

**Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer (SPHEREx) Observatory:**

- NASA will launch it on 28<sup>th</sup> February 2025 aboard a SpaceX Falcon 9 rocket.
- **Duration of mission – 2 years.**
- **Primary aim** - to measure **cosmic inflation** which refers to a period that took place around 14 billion years ago, during which universe expanded faster than speed of light for a fraction of a second.
- It will **identify water- and life-forming molecules, also known as biogenic molecules** (such as carbon, hydrogen, and oxygen), in Milky Way galaxy, where Earth is located.
- While James Webb Space Telescope (JWST) is great at observing highly localised regions of universe, **SPHEREx will image entire sky as seen from Earth.**

**Carbon Border Adjustment Mechanism (CBAM):**

- **European Union (EU) tariff on carbon intensive products.**
- **EU importers will have to buy carbon certificates** corresponding to carbon price that would have been paid in EU if goods had been produced locally.
- Price of certificates would be calculated according to auction prices in EU carbon credit market.
- **CBAM will apply in its definitive regime from 2026**, while current transitional phase lasts between 2023 and 2025.

**Emissions from coal power plants are reducing crop yield:**

- According to new research, coal-fired power plants are quietly depleting India’s rice and wheat output, destroying up to 10% of yield in several States.
- Emissions from coal power plants include **carbon dioxide, nitrogen oxides, sulphur oxides, fly ash, soot, suspended particulate matter, and other trace gases.**
- They cause **smog, acid rain, eutrophication.**
- **Nitrogen oxides are phytotoxic, meaning they stress plants**, and have been known to hinder cellular function and interfere with crucial enzymatic activities.
- They also contribute to formation of **ozone**, which in turn increase crop damage & produces particulate matter that **limits amount of sunlight** available for photosynthesis.

- **Vespertine animals** are active at dusk, such as bats, owls, flies, and moths. Vespertine flowers that bloom in evening.
- **Crepuscular animals** are active at dawn and dusk.
- **Matutinal animals** are active at dawn.
- **Nocturnal animals** are active throughout the night.

**Vitellogenesis:** Oogenesis is the process of egg development in females. The **process of yolk formation within an oocyte** is called vitellogenesis.

**Volcanic smog:** It is a form of air pollution created when **sulphur dioxide from a volcanic eruption reacts with oxygen, water, and sunlight**, leaving an acidic cloud of aerosols hanging in air.

**Ventifacts:**

- These are rocks that have been abraded, grooved, or **polished by wind-driven sand or ice crystals.** e.g. limestone rock formations in **White Desert National Park in Egypt.**
- **Dreikanter** is a ventifact with three opposing edges that form a pyramid shape.
- **Einkanter** is a ventifact with one main facet and one unabraded face.

- **Zweikanter** is a ventifact with two facets.

**Vinayak Damodar Savarkar:**

- He was born in 1883 near Nasik in Maharashtra.
- He called 1857 revolt as first war of independence.
- His **book ‘The Indian War of Independence 1857’** was inspired by works of V K Chiplunkar, who co-founded nationalist newspaper *Kesari* with Bal Gangadhar Tilak.
- He was also inspired by **bakhar, a form of historical narrative written in Marathi prose. Most bakhar revolve around history of Maratha Empire**, and more specifically, exploits of Chhatrapati Shivaji Maharaj.
- He founded **Abhinav Bharat Society (inspired by Mazzini’s Young Italy society) and Free India Society.**
- He was **not the founder of Hindu Mahasabha, but he did serve as its president.**
- He was also a **member of India House.**
- He **opposed the Quit India struggle in 1942**, calling it a "Quit India but keep your army" movement.
- He also wrote **“Joseph Mazzini- Biography and Politics”.**
- **Airport at Port Blair** has been named Veer Savarkar International Airport.

**Maha Kumbh 2025:**

- According to **Samudra Manthan** (churning of ocean) story in ancient Hindu scriptures, gods (Devas) and demons (Asuras) fought over Amrit (nectar of immortality). During this celestial battle, **drops of nectar fell at four locations— Prayagraj, Haridwar, Ujjain, and Nashik—**where Kumbh Mela is now held, with **Maha Kumbh occurring once every 144 years at Prayagraj.**
- Kumbh Mela has been recognized by **UNESCO as an intangible cultural heritage.**

**Defence Research & Development Organisation (DRDO) and Indian Navy** carried out **successful flight-trials of first-of-its-kind Naval Anti-Ship missile (NASM-SR) from Integrated Test Range (ITR), Chandipur** on February 25, 2025. Trials demonstrated missile’s capability against ship targets while launched from an Indian Naval Seaking Helicopter.

**Pradhan Mantri Matru Vandana Yojana (PMMVY):**

- It is a **Centrally Sponsored** scheme launched in **2017** by **Ministry of Women and Child Development.**
- **Maternity benefits** to women belonging to **socially and economically disadvantaged sections.**
- Provide benefit to **woman for the first two living children provided the second child is a girl.**
- For the **first child the maternity benefit of ₹5,000/- is provided in two instalments** under PMMVY and beneficiary is also entitled to receive the cash incentive as per approved norms towards **Maternity Benefit under Janani Suraksha Yojana (JSY) after institutional delivery** so that on an average, a woman gets ₹6,000/-.
- **For the second child, benefit of ₹6,000/- is to be provided subject to second child is a girl child, in one instalment after the birth.**
- **Cases of miscarriage/still births are to be treated as fresh cases** for providing maternity benefit under the scheme.
- Condition for First Child:
  1. **First instalment of ₹3000/- On registration of pregnancy and at least one Antenatal checkup within**

six months from last menstrual period date at the Anganwadi Centre or approved Health facilities.

2. **Second instalment of ₹2000/- when childbirth is registered.** The child has received all due vaccines till the age of 14 weeks.

○ **Eligibility:**

- ✓ applicant should be of **at least 19 years old and a pregnant woman.**
- ✓ applicant **should be employed and experiencing wage-loss** due to pregnancy.

○ **Exclusion: All pregnant women and lactating mothers in regular employment with Central Government or State Government or PSUs** or those who are in receipt of similar benefits under any law for time being in force.

**Restructuring of schemes under Ministry of Women and Child Development:**

For better implementation and efficient monitoring, **all Centrally Sponsored Schemes** of Ministry have been clubbed into **two verticals** –

1. **Saksham Anganwadi & Poshan 2.0** for improving nutrition & health indicators in the country.

- Under this programme, Anganwadi Services Scheme, POSHAN Abhiyaan and Scheme for Adolescent Girls has been reorganized into **3 primary verticals:**
  - i. **Nutrition Support** for children below the age of 6 years, pregnant women and lactating mothers, Adolescent Girls (14-18 years)
  - ii. **Early Childhood Care and Education** [3-6 years]
  - iii. **Anganwadi Infrastructure** including modern, upgraded Saksham Anganwadis.

2. **Mission Shakti:**

- Mission Shakti **comprises of two verticals ‘Sambal’ and ‘Samarthya’ for safety and security of women and empowerment of women**, respectively.
- Following schemes have been subsumed **under Sambal vertical:**
  - i. **One Stop Centres (OSC)** - for providing integrated support and assistance to women affected by violence and in distress, both in private and public spaces in a convergent and coordinated manner under one roof;

- ii. **Women Helplines (181-WHL)** - an emergency/non-emergency response system on a toll-free telephonic short code 181 that is integrated with ERSS (112) and other existing helplines/institutions.
- iii. **Beti Bachao Beti Padhao (BBBP)** - launched with an aim to address declining Sex Ratio Birth (SRB) and related issues of empowerment of girls and women over a life cycle continuum.
- iv. **Nari Adalat** - an initiative aimed at empowering women and ensuring justice, offers services such as alternate dispute resolution, grievance redressal, counselling, evidence-based decision-making, pressure group tactics, negotiation, mediation, and reconciliation.

○ Following schemes have been subsumed **under ‘Samarthya’ vertical:**

- i. **Pradhan Mantri Matru Vandana Yojana (PMMVY)** - a Centrally Sponsored Maternity Benefit Scheme under which cash incentives flow to the beneficiaries in Direct Benefit Transfer (DBT) mode for first child and second girl child.
- ii. **Ujjwala, Swadhar Greh (renamed as Shakti Sadan)** - an Integrated Relief and Rehabilitation Home for women in distress situations including trafficked women.
- iii. **Working Women Hostel (renamed as Sakhi Niwas)** - to promote availability of safe and conveniently located accommodation for working women in urban, semi-urban and also in rural areas where employment opportunities for women exist.
- iv. **National Hub for Empowerment of Women (NHEW)** - to facilitate inter-sectoral convergence of schemes and programs meant for women at National level, State/ UT level and district level.
- v. **National Creche Scheme (renamed as Palna)** – aims to increase women work force participation in the economy by providing quality crèche facility in safe and secure environment for children.

...Celebrating 15 years of its establishment

**PRACTICE MCQs**

Q1. Consider the following government schemes under Ministry of Women and Child Development:

1. Pradhan Mantri Matru Vandana Yojana
2. Sakhi Sadan
3. Sakhi Nivas
4. Palna
5. Nari Adalat

How many of the above schemes fall under ‘Samarthya’ vertical of Mission Shakti?

- a) Only two
- b) Only three
- c) Only four
- d) All five

**Answer: C**

Q2. Consider the following pairs:

1. Vespertine animals – active in the evening
2. Crepuscular animals – active at dawn

3. Matutinal animals – active at dawn and dusk
4. Nocturnal animals – active at the night

Which of the pairs given above are correctly matched?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) 1 and 4 only

**Answer: D**

Q3. Consider the following statements about SPHEREx observatory:

1. It is launched by NASA with mission period of two years.
2. Its primary aim is to measure cosmic inflation.
3. It will search for presence of biogenic molecules in Milky Way galaxy.

Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 only
- d) 1, 2 and 3

**Answer: D**

Q4. With reference to literature in India, 'bakhra' is –

- a) A form of historical narrative written in Marathi prose.
- b) A novel written by Rabindranath Tagore in Bengali language.
- c) A collection of Hindi poems to praise heroic acts of kings.
- d) A collection of ancient mythological stories.

**Answer: A**

Q5. Which of the following statements is incorrect about Pradhan Mantri Matru Vandana Yojana?

- a) It is Centrally Sponsored scheme under Ministry of Women & Child Development.
- b) It seeks to provide maternity benefit to woman for first two living children provided the second child is a girl.
- c) For the first child the maternity benefit of ₹5,000/- is provided in two instalments.
- d) For the second child, benefit of ₹6,000/- is to be provided in two instalments, subject to second child is a girl child.

**Answer: D**

# LUKMAAN IAS

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