- **Headquarters** - Singapore, later ***shifted to Rangoon*** in Myanmar (since January 1944).
- **Fighting brigades** - They were named after Gandhi, Azad, Nehru, Bose and the ***Rani Jhansi brigade*** (an exclusive women force).
- **Revival** - ***In 1943*** by Subhas Chandra Bose.
- 12,000-strong INA eventually grew to *more than 40,000 personnel*.
- Many civilian volunteers from the *Indian expatriate population in Malaya (Malaysia) and Burma* also joined.
- It had its *own currency, postage stamps and symbols* portraying a vision of a liberated India.
- **Successful activities** - INA *crossed the Burma border*, and stood on Indian soil by March, 1944 and ***hoisted the tricolour flag*** and subsequently advanced up to Kohima and Imphal.
- It *controlled the Andaman Islands* and parts of Manipur briefly.

*The 2 slogans 'Delhi Chalo' and 'Jai Hind' were the war cry of the INA.*

- **Downfall** - They ***failed to take Imphal and Kohima***, was forced to retreat.
- *By 1945, the British had retaken Burma, many perished or surrendered* and it got completely vanished *after Bose death and Japan surrender*.
- **Positive impact** - Though *INA was disbanded in 1945*, it made a significant impact in Indian freedom struggle.
- It ignited the Indian soldiers, led to the ***revolt of Royal Indian Navy and Royal Indian Airforce in 1946***.

Shah Nawaz Khan, Prem Sahgal and Gurbaksh Singh Dhillon, faced the 1<sup>st</sup> and most high-profile of court martials (**INA trails**), became a potent symbol of the unity of Indians.

- INA were not at all affected by communal divisions.
- They demonstrated the capabilities of Indian Women waging armed struggle and also the enthusiasm and concern of overseas Indians for the freedom of their motherland.

## Reference

[The Indian Express| INA's struggle for Indian Independence](#)

## Centre of Excellence in AI for sustainable cities

15 consortiums have applied for the chance to set up a Centre of Excellence in AI to help Indian cities achieve demonstrable improvements in the SDGs that are relevant to them.

2023 Union budget of India had announced to set up **3 AI Centres of Excellence** targeting agriculture, health and sustainable cities domain as a part of 'Make AI in India' and 'Make AI Work for India' initiatives.

- **Set up by** - **Ministry of Education**, collaboration with the Ministry of Housing and Urban Affairs.
- **Union budget** - **Rs. 300 crore**.
- **Objectives** - To help create AI-based applications and scalable solutions and products that have a disproportionate societal impact.
- **Focus** - City planning, traffic management, water and sewage network systems, effective distribution of gas and electricity, etc.
- **Data** - From GIS maps, sensors deployed in public spaces, and satellite feeds.
- It could be reduced down to the level of a household and can be aggregated at street, city/village, taluk, district, state, and country level.
- **AI inspired tool** - It could predict the need for a resource at a particular place or design of a public space.
- **Significance** - They will strive to help the Smart Cities
  - Reduce energy consumption in target sectors by 15%
  - Reduce air and water pollution by 10% and reduce pollutant levels in rivers and seas
  - Improve sewage and garbage disposal outcomes by 25%
  - Increase the reclamation of water and solid waste
  - Improve access to transportation, leading to a 20% reduction in commuting time.

Ministry of Education has established a central project management unit (CPMU) at IIT-Jammu for establishing 3 AI centres of excellence.

## References

1. [The Hindu| AI for improving sustainability of Indian Cities](#)
2. [Communications Today| 3 AI centres of excellence](#)

## PM-KISAN Scheme

According to recent data from Ministry of Agriculture and Farmers' Welfare, every 4<sup>th</sup> beneficiary added under PM-Kisan scheme over the past 2 months is a woman.

- **PM-KISAN** - Pradhan Mantri Kisan Samman Nidhi is a **Central Sector scheme** with 100% funding from Government of India.
- **Launched in** - **2019**, retrospectively operational from 2018.
- **Objective** - To provide *income support of Rs. 6,000 per year* to farmers in 3 equal instalments of *Rs.2000 each, every 4 months*.
- To *supplement financial needs* for procuring various inputs related to agriculture and allied activities as well as *domestic needs*.
- **Beneficiaries** - **All land-holding farmer families, irrespective of the size of their landholdings.**
- A landholder farmer's family is defined as "a family comprising of *husband, wife and minor children* who own cultivable land as per the land records of the concerned State/UT".
- **DBT** - The amount is *directly transferred to the bank accounts* of the beneficiaries without intermediaries.

*PM-KISAN is the largest Direct Benefit Transfer (DBT) scheme for farmers in the world. While the beneficiaries rose sharply, hitting a peak of 10.47 crore in April-July 2022, it dropped to 8.12 Cr during August-November 2023.*

### Exclusion criteria under PM-KISAN Scheme

- It excludes **all institutional land holders.**
- It excludes farmer families in which *one or more of its members belong to* following categories
  - Former and present holders of *constitutional posts*
  - Former and present *members of legislature, mayors* of municipal corporations and chairpersons of District Panchayats.
  - All *serving or retired officers of government*, attached offices and autonomous institutions under government.
  - All superannuated or retired *pensioners Rs.10,000/-or more*(Excluding Multi-Tasking staff employees)
  - All Persons *who paid income Tax in last assessment year*
  - *Professionals* like Doctors, Engineers' Lawyers and more registered with Professional bodies.

## Viksit Bharat Sankalp Yatra (VBSY)

- It is centre's flagship initiative to *raise awareness on its schemes*.
- **Launched in** - ***December 2023***, will run till January 2024.
- **Aim** - To ensure that *all intended beneficiaries are covered* under various flagship schemes of the Central government and thereby *achieving beneficiary saturation* under government schemes.

## References

1. [The Indian Express| Increase in Beneficiaries under PM-KISAN](#)
2. [PM KISAN| PM-KISAN Scheme](#)

## Big Ring

Recently, scientists have discovered massive superstructures in space and named it as Big Ring.

- **Big Ring** - They are *ultra-large superstructure* in the sky, about ***9.2 billion light-years away from Earth***.
- It isn't actually even a ring, it's coiled sort of like a slinky.
- **Formation** - It is made up of *galaxies and galaxy clusters*.
- **Diameter** - About 1.3 billion light years.
- **Circumference** - About 4 billion light-years.
  - It would *take 15 full Moon to cover it* despite being millions of times farther away than the natural satellite.



*Giant Arc* is the previously discovered super structure which is even more massive, with a diameter of 3.3 billion light-years. Both the Big Ring and the Giant Arc are cosmic neighbours and are only about 12 degrees apart from the time.

- **Challenges** - *Both the super structures defy cosmological theory*.
- Unlike Baryonic Acoustic Oscillations (BAOs), it is too large and is not spherical and another theory is that it could be caused by cosmic strings.
- Thus, their ultra-large sizes, distinctive shapes, and cosmological proximity needs to be studied further.

## Scientific concepts related to Big Ring

- **Cosmological theory** - All structures in the universe can be traced back to the [cosmic microwave background \(CMB\) radiation](#), the so-called "fireball of the Big Bang" that scientists observe filling the universe.
- **Baryonic Acoustic Oscillations (BAOs)** - They are *acoustic waves from the early universe*, and statistically, they should appear as spherical shells in the arrangement of

galaxies.

- **Cosmic strings** - They are *hypothetical 1D topological defects* believed to have formed *from the remnants of the cosmic fabric*, left over from cosmic symmetry breaking shortly after the Big Bang.
- They are extremely thin and possess an immense amount of energy.
- **Quasars** - They are extremely *luminous interiors of active galaxies* which are powered by supermassive black holes.

## References

1. [The Indian Express| Discovery of Big Ring in Space](#)
2. [Space| Superstructure celestial anomaly](#)

## Other Important Topics

### EXERCISE KHANJAR

- The 11<sup>th</sup> edition of **India-Kyrgyzstan** Joint Special Forces Exercise KHANJAR has commenced at the Special Forces Training School in Bakloh, Himachal Pradesh recently.
- It is an **annual event** conducted alternatively in both the countries.
- **Aim** - To exchange experiences in Counter Terrorism and Special Forces Operations in Built-up Area and Mountainous Terrain under **Chapter VII** of United Nations Charter.

### Subhash Chandra Bose Aapda Prabandhan Puraskar

- Subhash Chandra Bose Aapda Prabandhan Puraskar was recently announced to commemorate the birth anniversary of Netaji Subhash Chandra Bose.
- It is to recognize and honour invaluable contribution and selfless service rendered by individuals and organizations in the field of disaster management.
- It was administered by **National Disaster Management Authority (NDMA)**.

### Hottest Year, 2023

- The World Meteorological Organization (WMO) has officially confirmed that [2023 is the hottest year on record by a huge margin](#), smashing global temperature records.
- The yearly average global temperature approached **1.5 degrees Celsius** above pre-industrial levels.
- The **Paris Agreement** established a critical threshold, limiting global temperature change to no more than 1.5 degrees Celsius.

### Investment Forum for Advancing Climate Resilient Agrifood Systems

- It is jointly launched by
  - The National Institution for Transforming India (NITI Aayog),
  - The Ministry of Agriculture and Farmers' Welfare (moa&FW), and
  - The Food and Agriculture Organization of the United Nations (FAO)
- The conclave will discuss an investment and partnership strategy to advance climate resilient agri-food systems among the government, private sectors, and farmers' organisations.

### Sweden in NATO

- **Turkey** approved Sweden's application for NATO membership recently.
- Sweden and Finland applied for NATO membership in 2022 and ***Finland got its membership in 2023.***
- Hungary then becomes the only NATO ally not to have ratified Sweden's accession.
- ***North Atlantic Treaty Organization (NATO)*** is a military alliance established in 1949 of states from Europe and North America to ensure collective security in Western Europe.

### Daagna

- *Daagna* (branding) is a practice among some tribal communities of Madhya Pradesh, most prominent among the Baiga (traditionally priests), Kol, and Gond (traditionally rulers) tribes.
- It involves branding infants and children with ***iron rods or hot objects*** to treat undiagnosed illnesses.

### Khelo India Youth Games 2023

- Prime Minister to inaugurate Khelo India Youth Games 2023 in Chennai, being held also in Madurai, Trichy, and Coimbatore.
- This is the ***1<sup>st</sup> time*** the games are being held in ***South India.***
- For the ***1<sup>st</sup> time***, Tamil Nadu's Silambam is set to debut as 'demo sports'.

### Malaria in Cabo Verde

- The World Health Organization (WHO) has certified Cabo Verde (also known as Cape Verde) as a ***malaria-free country*** recently.
- It becomes the ***3<sup>rd</sup> country*** to acquire the status in the global health organisation's African region.
- Africa has the highest malaria burden and accounted for roughly 95% of global malaria cases and 96% of related deaths in 2021.

### Amalek

- The Amalekites, descendants of Amalek, were an ***ancient biblical nation (in Hebrew Bible)***, were the first to attack the children of Israel (Jewish people) after their escape from Egypt into Sinai.
- In 1980, Rabbi Israel Hess wrote an article that used the story of Amalek to justify wiping out Palestinians.
- The title of the article has been translated as "***Genocide: A Commandment of the Torah,***" as well as "The Mitzvah of Genocide in the Torah".

### Treatment of sewage water into Ganga

- The ***National Mission for Clean Ganga (NMCG)***, the Centre's nodal agency is responsible for abatement of pollution in river Ganga and its tributaries.
- It has assumed new powers under which it may now ***permit the discharge of treated sewage*** and effluent that conforms to the prescribed "norms" into the river, canal or water bodies.
- It is done by amending the ***River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016.***