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## Current Affairs - 28 August 2024

### NUCLEAR POWERED TRAINS



The Indian Railways plans to adopt nuclear energy as part of its green initiative to achieve net-zero carbon emissions by 2030.

- Indian Railways is actively exploring using nuclear power through captive units as part of its strategy to increase reliance on non-fossil fuel sources.
- The **first nuclear-powered train movements** are expected to focus on circuits served by the **Nabinagar Thermal Power Plant**, leveraging existing infrastructure to test and expand nuclear energy use in rail transport.

#### What are Nuclear-Powered Trains?

- Nuclear-powered trains utilise the heat generated from a **nuclear reaction to produce steam**, which drives turbines. One turbine powers the train, while another generates electricity for auxiliary systems such as **lighting and air conditioning**.
- The idea of nuclear-powered trains gained attention in the 1950s, especially in the USSR, where it became a goal of the **Ministry of Transport**.

#### How Do Nuclear-Powered Trains Function?

- **Design:** These trains would feature a **portable nuclear reactor**. The reactor heats a fluid to produce steam, which then **powers electric turbines**. These turbines generate the necessary electricity to propel the train.

**Thorium reactors:** Thorium-based reactors are considered for their **lower radiation risks** compared to other nuclear materials. The design of the reactors incorporates advanced safety mechanisms to minimize risks and prevent potential misuse.



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### PRADHAN MANTRI JAN DHAN YOJANA (PMJDY)



On August 28, 2024, the Pradhan Mantri Jan Dhan Yojana (PMJDY) accomplished a decade, marking a significant milestone in financial inclusion.

- **Launch date:** August 28, 2014
- **Objective:** To promote financial inclusion by providing access to financial services, including banking/savings accounts, remittance, credit, insurance, and pensions, affordably.
- **Significance:** Forms the backbone for several government economic initiatives and facilitates **Direct Benefit Transfers (DBTs)**.
- **Eligibility:**
  - The applicant should be an **Indian National**.
  - The applicant should be **aged between 18 and 59 years**.
  - **If minors above ten years apply, they will require support from their legal guardians to administer their PMJDY account.**
- **Jan Dhan Account:**
  - An individual can open an account under this scheme with any bank branch or Business Correspondent (Bank Mitra) outlet.
  - Accounts opened under PMJDY can be opened with **zero balance**. However, if the account holder wishes to get a chequebook, she/he will have to fulfil the minimum balance criteria.
  - The account holders under this scheme will be given a **RuPay debit card** which can be used across all ATMs for cash withdrawal.

### **Scheme highlights:**

- **Zero-balance accounts:** Accounts can be opened with no minimum balance requirement.

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- **RuPay debit card:** Provides a free RuPay debit card with in-built accident insurance coverage.
  - **Accident insurance:** Up to ₹2 lakh.
  - **Life insurance:** Up to ₹30,000 for eligible first-time account holders.
- **Overdraft facility:**
  - Up to ₹10,000 is available to one account per household, with an additional ₹5,000 loan after six months of satisfactory account activity.
- **Coverage focus:** 6% of accounts are in rural and semi-urban areas, with 55.6% of account holders being women.
- **Banking access:** 95% of inhabited villages have banking facilities within a 5 km radius.

### Recent developments:

- **Account growth:**
  - Accounts increased from 72 crore in March 2015 to 53.13 crore by August 2024.
  - Deposits in PMJDY accounts surged from ₹15,670 crore (March 2015) to over ₹2.31 lakh crore (August 2024).
- **Financial Year 2024-25 target:** The government aims to open an additional 3 crore PMJDY accounts.
- **Operative accounts:** Out of 173 crores CASA accounts in the country, over 53 crores are PMJDY accounts, with an 80% operation rate.

### WHAT IS A QUASAR?



- A quasar is an **extremely active and luminous type** of Active Galactic Nucleus (AGN).
- An AGN is nothing more than a **supermassive black hole** that is active and feeding at the center of a galaxy.
- All quasars are AGNs, but **not all AGNs are quasars.**



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- Quasar is short for **quasi-stellar radio source** because astronomers first discovered quasars in 1963 as objects that looked like stars but emitted radio waves.
- Quasars are **intense sources of X-rays as well as visible light**. They are the **most powerful type of X-ray source** yet discovered.
- They are among the **most luminous, powerful, and vibrant objects** known in the universe.

### How are they formed?

- Quasars are thought to form in regions of the universe where the large-scale density of matter is much higher than average.
- An **active galaxy** is one in which the **central supermassive black hole** is **consuming large amounts of matter**.
- The **infall of matter into the black hole** is so great that all the material can't enter the black hole at the same time, so it **forms a queue as a spiralling accretion disk**.
- The **matter**—in the **form of huge clouds**—**falls into the disk**, with the inner parts of the cloud closer to the black hole orbiting faster than the outer parts (just like planets closer to the sun orbit faster than those farther away).
- This creates a shear force that twists the clouds, causing them to bump into their neighbours as they move around the black hole at velocities ranging from 10% of the speed of light up to over 80%.
- This **friction from fast-moving gas clouds generates heat**, and the **disk becomes so hot**—millions of degrees—that it **shines brightly**.
- **Some of the material** in the disk is **also funnelled away** from the black hole in a **highly luminous, magnetically collimated jet**.
- The hot accretion disk and the jet combine to make the nucleus of the active galaxy shine so brightly that it can be seen far across the universe.

The **brightest quasars** can **outshine all of the stars in the galaxies** in which they reside, which **makes them visible** even at **distances of billions of light-years away**.

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### WHAT ARE GEOGLYPHS?

The Maharashtra government recently declared 1,500 geoglyphs spread across 70 locations in a 210-square-kilometre area of the Ratnagiri district as a 'protected monument'.



- A geoglyph refers to a **design** that is **drawn on the earth**.
- Geoglyphs are typically **formed of durable elements of the landscape**, such as **stones, gravel, or earth**.
- A geoglyph is usually **longer than four metres**.
- Geoglyphs are **difficult to see** or even identify **on the ground** but are **easily appreciated when seen from the sky**.
- There are **two types** of geoglyphs, namely a **positive and negative** geoglyph.
  - A **positive geoglyph** is formed by the arrangement and **alignment of materials on the ground** in a manner **akin to petroforms** (which are simply outlines created using boulders).
  - A **negative geoglyph** is formed by **removing part of the natural ground surface** to create differently coloured or textured ground in a manner **akin to petroglyphs**.
- There is **another variation** of a geoglyph that **involves seeding plants in a special design**.
  - The design **usually takes years** to see since it **depends on the plants growing**. This type of geoglyph is called an **arborglyph**.
- **Another type** of geoglyph often referred to as '**chalk giants**' are those carved into hillsides, exposing the bedrock beneath.
- **Examples:** The most famous geoglyphs are the **Nasca lines in Peru** and the **horse and human figures** cut into hillsides in southern England (e.g., the Uffington White Horse and the Cerne Giant).





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### TELEGRAM CEO ARRESTED IN PARIS

Pavel Durov, the founder and CEO of Telegram, was arrested in Paris recently on charges related to the alleged use of his messaging platform for illicit activities, including drug trafficking and the distribution of child sexual abuse material.

#### **Telegram**

- Telegram was founded in 2013 by Pavel Durov and his brother Nikolai.
- Before creating Telegram, Durov founded VKontakte, Russia's largest social network, but sold his stake and left Russia in 2014 after facing pressure from the Russian government to censor and hand over data on opposition activists.
- Telegram is now based in Dubai, which Durov considers a neutral location that supports the platform's commitment to user privacy and freedom of speech.
- **About**
  - Telegram is a messaging app that allows for one-on-one conversations, group chats, and large channels for broadcasting messages.
  - Unlike WhatsApp, which limits group chats to 1,024 participants, Telegram allows up to 200,000 people in a group, raising concerns about the spread of misinformation.
  - While Telegram offers end-to-end encryption, this feature is not enabled by default and does not apply to group chats, unlike competitors like Signal and Facebook Messenger, which encrypt chats by default.
  - Only Telegram's "secret chat" feature provides end-to-end encryption. With over 950 million active users, Telegram is widely used in France, including by government officials.
  - However, it has also been utilized by extremists and drug traffickers.

#### **France's case against Telegram and Durov**



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- Pavel Durov was arrested at Le Bourget airport in connection with accusations against Telegram for complicity in drug trafficking, terrorism support, and cyberstalking.
- Telegram's strong privacy features have enabled some users to conduct illegal activities, such as selling drugs and committing online scams.
- An investigation was launched after 12 alleged violations, with Durov reportedly refusing to cooperate, leading to an arrest warrant.
- Security agencies had quietly begun investigating Telegram for the dissemination of child pornography, with additional charges added later.
- Telegram's policy is to take down illegal content but resists politically motivated censorship.

### PREVENTING MISLEADING ADS ABOUT AYURVEDIC, SIDDHA AND UNANI DRUGS

#### Drug Regulation in India:

- **The Drugs and Cosmetics Act, 1940 and Rules 1945:** These have entrusted various responsibilities to central and state regulators for regulation of drugs and cosmetics.
- **Central Drugs Standard Control Organisation (CDSCO):**
  - The CDSCO under the Directorate General of Health Services, Ministry of Health & Family Welfare, is the **National Regulatory Authority (NRA)** of India.
  - Under the Drugs and Cosmetics Act, **CDSCO is responsible** for -
    - Approval of Drugs.
    - Conduct of **Clinical Trials**.
    - Laying down the **standards** for Drugs.
    - **Control** over the quality of imported Drugs in the country.
    - **Coordination** of the activities of State Drug Control Organisations.
    - Further CDSCO along with state regulators, is **jointly responsible** for grant of licences of certain specialised categories of critical Drugs such as vaccine and sera, etc.

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- **Drugs Controller General of India (DCGI):**

- DCGI is the head of department of the CDSCO responsible for approval of licences of specified categories of drugs such as blood and blood products, vaccines and sera, etc., in India.
- DCGI also sets standards for manufacturing, sales, import, and distribution of drugs in India.

### About the Ayurveda, Siddha and Unani Drugs:

- **Definition:** The Drugs and Cosmetics Act 1940 defines Ayurvedic, Siddha, and Unani drugs as medicines that are used internally or externally to treat, prevent, mitigate, or diagnose diseases or disorders in humans or animals.
- **Regulation:**
  - The act also establishes the Ayurvedic, Siddha, and Unani Drugs Technical Advisory Board (ASUDTAB), which sets the standards for these drugs.
  - **The Central Government** can also make or change rules regarding these drugs after consulting with the board.

### The SC's Efforts to Protect Consumers from Being Trapped by Misleading Ads:

- In a contempt case against Patanjali Ayurved Limited, the SC (on May 7, 2024) directed that **advertisers should submit self-declarations** that they are not misrepresenting or making false claims about products before promoting them in the media.
  - However, the Ministry of AYUSH (on July 1, 2024) notified that Rule 170 of the Drugs and Cosmetics Rules, 1945 was no longer operational.
    - According to the ministry, the basis of this notification is a recommendation made by the ASUDTAB.
  - In its recent order, the SC stays centre's notification (dated July 1) to omit Rule 170 of the Drugs and Cosmetics Rules, 1945, as it runs contrary to directions issued by this court.
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### WHAT ARE COMBINATION DRUGS?

The Indian government has recently banned 156 Fixed-Dose Combination (FDC) drugs.



Fixed-dose combination (FDC) drugs are medications that combine two or more **Active Pharmaceutical Ingredients (APIs)** in a single dosage form, such as a **pill, capsule, or injection**.

- These drugs are often prescribed for conditions requiring multiple medications, such as **tuberculosis, diabetes, and hypertension**, to enhance patient compliance by reducing the number of pills taken daily.
- **The rationale for the Ban:** The banned FDCs were deemed "irrational" by the central government, as they do not provide any additional therapeutic benefits.
- **Benefits:** FDCs can improve patient compliance, especially for chronic diseases where multiple medications are required.
- **Risks:** Some FDCs may include unnecessary components, leading to patients consuming drugs they don't need.
  - For example, **Cheston Cold** includes **paracetamol, cetirizine, and phenylephrine**, which are not necessary for treating bacterial infections but are used for managing cold symptoms.
- **Banned FDCs:** The recent ban includes various drug combinations:
  - **Gastrointestinal treatments:** Enzyme combinations for digestive issues.
  - **Anti-allergy treatments:** Combinations of levocetirizine with nasal decongestants, and cough syrups with mucus-breaking properties.
  - **Skin treatments:** FDCs like menthol with aloe vera, and silver sulfadiazine with antiseptics.
  - **Migraine and menstrual pain:** Combinations for treating migraines and menstrual cramps.
  - **Erectile dysfunction:** Combinations involving sildenafil (Viagra) with other drugs affecting blood vessels and muscles.