Master Clock System of Indian Railways

Source: TH

Indian Railways is set to develop a **master clock system** to **synchronise time across its operations**, addressing challenges in safety and accident investigations.

- Currently, timekeeping is manual, leading to discrepancies across zonal railways. This inconsistency complicates investigations into rail accidents, where accurate timelines are essential.
- **Key Features of Master Clock:**
  - These digital clocks will have GPS synchronisation for precise timekeeping through GPS, uniform design across stations, and suitability for both platforms and office areas.
  - They include **GPS receivers, NTP synchronization, LED illumination,** and **can send alarms** for monitoring.
    - NTP synchronization involves using the **Network Time Protocol (NTP)** to align clocks across devices over a network with a standard time source, **usually** Coordinated Universal Time (UTC), ensuring accurate timekeeping.
- **Need for a Master Clock System:**
  - **Safety:** Accurate time records are crucial for analysing accidents and understanding event sequences.
  - **Operational Efficiency:** A unified system will enhance train operations and management.
  - **Technological Advancements:** Modern technology demands reliable timekeeping solutions.
- The system will utilise time data from Navigation with Indian Constellation (NAVIC) or the **National Physical Laboratories (NPL).**

Read More: Evolution of Timekeeping Devices, Atomic Clock.