DAILY CURRENT AFFAIRS 15-02-2025

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Sarojini Naidu

Syllabus: GS-1: Indian Freedom Struggle – Significant Personalities.

Context:

- National Women's Day Wishes 2025: Celebrating Sarojini Naidu's Birth Anniversary And Her Legacy.

Sarojini Naidu - The Nightingale of India

Early Life and Education

- Born on **13th February 1879** in Hyderabad.
- Father: **Aghorenath Chattopadhyay** (scientist, philosopher, and educator).
- Mother: **Barada Sundari Devi** (Bengali poet).
- Showed early literary talent and wrote her first poetry collection, *Golden Threshold*.
- Studied at **King's College, London**, and **Girton College, Cambridge**.

Role in Freedom Struggle

- Joined the **Indian National Movement** under **Gopal Krishna Gokhale's** influence.
- **1917:** Helped establish the **Women's Indian Association**.
- **1919:** Opposed the **Rowlatt Act** and participated in the **Non-Cooperation Movement** (1920).
- **1930:** Took part in the **Salt Satyagraha** led by Mahatma Gandhi.
- **1942:** Arrested during the **Quit India Movement**.

Political Contributions

- First Indian woman to become the **President of the Indian National Congress** (1925, Kanpur session).
- Played a crucial role in the **Round Table Conferences** (1931).
- Became the **first woman Governor of independent India** (Governor of United Provinces, now Uttar Pradesh, in 1947).

Literary Contributions

- Known as the **"Nightingale of India"**, a title given by Mahatma Gandhi.
- Famous works:

- *Golden Threshold* (1905)
- *The Bird of Time* (1912)
- *The Broken Wing* (1917)

- Her poetry focused on themes of **patriotism, nature, and Indian culture**.

Death and Legacy

- Passed away on **2nd March 1949**.
- Remembered as a **freedom fighter, poet, and women's rights activist**.
- Honored with various memorials, including her residence **Golden Threshold**, now part of the University of Hyderabad.

Immigration and Foreigners Bill, 2025

Syllabus: GS-2: Indian Polity – Bills and Acts.

Context:

- The Immigration and Foreigners Bill, 2025 that is expected to be introduced in the current session of the Parliament.

Introduction

- The **Immigration and Foreigners Bill, 2025** is expected to be introduced in the current session of Parliament.
- It aims to introduce **threats to national security and sovereignty** as a ground to refuse entry or stay for foreign nationals.
- The Bill may also bar entry of foreigners based on **relations with a foreign State**.

Key Provisions of the Bill

- **Final Decision by Immigration Officers**
  - The **Immigration Officer's decision will be final and binding** regarding entry denial.
  - Previously, such denials existed but were not explicitly mentioned in any legislation.

- **Repeal and Replacement of Existing Laws**
  - The Bill will **repeal and replace** the following four Acts:
    1. **Foreigners Act, 1946**
    2. **Passport (Entry into India) Act, 1920**
    3. **Registration of Foreigners Act, 1939**
    4. **Immigration (Carriers' Liability) Act, 2000**
  - The **existing laws had overlapping provisions** from the World War era, necessitating a new comprehensive law.
- **New Definitions and Responsibilities**
  - The Bill may define the **functions of Immigration Officers**.
  - Universities, medical institutions, and other organizations **admitting foreigners will have obligations** under the new law.
  - **Burden of proof** may be placed upon individuals to establish that they are not foreign nationals.
- **Strengthening the Bureau of Immigration**
  - The Bureau of Immigration already exists, but the Bill will provide it with **adequate legal backing**.

Penal Provisions

- **Illegal Entry into India**
  - **Imprisonment of up to 5 years**, or
  - **Fine up to ₹5 lakh**, or both.
- **Using or Distributing Forged Travel Documents**
  - **Imprisonment from 2 to 7 years**.
  - **Fine ranging from ₹1 lakh to ₹10 lakh**.
- **Overstaying Beyond Visa Period**
  - **Imprisonment of up to 3 years**.
  - **Fine up to ₹3 lakh**.

Significance of the Bill

- Introduces **explicit security-based entry restrictions**.
- Prevents **legal overlaps and inconsistencies**.
- Strengthens **immigration enforcement and penalties**.
- Enhances **clarity in visa, registration, and travel documentation requirements**.

Nari Adalat

Syllabus: GS-2: Schemes and Policies for Welfare of Woman.

Context:

- Govt invites proposals from states for setting up Nari Adalats.

Nari Adalat Scheme

Introduction

- The Government of India has invited proposals from states to establish **Nari Adalats** (women's courts).
- Announced by **Women and Child Development (WCD) Minister Annpurna Devi**.
- The scheme is currently running on a **pilot basis** in **Assam** and **Jammu & Kashmir (J&K)**.

Objectives

- To provide **community-based dispute resolution** for women.
- To ensure **women's rights and grievance redressal** at the grassroots level.
- To empower women by involving them in **decision-making and justice delivery**.

Key Features

- **Implemented by**: Ministry of Women and Child Development (WCD).
- **Structure**:
    - Operates at the **Gram Panchayat level**.
    - A group of **7 to 11 women members**, called **'Nyaya Sakhis'**, are nominated by the Gram Panchayat.

- They handle **cases of rights denial and grievances** of women.

- **Pilot Implementation**:
  - Launched in **50 Gram Panchayats each in J&K and Assam** in 2023.
  - The central government provided **₹20 lakh each** to these states for implementation in **2023-24**.

Expansion Plan

- WCD Secretary **Anil Malik** wrote to states and Union Territories (UTs) to submit proposals.
- Expansion targets:
  - **At least 10 Gram Panchayats per state**.
  - **At least 5 Gram Panchayats per Union Territory (UT)**.
- **Proposals from Bihar and Karnataka** have already been accepted.

Significance

- **Strengthens local governance** by involving women in justice delivery.
- **Reduces burden on formal judiciary** by resolving disputes at the community level.
- **Empowers women socially and legally**, promoting awareness of their rights.
- **Enhances access to justice**, especially for women in rural areas.

Challenges and Way Forward

- **Challenges**:
  - Need for **legal training** of Nyaya Sakhis.
  - **Ensuring neutrality and fairness** in dispute resolution.
  - **Scaling the scheme** across all states and UTs.
- **Way Forward**:
  - Capacity building and training for Nari Adalat members.
  - Integration with **existing women-centric legal aid programs**.
  - Strengthening financial and administrative support.

Bombay Blood Group

Syllabus: GS-3: General Science – Human Biology.

Context:

- India's first kidney transplant for a patient with rare 'Bombay' blood group successfully performed in Mumbai hospital.
- The patient had the rare **Bombay blood group (HH)**, making organ transplantation highly challenging.
- Doctors at **MIOT International, Chennai**, performed the world's first **cross-blood kidney transplant** for a Bombay blood group patient.

Understanding the Bombay Blood Group

- **Discovered:** 1952 by **Y.M. Bhende** in Mumbai.
- **Cause:** Mutation or absence of the **H antigen**, which is essential for the ABO blood group system.
- **Key Characteristic:**
    - Cannot receive blood transfusions from any **ABO blood group**, including **O type**, which has the H antigen.
    - Can only receive blood from another Bombay blood group donor.
- **Prevalence:**
    - **Global:** 1 in 4 million.
    - **Europe:** 1 in 1 million.
    - **Mumbai:** 1 in 10,000.

Clinical Challenges in the Transplant

- **Blood Group Mismatch**
    - The patient's mother, the donor, did not have the Bombay blood group.
    - Conventional transplantation would lead to **immediate organ rejection** due to **anti-H antibodies** in the recipient's blood.
- **Risk of Hyperacute Rejection**
    - Anti-H antibodies are more potent than **anti-A or anti-B antibodies**, making rejection highly probable.

- No prior precedence for a **safe antibody titre cut-off** for Bombay blood group transplants.

Innovative Medical Approach

Cross-Blood Transplantation

- **Inspired by Japan's cross-blood transplant techniques.**
- **Technique Used:Double Filtration Plasmapheresis (DFPP)**
  - Developed in Japan for ABO-incompatible transplants.
  - Removes antibodies from the recipient's blood, reducing rejection risk.

Pre-Transplant Procedures

- **Antibody Level Testing**
  - Measured **anti-H, anti-A, and anti-B antibodies** to determine safe transplantation levels.
- **Monoclonal Antibody Injection**
  - Administered to deplete **B cells**, which produce antibodies.
- **Plasmapheresis & IVIG (Intravenous Immunoglobulin)**
  - Regular plasmapheresis to remove antibodies.
  - IVIG therapy to suppress the immune response.
- **Antibody Titre Reduction**
  - Started at **1:256** concentration and aimed to reduce it to an assumed safe level.
  - No prior reference for anti-H safe levels, so approximations were made.

The Transplant Surgery

- Performed after reaching a **no-rejection antibody titre**.
- **Precaution:**
  - Searched for **Bombay blood group units** in case of an emergency transfusion.
- **Outcome:**
  - Surgery went smoothly with **no complications**.

- No rejection in the **crucial first two weeks** post-surgery.

- **Post-Operative Success:**
  - **Six months later,** the patient is healthy and has resumed normal activities.

Significance of the Breakthrough

- **First-ever cross-blood kidney transplant** for a Bombay blood group patient.
- Provides **hope for future Bombay blood group patients** needing transplants.
- Demonstrates the potential of **plasmapheresis and cross-blood matching techniques** in rare blood group transplants.

Conclusion

- The **impossible became possible**, proving that Bombay blood group patients can receive life-saving transplants.
- This medical breakthrough **sets a new precedent** for future transplants involving rare blood groups.

CO2 battery

Syllabus: GS-3: Science and Technology –Battery Technology.

Context:

- NTPC rolls out state-of-the-art CO2 Battery at Kudgi: A landmark 'long duration' electrical energy storage solution.

NTPC Launches CO2 Battery Energy Storage Technology

Introduction

- NTPC has announced the launch of **CO2 Battery Energy Storage Technology**, marking a significant step towards **sustainable and innovative energy solutions**.

Significance of the Project

- **Pioneering in Long Duration Energy Storage (LDES)**:
  - NTPC's Chairman & MD, **Shri Gurdeep Singh**, highlighted the project's role in advancing **long-duration energy storage solutions**.

- The **CO2 Battery will be set up at NTPC Kudgi** with an **energy capacity of 160 MWh**.

- **Advantages of CO2 Battery Over Conventional BESS**:
  - **Long operational life** (>25 years).
  - **No requirement for critical minerals** like lithium and cobalt.
  - **Topography agnostic** (can be installed anywhere).
  - **Minimal performance degradation** over time.
  - **100% depth of discharge**, ensuring full utilization of stored energy.

Technological Aspects

- **How the CO2 Battery Works**:
  - Unlike traditional **Battery Energy Storage Systems (BESS)** that rely on **electrochemistry**, the CO2 Battery is based on **electro-mechanical turbomachinery**.
  - It operates on a **Closed Brayton Thermodynamic Cycle** using **anhydrous CO2** as the process fluid.
  - **Energy Storage Process**:
    - Charging and discharging occur by **manipulating the physical state of CO2** between vapor and liquid.

Strategic Importance

- **Supports NTPC's Decarbonization Goals**:
  - Strengthens **round-the-clock (RTC) power delivery**.
  - Contributes to **clean energy solutions** and India's transition to renewable power.
- **Alignment with Government Initiatives**:
  - Reinforces **'Make in India'** and **'Atmanirbhar Bharat'** by promoting domestic manufacturing and supply chain development.
- **Strengthening India's Energy Security**:
  - Reduces reliance on imported battery materials.
  - Diversifies NTPC's energy portfolio towards **innovative storage solutions**.

Conclusion

- The **CO2 Battery Energy Storage Technology** positions NTPC at the **forefront of energy innovation**.
- It enhances **energy security**, supports **sustainable development**, and marks a significant leap in India's **clean energy transformation**.