CURRENT AFFAIRS WEEKLY

WEEK 2
JUNE, 2024

MAINS ARTICLE

GS-1

- The Six-Day War

GS-II

- Imperative for UNSC Reform
- Sri Lanka's Malaiyaha Tamils
- Unrest in New Caledonia
- BRICS Expansion
- Special Category Status
- The demand for 'Bhil Pradesh'
- First Past the Post System (FPTP) VS Proportional Representation (PR)
- NOTA Votes
- UGC Policy shift for Higher Education
- Financial Hardship in TB Treatment Programme
- Cashless Health Claim Settlement
- Boost to Green Ammonia Production

GS-III

- Understanding the Indian Ocean
- Role of Heat
- Sc develop method to cleanse groundwater contamination
- World Bank's Global Economic Prospects
- PLI Scheme
- Dollar-based System with no real "Alternative"
- Global Debt Crisis

TERMS OF THE WEEK

PRELIMS ARTICLE

RT & CULTURE

- Satnami Sect

GEOGRAPHY

- Kazakh Steppe
- Latin America
- Kashmir's White Gold

INTERNATIONAL RELATIONS

- G7 Summit
- China-Pakistan Economic Corridor (CPEC)

POLITY & GOVERNANCE

- Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP)
- Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme
- 100-Day Action Plan for Animal Health, Dairy, and Conservation
- Anamika Rajeev becomes Navy's First Woman Chopper Pilot

ECONOMY

- India's Consumer Price Inflation

SCIENCE & TECH

- Digital Payments Intelligence Platform 33
- Global Navigation Satellite System (GNSS)-based Tolling
- Discovery of frost atop Mars' Volcanoes
- ISRO's Aditya-L1 Spacecraft Captures Solar Activity
- SpaceX's Starship Test Flight
- Portable Optical Atomic Clocks
- International Year of Quantum
- Donanemab, new Alzheimer's drug
- Inflammatory Bowel Disease (IBD)
- Pakistan Reports Fifth Polio Case

ENVIRONMENT

- Air Pollution Crisis
- Rising Nitrous Oxide Emissions
- Protecting the Western Ghats
- Greater One-Horned Rhino (Rhinoceros Unicornis)

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DISCLAIMER

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

CONTENT

2ND WEEK - JUNE, 2024

SECTION: B (MAINS ISSUE)

HISTORY (GS-1)

- The Six-Day War 7

INTERNATIONAL RELATIONS (GS-II)

- Imperative for UNSC Reform 7
- Sri Lanka's Malaiyaha Tamils 8
- Unrest in New Caledonia 9
- BRICS Expansion 10

POLITY & GOVERNANCE (GS-II)

- Special Category Status 11
- The demand for 'Bhil Pradesh' 11
- First Past the Post System (FPTP) VS Proportional Representation (PR) 12
- NOTA Votes 13
- UGC Policy shift for Higher Education 14
- Financial Hardship in TB Treatment Programme 15
- Cashless Health Claim Settlement 16
- Boost to Green Ammonia Production 17

ENVIRONMENT (GS-III)

- Understanding the Indian Ocean 18
- Role of Heat 19
- Sc develop method to cleanse groundwater contamination 20

ECONOMY (GS-III)

- World Bank's Global Economic Prospects 21
- PLI Scheme 22
- Dollar-based System with no real "Alternative" 23
- Global Debt Crisis 24

SECTION B: QUICK BYTES

ART & CULTURE

- Satnami Sect 26

GEOGRAPHY

- Kazakh Steppe 27
- Latin America 28
- Kashmir's White Gold 28

INTERNATIONAL RELATIONS

- G7 Summit 28
- China-Pakistan Economic Corridor (CPEC) 29

POLITY & GOVERNANCE

- Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP) ... 30
- Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme 30
- 100-Day Action Plan for Animal Health, Dairy, and Conservation 31
- Anamika Rajeev becomes Navy's First Woman Chopper Pilot 32

ECONOMY

- India's Consumer Price Inflation 32

SCIENCE & TECH

- Digital Payments Intelligence Platform ... 33
- Global Navigation Satellite System (GNSS)-based Tolling 33
- Discovery of frost atop Mars' Volcanoes.... 34
- ISRO's Aditya-L1 Spacecraft Captures Solar Activity 35
- SpaceX's Starship Test Flight 36
- Portable Optical Atomic Clocks..... 37
- International Year of Quantum 37
- Donanemab, new Alzheimer's drug..... 39
- Inflammatory Bowel Disease (IBD) 40
- Pakistan Reports Fifth Polio Case 40

ENVIRONMENT

- Air Pollution Crisis 40
- Rising Nitrous Oxide Emissions 41
- Protecting the Western Ghats..... 41
- Greater One-Horned Rhino (Rhinoceros Unicornis) 42

SECTION C: TERMS OF THE DAY

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SECTION-A
MAINS ISSUES

THE SIX-DAY WAR

Context

Fifty-seven years have passed since the Six-Day War, fought between Israel and its Arab neighbours between June 5 and June 10, 1967.

Key-details of the War

- **Roots of the Conflict:** The Six-Day War, fought between Israel and its Arab neighbors in June 1967, stemmed from long-standing tensions over territorial and water disputes.
  - The establishment of Israel led to a refugee crisis among Palestinian Arabs, fueling animosity with neighboring Arab states, particularly Egypt under President Nasser.
- **Outbreak of the War:** The conflict was triggered by Egypt's naval blockade of the **Straits of Tiran**, vital for Israeli commerce.
  - Israel, feeling threatened, launched a pre-emptive strike against **Egyptian airfields** on June 5, 1967.
  - This swiftly escalated into a full-scale war as **Jordan and Syria joined the conflict.**
- **Israeli Victory and Consequences**: Israel emerged victorious, gaining control of significant territories, including the **Sinai Peninsula, Gaza, the Golan Heights, the West Bank, and East Jerusalem**.
  - The defeat humiliated the Arab nations and established Israel's dominance in the region.
  - The war also spurred Palestinian nationalism and led to the formation of the PLO.
- **Long-Term Implications**: The Six-Day War reshaped the geopolitical landscape of the Middle East and fueled ongoing tensions.
  - Israel's occupation of **East Jerusalem, the West Bank, and Gaza** remains a contentious issue, with the fate of Palestinian refugees from the conflict unresolved.
  - Subsequent conflicts, like the **1973 Yom Kippur War**, reflect attempts to reverse the Arab losses of the Six-Day War.

IMPERATIVE FOR UNSC REFORM

Context

Denmark, Greece, Pakistan, Panama, and Somalia have been recently elected to serve on the U.N. Security Council for two-year terms. In recent times, countries are advocating for reforms within the UNSC to ensure equitable representation and effectiveness in addressing global security challenges.

Key-highlights

- The Security Council consists of 15 members, including five permanent members with veto power and ten non-permanent members elected for two-year terms.
- **Selection Process:** Members are chosen through a voting process where nominees from regional groupings are voted on by all 193 U.N. member states.
- **Regional Representation:** This year's selections include **Somalia for Africa, Pakistan for Asia-Pacific, Panama for Latin America and the Caribbean, and Denmark**

and Greece for two Western seats.

Why UNSC requires "reforms"?

- The formation of the UN Security Council, comprising five permanent members — China, France, Russia, the United Kingdom, and the United States — occurred nearly eight decades ago.
  - At that time, the global landscape comprised approximately 50 independent nations.
  - Despite the significant increase in the number of sovereign states to around 193 today, the control over UNSC membership has remained concentrated in the hands of the original five permanent members.
- **India's Efforts**: India, alongside Japan, Germany, and Egypt, has actively advocated for UNSC reform. The proposal put forth by this coalition seeks to address the imbalance in representation and enhance the Council's effectiveness.
- **Challenges Faced:** Obtaining consensus for UNSC reform has proven challenging. While some nations have expressed support, others have been hesitant or resistant to change. Overcoming these hurdles necessitates concerted efforts and strategic diplomacy.

Global Support for India's Candidacy:

- India's aspiration for a permanent seat on the **United Nations Security Council (UNSC)** has been a longstanding diplomatic endeavour.
- India's rising global stature and widespread support from various regions position it favorably for a permanent seat on the UNSC. **India's economic growth, large population, vibrant democracy, and diplomatic prowess** under Prime Minister Modi's leadership provide a strong foundation for garnering support.
- Support from the African Union, ASEAN nations, the United States, European countries, and other regions underscores India's candidacy.
- **Potential Opposition**: While China remains a potential obstacle to India's permanent membership, diplomatic efforts could sway opinions, especially if China stands isolated in its opposition.

About UNSC

- The United Nations Security Council (UNSC) has primary responsibility for the maintenance of international peace and security.
- It has 15 Members, and each Member has one vote.
  - **Permanent Members (P5):** The United States, China, France, Russia, and the United Kingdom are the five permanent members with veto power. Any of these members can block a resolution.
  - **Non-Permanent Members (10)**: The Security Council also has ten elected members who serve two-year terms without veto power. These members are chosen through a two-thirds vote by the UN General Assembly.
- **Presidency Rotation:** The presidency of the Security Council rotates monthly. This ensures that non-permanent members have some influence on the agenda.
- **Selection Criteria:** Eligibility for membership is based on contributions to international peace and security. This often includes financial or troop contributions to peacekeeping operations or leadership on regional security issues.
- **Regional Representation:** Seats on the Security Council are allocated based on regional groups established in 1965. Each regional group has specific electoral norms.
- **Regional groups include the**
  - African Group (3 seats)
  - Asia-Pacific Group (2 seats)
  - Eastern European Group (1 seat)
  - Latin American and Caribbean Group (2 seats)
  - Western European and Others Group (WEOG) (2 seats)

SRI LANKA'S MALAIYAHA TAMILS

Context

In a recent development, an international tribunal composed of former judges from the region expressed shock at the harsh realities faced by **Malaiyaha Tamil community**, Sri Lanka's tea and rubber plantation workers.

Who are Malaiyaha Tamil community?

- The community originally brought from India to work in Sri Lanka's plantation sector over 200 years ago.
- The Malaiyaha Tamils live in upcountry Sri Lanka.
- The community is a distinct ethnic group, constituting the fourth largest population on the island nation — following the Sinhalese, the 'Sri Lankan' Tamils, and the Muslim community.
- They're one of the poorest communities in the country — underpaid and overworked.
- **Economic Contribution**: Despite their significant contribution to Sri Lanka's tea industry, with tea exports fetching approximately $1.3 billion annually, these workers receive meagre wages that barely meet their basic needs.

Discrimination faced by the Malaiyaha Tamil community

- **Ethnic discrimination**: They continue to face discrimination based on their ethnic origin.

- **No land rights**: The community continues to be denied land rights, further exacerbating their socio-economic marginalization and perpetuating cycles of poverty.
- **Labour Exploitation:** The workers, primarily women, are subjected to exploitative working conditions, including low wages tied to demanding daily targets of tea leaf plucking, regardless of weather conditions or safety concerns.
- **Living Conditions:** These workers endure inhumane and degrading living conditions in colonial-era line room accommodations, where multiple individuals often share cramped spaces with poor sanitation facilities.

There is urgent need for comprehensive measures to address the systemic discrimination and socio-economic injustices faced by the Malaiyaha Tamil community. This includes ensuring fair wages, improving living conditions, protecting land rights, and addressing exploitative labour practices across industries.

FACT BOX

Important Pacts

- **Sirima-Shastri Pact**: Signed in 1964 between prime ministers Lal Bahadur Shastri and Sirimavo Bandaranike, the pact repatriated at least half a million Indian-origin Tamils to India. But those who remained behind in Sri Lanka had to struggle for rights up until 2003, granted tenuous citizenship in 1977.
- **Other similar pact**: Sirima-Indira pact (1974)

UNREST IN NEW CALEDONIA

Context:

Recently, widespread protests and riots erupted in **New Caledonia**, a French territory in the South Pacific, following the **French parliament's decision to amend the electoral reform**. This decision sparked outrage among the indigenous Kanak community, leading to tensions and unrest in the region.

Background (History of the Archipelago):

- New Caledonia, once inhabited primarily by **Kanaks**, became a French territory in 1853.
- Over time, **increased migration from France** led to a shift in demographics, with **Kanaks becoming a minority**.
- This demographic change, coupled with **socio-economic disparities and political marginalization**, fueled the emergence of an independence movement, represented by the FLNKS, in the 1960s.
- **Tensions and Agreements:**
  - Tensions between Kanaks and loyalists escalated in the 1980s, culminating in the signing of the **Matignon agreements in 1988** and the **Nouméa Accord in 1998**.
  - These agreements aimed to **transfer powers from Paris** to local authorities and included provisions for three referendums to decide on the territory's independence.

What are the recent developments pertaining to Kanaks?

- Despite the referendums in 2018 and 2020 favoring continued ties with France, Kanaks continue to push for independence.
- The French parliament's decision to amend the electoral reform further marginalized the Kanak community, leading to their opposition and unrest in the region.
- **Kanak Demands for Independence**
  - Post-World War II, the Kanaks experienced socio-economic exploitation under what they term "**settler colonialism**."
  - Despite promises to address social inequalities and enhance political participation, Kanaks still face high poverty rates compared to non-Kanak residents.
  - The proposed electoral reforms are viewed as an attempt to stifle Kanak aspirations for independence.

Why Caledonia is important for France?

- For France, achieving peace in New Caledonia is crucial to safeguarding the interests of its overseas citizens and maintaining its reputation.
- Additionally, integration of New Caledonia aligns with France's Indo-Pacific strategy, where it seeks to assert itself as a key player.
- However, Kanak demands for independence pose a challenge to French ambitions in the region.

FACT BOX

About New Caledonia

- New Caledonia is a French overseas territory situated in the southwest Pacific
- New Caledonia, with its population of approximately 270,000 people, boasts a diverse demographic makeup.
- Indigenous Kanak form 44% of the populace, followed by 34% Europeans, predominantly French, alongside other minority groups like Wallisian and Tahitians.
- Notably, Nouméa, the capital, accommodates more than a third of the island's inhabitants.

BRICS EXPANSION

Context:

India participated in the recent **Brics Foreign Ministers' Meeting in Nizhny Novgorod, Russia**, marking the first meeting since the **expansion of Brics in 2023**. The expansion saw **Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE** joining **Brazil, Russia, India, China, and South Africa** as full-fledged members. Russia assumed the chairmanship of Brics on January 1, 2024.

BRICS and its Expansion:

- **Origins and Objectives**: The term BRIC was coined in 2001, but formalized as a bloc in 2009 by **Brazil, Russia, India, and China**, later joined by **South Africa** in 2010.
  - Initially an **economic forum**, BRICS aims to create **a fairer international order and reform the multilateral system.**
- **Expansion Dynamics**: After 13 years, BRICS expanded in 2023, admitting **Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE**.

Impact of Expansion:

- The BRICS group now comprises almost:
  - 46 per cent of the world's population (with China and India alone accounting for 86 per cent of BRICS)
  - 36 per cent of global GDP (of which China alone accounts for 65 per cent of BRICS)
  - 25 per cent of world trade, measured in terms of exports.
- This enlargement added USD 2.6 trillion to the group's GDP, reaching USD 28.5 trillion collectively and covering **28.1% of global output.**
- The expansion enhanced **BRICS' economic and geostrategic reach**, doubling its **oil production capacity** and accounting for **25% of global exports**.
- It also strengthened control over rare earth minerals and projected significant GDP growth for new members by 2050.

Impact and Challenges of BRICS Expansion:

- **Economic Influence**: Despite BRICS' economic significance, G7 countries still dominate global GDP, accounting for 43.2%. However, forecasts suggest a shift in economic power towards BRICS, especially with the significant growth projected for new members like Egypt and Ethiopia.
- **Geopolitical Significance**: BRICS seeks to challenge the **Western-centric global order** by establishing institutions like the New Development Bank. While it aims to reduce dependence on Western-led institutions, challenges remain in implementing a common BRICS currency and dethroning the US dollar.
- **Challenges and Limitations**: BRICS faces challenges

such **as overreliance on China's economy, limiting leverage and equality within the group**. Bilateral power dynamics between China and India pose complexities, with China's larger economy overshadowing India's influence within BRICS.

India's Interests in BRICS:

- **Policy Framework:** India's approach to BRICS reflects its policy of "**multi-alignment**", akin to its historical stance of "**non-alignment**" during the **East-West conflict**. This allows India to engage with multiple geopolitical centers rather than aligning strictly with one.
- **Counterweight to Russia and China:** Within BRICS, India seeks to **balance the influence of dominant powers like Russia and China.** It aims to represent a **counterweight to these nations**, particularly in the context of **global South politics**, where India competes with China for influence among developing countries.
- **Bridge Builder to the West**: India's role in BRICS also involves acting as a bridge builder to the West. As a member of the **Quadrilateral Security Dialogue (Quad),** India collaborates closely with the **USA, Japan, and Australia** to counter China's growing influence in the Indo-Pacific region.
- **Challenges and Considerations:**
  - **Diverging Interests:** The diverse interests within BRICS, including conflicting agendas between commodity producers and importers like India and China, pose challenges to pursuing collective interests with joint capacities.
  - **Conflict-Ridden Structure:** BRICS expansion further complicates the group's dynamics, intensifying **conflicts of interest among member states**. India supported the accession of new members, particularly the United Arab Emirates and Saudi Arabia, but balancing these diverse interests remains a challenge.

FACT BOX

New Development Bank (NDB)

- **Established in:** 2014 by the BRICS group.
- **Headquarters:** Shanghai, China
- It is a **multilateral bank** focused on **financing infrastructure projects and sustainable development**.
- So far, it has financed 96 projects worth $33 billion.

SPECIAL CATEGORY STATUS

Context

After the recent Lok Sabha Election 2024, Bihar, Andhra Pradesh are demanding special category status for their respective states. However, the Fourteenth Finance Commission removed the concept of special category status from states, and since then, the Centre has largely discouraged calls for special category status in recent years.

What is Special Category Status?

- Special Category Status (SCS) is a classification granted by the Centre to certain states in India to aid in their development.
- It is based on specific geographical and socio-economic disadvantages. The scheme was introduced in 1969 following recommendations from the Fifth Finance Commission.
- **Criteria for Granting SCS:** Before granting SCS to a state, five factors are considered:
  - Hilly and difficult terrain
  - Low population density and/or significant tribal population
  - Strategic location along international borders
  - Economic and infrastructural backwardness
  - Non-viable nature of state finances
- Currently, 11 states in India have been granted SCS, including Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, and Uttarakhand.
- **Benefits of SCS:**
  - States with SCS receive funding from centrally sponsored schemes in a more favorable ratio of 90:10 (Centre), compared to general category states. For Non-Special Category Status, the Normal Central Assistance was calculated as 30% grant and 70% loan.
  - They are provided Special Plan Assistance for projects of special importance to the state.
  - Unspent funds do not lapse at the end of the financial year.
  - They also enjoy other benefits such as tax concessions.

Why Bihar is Demanding SCS?

- Bihar is demanding SCS due to its low per capita net state domestic product and high poverty rates.
- Its per capita income is among the lowest in the country, and a significant portion of its population is multidimensionally poor according to the National Family Health Survey 5.

Why Andhra Pradesh is Demanding SCS:

- Andhra Pradesh is seeking SCS primarily because of the revenue loss it experienced after the 2014 bifurcation of the state, which led to the formation of Telangana.

THE DEMAND FOR 'BHIL PRADESH'

Context

The demand for 'Bhil Pradesh', the idea of creating a new state for the **Bhil tribal community** from parts of Gujarat and three nearby states, has reared its head once again.

Who are the Bhils?

- The Bhils are one of **India's oldest and second-largest tribal groups**, known for their expertise in archery.
- The name "Bhil" likely originated from a **Dravidian word** meaning bow and arrow. The community is also known as the "Dhanush Purush of India" for having an excellent knowledge of Dhanush (
- They predominantly reside in states like **Rajasthan, Gujarat, Madhya Pradesh, and Maharashtra**, with some migrating for job opportunities.

What is Bhil Pradesh?

- Bhil Pradesh is a proposed state aimed at addressing the socio-economic and cultural needs of the Bhil tribal community.
- It would include areas with significant Bhil populations across **Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra.**
- The Bhils are demanding to carve out a separate state based on Article 244 (1) of the Constitution of India.

Why is it demanded?

- Historically, the Bhils have faced marginalization and socio-economic challenges. Despite their rich cultural heritage, they often feel neglected in the development plans of the states they inhabit.
- The demand for Bhil Pradesh stems from the desire to have more focused attention on their needs and development.
- This demand was first raised by **Govind Guru**, a **Bhil social reformer** and spiritual leader, after the tragic event of the **Mangarh massacre** in 1913.
- The government has implemented various measures like the Tribal Sub-Plan, Forest Rights Act, and reservation policies to address tribal issues, but the Bhils still feel the need for a separate state to ensure their voices are heard and their unique challenges are adequately addressed.

Government Initiatives:

- Along with reservation policies in education and employment, the Government of India has introduced several schemes and policies to uplift tribal communities, including the Bhils. These include the:
  - Tribal Sub-Plan
  - Forest Rights Act
  - NREGA
  - ICDS
  - Mid-Day Meal Scheme
  - Panchayat Extension to Scheduled Areas (PESA) Act, 1996 (allows and ensures tribal self-rule for people living in scheduled areas).
- **Constitutional Measures:** Protection of tribal interests through the **Fifth Schedule under Article 244(1) of the Constitution.**

FIRST PAST THE POST SYSTEM (FPTP) VS PROPORTIONAL REPRESENTATION (PR)

Context

In the recent Lok Sabha Elections, the NDA emerged as the leading alliance, forming the government with a majority of seats. However, the Opposition bloc also had a significant presence in the Parliament. Despite their collective vote share, other regional parties and independents didn't win many seats.

What is FPTP?

- **First Past the Post System (FPTP)** is a voting system used in India for Lok Sabha and Legislative Assembly elections.
- It is also known as the simple majority system.
- In this system, the candidate with the most votes in a constituency wins, regardless of whether they have a majority.
- **Advantages of FPTP:**
  - Simple and feasible, suitable for a large country like India.
  - Provides stability to the government as the winning party/coalition can have a majority in the legislature without winning a majority of votes.
- **Issues with FPTP:**
  - May lead to over or **under-representation of political parties** compared to their vote share.
  - In some cases, a party with a minority of votes can still win a majority of seats.

Alternatives to FPTP:

- Proportional Representation (PR) system ensures representation of parties based on their vote share.
- **Mixed Member Proportional Representation (MMPR)** combines FPTP with proportional representation, providing stability and proportionate representation.
- In the commonly used **'party list PR' system**, voters vote for a political party, not specific candidates. Parties are then allocated seats in legislative bodies based on their overall vote share. There's usually a minimum threshold (around 3-5% of the vote) for a party to qualify for seats.
- **Implementation in India:** If implemented in India, PR would ideally operate at each State/Union Territory level due to the federal nature of the country.
- **International Practices:** Some countries like Germany and New Zealand use MMPR, ensuring both stability and proportionate representation.

NOTA VOTES

Context:

The percentage of votes recorded under NOTA (None of the Above) dipped nationally in the 2024 Lok Sabha elections compared to 2019, while Northeastern India exhibited a different trend.

Key-highlights

- The overall percentage of NOTA votes in India in 2024 was 0.99%, down from 1.06% in 2019.
- In the Northeast, the NOTA votes increased from an average of 0.71% in 2019 to 0.81% in 2024.
- Assam, a state in the Northeast, recorded the highest number of NOTA votes in three constituencies won by Bharatiya Janata Party (BJP) candidates: Dibrugarh (32,255), Kaziranga (24,431), and Darrang-Udalguri (23,204).

Reason behind the Situation

- **Discontent with Candidates:** The increase in NOTA votes in the Northeast indicates voter dissatisfaction with the available candidates. Frequent party-switching by MLAs in the region has led to a lack of trust.
- **Perceived Inefficacy:** Voters may perceive their elected leaders as ineffective in fulfilling development promises, prompting a preference for NOTA as a form of protest.

Impact of NOTA

- **Signal to Political Parties:** A higher NOTA count serves as a signal to political parties about the electorate's dissatisfaction, compelling them to field better candidates.
- **Political Accountability:** It promotes accountability as parties are forced to introspect and address the reasons behind voter discontent.

Required Measures

- **Scrutiny and Transparency:** Political parties need to adopt a more rigorous and transparent candidate selection process to ensure that they field candidates with integrity and capability.
- **Voter Engagement:** Increased engagement with voters to understand their grievances and expectations can help in selecting candidates who align more closely with public sentiment.

Electoral Reforms:

- **Strengthening NOTA:** To make NOTA more impactful, electoral reforms could include provisions that mandate re-elections or other actions if a significant percentage of votes are cast for NOTA.
- **Awareness Campaigns:** Conducting awareness campaigns about the purpose and power of NOTA can encourage more informed voting and participation in the democratic process.
- **Global examples**: There are more than 12 countries where the voters have the option for NOTA. Besides India, it exists in countries like France, Sweden, Belgium Greece, Belarus, Spain, Bangladesh, Brazil, Colombia, Chile, and Ukraine. A few states in America also allow NOTA votes. The state of Texas in the US has had the provision since 1975. However, the provision has faced opposition there.

FACT BOX

Right to Reject

- The **'right to Reject'** was first proposed by the **Law Commission in its 170th Report in 1999.**
- Similarly, the Election Commission endorsed 'Right to Reject', first in 2001, under Mr. James Lyngdoh (the then CEC), and then in 2004 under Mr. TS Krishnamurthy (the then CEC), in its **Proposed Electoral Reforms.**
- Likewise, **'Background Paper on Electoral Reforms'**, prepared by the Ministry of Law in 2010, proposed that if a certain percentage of the vote is negative, then the election result should be nullified and a new election should be held.
- **SC on 'right to reject':** If the right to vote is a statutory right, then the right to reject a candidate is a fundamental right of speech and expression under the Constitution.

What is NOTA?

- NOTA, or "None of the Above", is the option that enables the voter to officially register a vote of rejection for all candidates who are contesting.
- If a voter chooses to press NOTA it indicates that the voter has not chosen to vote for any of the party.
- The main objective of the 'NOTA' option is to enable electors who do not wish to vote for any of the candidates to exercise their right to reject without violation of the secrecy of their decision.
- The voter must be eligible to register a vote of rejection if they feel that the contesting candidates do not deserve to be voted for.
- The **Right to vote** granted to all citizens must allow the vote of disapproval.

Mains Practice Question

Q: "The rise in NOTA votes in certain regions indicates a deeper discontent with the political choices available to the electorate." Discuss

UGC POLICY SHIFT FOR HIGHER EDUCATION

Context

The University Grants Commission (UGC) has made a big change in policy: **now, colleges can admit students twice a year, starting next year**. This move brings Indian universities in line with global norms, which could lead to better connections with other countries and more student exchanges. To achieve the goals of **Vision 2047**, India needs to start with strong short-term plans right away.

Current State of India's Higher Education System:

- **Student Population**: India has 25% of the world's students.
- **Institution Numbers**: With over 58,000 higher education institutions, India has the world's second-largest higher education system. In 2021-22 alone, nearly 2,400 new institutions were added.
- **Enrollment:** There's been a 4.5% increase in student enrollment compared to the previous year, totaling 4.33 crores.
- **Gender Enrollment**: The Gross Enrollment Ratio (GER) for females has been higher than males since 2018-19, thanks to various government schemes empowering women. The National Education Policy (NEP) 2020 aims to raise the GER to 50% by 2035, a 40% increase from current levels.
- **Teacher Ratio:** The pupil-teacher ratio (PTR) in universities and colleges remains at 24:1.
- **National Education Policy (NEP) 2020:** The government launched NEP 2020 to address various educational challenges. However, its implementation faces hurdles due to existing complexities and institutional hesitancy.

Issues in Education System and Remedial Measures:

Limited Funds and Redistribution:

- **Issue:** Lack of adequate resources like manpower, infrastructure, and funds hampers educational quality and accessibility.
- **Remedy:** Government needs to allocate sufficient resources at both provincial and national levels to address educational needs. Redistribution of resources to ensure equitable access to education is vital.

Autonomy for Education Institutions:

- **Issue:** Excessive administrative control restricts the autonomy of educational institutions, hindering innovation and quality.
- **Remedy:** High-performing institutions should be granted autonomy in operations, including syllabus revision and reforms. Collaboration between state and central governments is crucial for implementing measures to reduce control over top-ranked institutions.

Expensive Higher Education:

- **Issue:** Privatization and profit-driven models have led to high costs of professional and technical education, limiting accessibility.
- **Remedy:** Government can establish entities offering education loans at lower interest rates or with longer repayment tenures. Private institutions should offer more scholarships to economically and socially weaker sections to enhance affordability.

Obsolete Curriculum:

- **Issue:** Current curriculum focuses on general education, failing to prepare students adequately for real-life challenges.
- **Remedy:** Align curriculum with international standards, introduce multidisciplinary institutions with flexible credit systems, and allow students to choose courses freely.

Archaic Academic Structure:

- **Issue:** Assessment methods and evaluation criteria are outdated and not in line with international standards.
- **Remedy:** Embrace continuous evaluation and formative assessment models, prioritize practical and vocational courses, and streamline education areas for better assessment.

Inferior Primary Education Infrastructure:

- **Issue**: Inadequate infrastructure leads to high dropout rates, wasting potential human resources and causing financial strain.
- **Remedy:** Focus on skill development and vocational education at the middle school level, preparing students for the job market. Early vocation-based courses can instill the importance of education in families and alleviate financial burdens.

Government Initiatives for Higher Education in India:

- **National Education Policy (NEP) 2020**: Launched in 2020, NEP aims to revamp the education system, focusing on holistic development, flexibility, and multidisciplinary learning.
- **Swayam**: An online platform offering free courses from school to postgraduate level, launched to promote digital learning and increase access to quality education.
- **SWAYAM PRABHA**: A group of 32 DTH channels transmitting high-quality educational content, aimed at reaching remote areas and disadvantaged groups.
- **Education Quality Upgradation and Inclusion Program (EQUIP):** Aims to enhance access, inclusion, quality, excellence, and employability in higher education.
- **Technical Education Quality Improvement Programme (TEQIP):** Aims to improve the quality

of technical education through long-term projects implemented in phases.

- **Institute of Eminence (IoE) Scheme**: Empowers higher educational institutions to become world-class teaching and research institutions.
- **Rashtriya Uchchatar Shiksha Abhiyan (RUSA)**: A Centrally Sponsored Scheme aimed at providing strategic funding to eligible state higher educational institutions.
- **Prime Minister's Research Fellows (PMRF) Scheme**: Designed to improve research quality in higher educational institutions by attracting top talent into research.
- **Scheme for Promotion of Academic and Research Collaboration (SPARC):** Facilitates academic and research collaborations between Indian institutions and top institutions worldwide.
- **e-PG Pathshala:** Provides high-quality, interactive e-content across various subjects under the National Mission on Education through ICT (NME-ICT).

Surveys and Rankings:

- National Institutional Ranking Framework (NIRF)
- All India Survey on Higher Education (AISHE)

Vocational Education:

- National Apprenticeship Training Scheme (NATS)
- Scheme for Higher Education Youth in Apprenticeship and Skills (SHREYAS)

FACT BOX

Regulation of Higher Education

- The **42nd Amendment to the Constitution in 1976** shifted Education to the Concurrent List.
- The **University Grants Commission** (UGC) regulates higher education in India, **All India Council for Technical Education, Medical Council of India, Bar Council of India (BCI),** and other statutory bodies specific to different fields of study.
- These regulatory bodies set standards, provide accreditation and ensure quality in higher education.

India Rankings 2023 of higher education institutions

- On the basis of Field:
  - **The Indian Institute of Technology (IIT)-Madras** in Chennai remained the best educational institution in overall rankings for the fifth consecutive term.
  - **The Indian Institute of Science (IISc), Bengaluru** ranked as the best university in the country for eight years in a row.
  - **Miranda House**, Delhi is ranked the best college.
  - **Indian Institute of Management (IIM), Ahmedabad** is the top management institute.
  - **National Institute of Pharmaceutical Education and Research (NIPER),** Hyderabad is ranked number one for pharmaceutical studies.
  - **The All India Institute of Medical Sciences (AIIMS),** Delhi is ranked the best medical college, and Saveetha Institute of Medical and Technical Sciences, Chennai is the top dental college.
  - **National Law School of India University, Bengaluru** is ranked the best law college in the country.
    - **IIT-Madras** has also been ranked the best engineering college for the eighth consecutive year (from 2016 to 2023).
  - On the basis of Research Capability:
    - **IISc Bengaluru** stood first in 'Research Institutions'
    - **IISc** is followed by the Jawaharlal Nehru University (JNU) and Jamia Millia Islamia University as the second and third best universities, respectively.
  - In Agriculture sector:
    - **Indian Agricultural Research Institute, New Delhi** remained at the top in 'Agriculture and Allied Sectors'.
    - **IIT-Kanpur** topped the 'Innovation' category.
    - **IISc, Bengaluru and IIT-Delhi** are ranked the second and third best institutes in the overall category.
    - **Hindu College, Delhi and Presidency College, Chennai** are ranked the second and third best colleges, respectively.

FINANCIAL HARDSHIP IN TB TREATMENT PROGRAMME

Context

A recent survey sheds light on the significant financial challenges faced by TB patients in India. The survey, encompassing 1,482 TB patients across four states, reveals alarming levels of **economic hardship** resulting from delays in diagnosis and the long course of TB treatment.

Key-findings of the Study

- **Financial Strain:** TB patients experience the severe financial strain, with delays in diagnosis and loss of income during treatment contributing to substantial economic burdens.
- **Catastrophic Costs:** Between 30% to 61% of study participants faced catastrophic costs, defined as **out-of-pocket expenses** exceeding 20% of pre-TB annual household income. These costs pose a significant threat to the financial stability of TB-affected households.

- **Pre-Diagnosis Delay:** Over half of the participants faced catastrophic costs even before commencing TB treatment due to delays in diagnosis. The average delay of seven to nine weeks from symptom onset to treatment initiation significantly contributed to financial burdens.
- **Recommendations:** The survey recommends
  - intensifying private sector engagement
  - improving rapid diagnosis
  - implementing community awareness campaigns
  - expanding health insurance coverage for pre-treatment expenses
  - safeguarding TB patients from income loss

How 'cost' is a determining factor in TB treatment?

- TB treatment in India often imposes a significant financial burden on patients and their families due to various factors, including medical expenses, loss of income, and associated costs.
- **Patients face a range of other recurring costs including the costs of accommodation, transport to healthcare facilities and consultations, multivitamins, and loss of income due to missed work** opportunities.

Other Challenges:

- **Delays in Diagnosis:** Widespread delays in diagnosing TB persist due to various factors, including delayed testing and reliance on older diagnostic methods like smear microscopy.
- **Diagnostic Gaps in Rural Areas:** The availability of tools to diagnose extra-pulmonary TB, especially in rural areas, remains a significant gap in healthcare infrastructure.
- **Barriers to Treatment Adherence:** Poverty, lack of awareness about TB, and shortages of medication contribute to patients discontinuing treatment prematurely.

Case Study

- In 2022, Tamil Nadu launched **India's first special TB care model**, known as the **Tamil Nadu-Kasanoi Erappila Thittam (TB death-free project)**.
- This initiative aimed to reduce deaths among TB patients aged 15 and above by 30%.
- The program assessed newly diagnosed TB patients to identify those with severe malnutrition or respiratory issues, referring them for hospitalization when needed.
- One in four patients assessed were found to be severely undernourished.
- Scaling up such initiatives could help prevent TB-related deaths.

What measures are required?

- The findings of the survey underscore the urgent need for both policy and public interventions to alleviate the economic burden of TB on patients and the nation.
- Addressing delays in diagnosis, ensuring uninterrupted livelihood during treatment, and expanding health insurance coverage are essential steps towards mitigating catastrophic costs for TB-affected households.
- Furthermore, enhancing private sector engagement and community awareness campaigns can facilitate timely diagnosis and treatment initiation, reducing financial hardships associated with TB.

FACT BOX

About Tuberculosis (TB)

- **Causes:** TB is caused by a bacterium known as ***Mycobacterium tuberculosis***, which is a member of the ***Mycobacteriaceae family*** comprising approximately 200 species.
- **Types of TB:**
  - Pulmonary TB (affecting lungs)
  - Extra-pulmonary TB (other organs outside lungs)
- **Treatability and Curability**: TB is a treatable and curable disease, especially when diagnosed early and treated promptly with appropriate medications.
- **Mode of Transmission**: TB spreads from person to person through the air, particularly when individuals with lung TB cough, sneeze, or spit.
- **TB Mukt Bharat (TB-free India):** India is committed to ending the TB epidemic by 2025, five years ahead of SDG target timeline. (***India accounts for around 27% of TB cases worldwide – which is the world's highest country-wise TB burden***)
- **National and international initiatives:**
  - National TB Elimination Programme (NTEP)
  - National Strategic Plan (NSP) for Tuberculosis Elimination (2017-2025)
  - The Nikshay Ecosystem (National TB information system)
  - Nikshay Poshan Yojana (NPY- financial support)
  - TB Harega Desh Jeetega Campaign
  - TB Free India Campaign
  - Tribal TB Initiative

CASHLESS HEALTH CLAIM SETTLEMENT

Context

Starting August 1, 2024, insurance companies in India **are mandated to settle health insurance claims through cashless methods.** This move by the **Insurance**

Regulatory and Development Authority of India (IRDAI) aims to streamline and expedite the process of hospital bill settlement for policyholders.

Key-highlights of IRDAI's decision:

- **Cashless Settlement:** Insurance companies must adopt cashless settlement of health insurance claims, ensuring smoother and faster processing of claims for policyholders.
- **Procedures for Insurers:** Insurers must establish dedicated Help Desks at hospitals to assist with cashless requests and provide pre-authorization through digital means.
- **Timely Settlement**: Insurers are encouraged to achieve 100% cashless claim settlement within a specified timeframe, minimizing the need for reimbursement except in exceptional circumstances.
- **Claim Processing Timeframe**: Insurers are required to decide on cashless authorization requests promptly, within one hour of receipt, and grant final authorization within three hours of discharge authorization from the hospital.
- **Compensation for Delays**: In case of delays beyond the stipulated timeframe, insurers are liable to cover any additional charges imposed by the hospital from their shareholder's fund.
- **Dealing with Mortal Remains**: In unfortunate instances of the policyholder's death during treatment, insurers must promptly process the claim and facilitate the release of the mortal remains from the hospital.

What are the likely impacts?

- **Positive Impact:** The move towards cashless settlement of health insurance claims is expected to alleviate the burden on policyholders, making the process more efficient and less stressful, especially during times of illness or emergencies.
- **Reducing Challenges**: With a significant percentage of policyholders facing difficulties in processing health insurance claims, the new mandate addresses concerns raised in surveys regarding claim rejection and time-consuming processes.
- Policyholder Rights: IRDAI emphasizes policyholders' rights, including the option to port policies between insurers and ensuring seamless transfer of underwriting details and claim history.
- **Regulatory Oversight:** The requirement for insurers to seek approval before repudiating claims and the establishment of clear procedures for claim processing aim to enhance transparency and accountability in the insurance sector.
- **Improving Accessibility**: By eliminating the need for policyholders to submit documents directly, the process becomes more accessible and convenient for individuals seeking health insurance benefits.

FACT BOX

Indian Insurance market

- At present, India is the 9th largest Life Insurance Market.
- The Indian Insurance market is expected to reach USD 200 bn by 2027.
- Insurance density in India has increased from USD 11.1 in 2001 to USD 91 in 2021 (Life insurance- USD 69, Non-life insurance – USD 22)
- Insurance penetration in India has been steadily increasing (from 2.7% in 2000 to 4.2% in 2021)

Important Government Interventions

- **Insurance for all**: To realise the dream of 'Insurance for all' by 2047, insurance regulators are taking many progressive steps like **BIMA SUGAM, BIMA VAHAK and BIMA VISTAAR** amongst others.
- **Digital Personal Data Protection (DPDP) Act, 2023** aims to help insurance providers to enhance data protection in the insurance sector.
- **Ayushman Bharat PM-JAY** is the largest health assurance scheme in the world and is funded by the Government.
- **Financial inclusion programmes** like **Pradhan Mantri Jan Dhan Yojana, Jeevan Suraksha Bandhan Yojana and Pradhan Mantri Suraksha Bima Yojana, Atal Pension Yojana** have played a pivotal role in bringing underpenetrated segment under the umbrella of insurance.

Other recent initiatives taken by IRDAI

- **Age Ceiling:** IRDAI has lifted the age ceiling of 65 years for buying a medical insurance policy, a move that widens the insurance net and provides huge relief to senior Indians.
- **Time Limit for Approving Cashless Claims:** IRDAI has mandated that insurers must grant final authorisation within three hours of receiving the discharge request from the hospital. If there is any delay beyond three hours, the additional amount charged by the hospital will be borne by the insurer from the shareholder's fund.

BOOST TO GREEN AMMONIA PRODUCTION

Context

India has taken a crucial step towards demand creation of Green Hydrogen and its derivatives in the country. **Solar Energy Corporation of India (SECI)** has issued **Request for Selection (RfS) for Selection of Green Ammonia Producers** for the production of **Green Ammonia in India** under **Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme.**

Implications for India's Energy Sector:

- **Environmental benefits:** The production of Green Ammonia holds immense promise for India's energy sector. By leveraging renewable energy sources for ammonia production, the country can significantly reduce its carbon footprint and mitigate environmental degradation.
- **Energy security and development:** Furthermore, the adoption of Green Hydrogen technologies not only enhances energy security but also fosters economic growth through job creation and technology development.
- **Emergence as leader:** By prioritizing the production of Green Ammonia and other clean energy derivatives, India is poised to emerge as a global leader in the clean energy transition.
- **Self-reliance:** With concerted efforts and strategic investments, the nation is well-positioned to achieve its goal of Aatmanirbhar Bharat (self-reliant India) while spearheading the global fight against climate change.

India's position in Ammonia market

- India is positioning itself as a key player in the renewable ammonia market.
- India's ambition to produce 5 million metric tons (mt) of renewable hydrogen by 2030 and secure a 10 per cent share of the global trade by that time underscores its commitment to renewable energy.
- **Challenges:** While India boasts nearly 100 renewable or low-carbon hydrogen projects with a combined capacity of 7.85 million mt, the challenge lies in finding a market for its renewable ammonia.
- **Advantages for India:** Despite these challenges, India's renewable hydrogen/ammonia is expected to remain competitive globally due to its cost advantages.
  - **National Green Hydrogen Mission 2023** waives interstate transmission charges for renewable energy and offers substantial subsidies, plays a pivotal role in driving down production costs.
  - **India's renewable energy sector** benefits from various incentives, including cheap power, subsidies, low-cost loans, and readily available land, provided by federal and state governments.
  - India enjoys a significant transport cost advantage over the **Middle East in supplying to North Asia**, further enhancing its competitiveness.

What is the 'SIGHT Programme'?

- SIGHT Programme is a subcomponent of National Green Hydrogen Mission under Ministry of New & Renewable Energy (MNRE)
- This program aims to propel India towards self-reliance in clean energy through the production of Green Hydrogen and its derivatives.
- **Implemented by: Solar Energy Corporation of India (SECI)**
- Under the SIGHT Programme, MNRE has already allocated 4.12 lakh Metric Tonnes (MT)/annum of Green Hydrogen production capacity and 1.5 GW/ annum of Electrolyzer manufacturing capacity.

FACT BOX

Green Hydrogen

- **Green Hydrogen** is produced through the **electrolysis of water** using **renewable energy** sources such as **solar or wind power.**
- Unlike conventional hydrogen production methods that rely on fossil fuels, Green Hydrogen emits zero greenhouse gases, making it an environmentally sustainable alternative.

Green Ammonia

- Ammonia is a compound comprised of nitrogen and hydrogen, commonly used in fertilizer production.
- **Green Ammonia** is produced using Green Hydrogen instead of hydrogen derived from fossil fuels, thus significantly reducing carbon emissions.

National Green Hydrogen Mission:

- **Launched in:** 2023
- **Implemented by:** Ministry of New & Renewable Energy (MNRE)
- National Green Hydrogen Mission is a visionary initiative with a significant financial outlay.
- With the objective of fostering self-reliance and driving clean energy transition, this mission aims to reduce India's dependence on fossil fuel imports while positioning the country as a global leader in Green Hydrogen technology. By promoting innovation and investment in renewable energy, the mission sets the stage for a greener, more sustainable future.

UNDERSTANDING THE INDIAN OCEAN

Context

On **World Oceans Day (June 8),** the focus often shifts to the Indian Ocean, one of the three major oceans, known for its rapid **warming and significant influence on global climate patterns**. This brief explores the unique characteristics of the Indian Ocean, its impact on weather phenomena, and its role in shaping human evolution.

Critical Importance of the Indian Ocean:

- The Indian Ocean plays a vital role in the earth's response to increasing greenhouse gases and global warming, making it essential to understand its dynamics.

- With its dramatic monsoon winds and rainfall patterns, the Indian Ocean sustains over a billion people by providing **moisture for agriculture, fisheries, and energy production**.
- **Home to the Deadliest Storms:**
  - The warm summer months in the Indian Ocean are characterized by the rapid warming of the **Arabian Sea and the Bay of Bengal**, leading to pre-monsoon cyclones.
  - While the **North Indian Ocean** doesn't generate as many cyclones as other oceans, their rapid intensification poses significant threats to coastal regions, making cyclones the deadliest storms by mortality.
- **Unique Configuration and Circulation Patterns:** Unlike other oceans, the Indian Ocean is bounded by the Asian landmass in the north and connected to the Pacific and Southern Oceans through oceanic tunnels.
  - These tunnels facilitate the **exchange of water masses, heat, and nutrients, influencing the ocean's circulation, temperature, and salinity.**

Impact of Global Warming:

- The Indian Ocean's warming rate is among the fastest globally, leading to heat waves, extreme rainfall, and marine heatwaves with detrimental effects on ecosystems and coastal communities.
- Changes in wind circulation patterns due to ocean warming also affect the heat absorption capacity of the Pacific Ocean, thereby influencing global climate dynamics.

FACT BOX

Indian Ocean

- The Indian Ocean spans a wide area, extending from the **Strait of Malacca** and the western coast of Australia in the East to the **Mozambique Channel** in the West. It includes the **Persian Gulf and the Arabian Sea** in the North, reaching down to the **southern Indian Ocean.**
- **Geographical Extent:** The Indian Ocean is the third-largest ocean in the world, covering an area of approximately 70.56 million square kilometers (27.24 million square miles).
- **Monsoon Influence:** The Indian Ocean is characterized by the seasonal reversal of winds known as the **Indian Ocean Dipole (IOD),** which influences weather patterns in the region, particularly the Asian monsoon.
- Choke Points:
  - **Malacca strait** between Malaysia, Singapore and the Indonesian island of Sumatra, which connects Southeast Asia and the western Pacific to the Indian Ocean.
  - **Strait of Hormuz:** the only sea passage connecting the Persian Gulf to the wider Indian Ocean.
  - **Bab-el-Mandeb strait:** flows between Eritrea and Djibouti in the Horn of Africa and Yemen on the Arabian Peninsula, connecting the Red Sea to the Indian Ocean.
  - **Mozambique Channel** between Madagascar and Mozambique: a key trading route for goods transiting the Cape of Good Hope to the Middle East and Asia.

ROLE OF HEAT

Context:

Heat, a **fundamental force** present since the universe's inception, has profoundly impacted human history and modern technologies. From the steam-powered engines of the **Industrial Revolution** to contemporary concerns about global warming, heat's significance cannot be overstated.

What is Heat?

- Heat is a **fundamental aspect** of the universe, existing since its birth and intertwined with its eventual demise.
- At its core, heat is the average kinetic energy of particles within an object, influencing temperature changes when bodies at different temperatures interact.
- **Applications of Heat:**
  - Heat plays a pivotal role in various technologies, from **steam-powered engines** of the **Industrial Revolution** to modern-day **thermal and nuclear power plants and air conditioning systems.**
  - Heat can be converted into mechanical energy, driving engines like **internal combustion engines (ICEs) and steam engine**s, or used to generate electricity in thermal power plants.
  - Heat's influence extends beyond technology, impacting areas like **metallurgy, chemical reactions, and even meteorology.**
  - **Heating, ventilation, and air-conditioning (HVAC) systems** rely on heat transfer principles to regulate indoor temperatures, with increasing calls for equitable access to cooling in warmer regions.

What is heat's relationship with work?

- Heat and work share the same physical dimensions, but not all heat can be converted into work efficiently due to energy losses.
- The concept of entropy is closely related to the loss of "useful heat," where energy is dissipated in processes like friction, reducing the system's ability to perform work effectively.

Implications of Heat in Climate Change:

- **Mitigation Efforts:** Researchers globally are working on alternative methods to produce heat energy without fossil fuel combustion, aiming to mitigate climate change. Efforts also focus on reducing emissions from existing technologies.

- **Adaptation to Climate Change:** In regions like India, heat waves are a significant concern. During heat waves, health and preventive measures become crucial. Long-term factors like living conditions and access to healthcare, as well as short-term strategies to mitigate heat accumulation, are essential for coping.
- **Global Warming and Heat Dynamics:** Global warming primarily stems from heat-related issues. Solar energy absorbed by the Earth is partially reflected, with the rest warming the atmosphere and ground. At night, the absorbed energy is released as **infrared radiation**. Greenhouse gases trap this radiation, converting it to **kinetic energy** and warming the atmosphere, hindering the **Earth's cooling process.**

SC DEVELOP METHOD TO CLEANSE GROUNDWATER CONTAMINATION

Context

In a breakthrough effort to tackle the pressing issue of arsenic contamination in groundwater, researchers at the **Indian Institute of Science (IISc)** have devised a pioneering three-step process. This method not only effectively removes heavy metal pollutants like arsenic but also ensures their safe disposal, preventing them from re-entering the environment.

Key-highlights

- Scientists have developed a patent-pending technique aimed at addressing the critical aspect of **sustainable waste management** in **water purification**.
- The three-step method effectively eliminates heavy metal contaminants like arsenic from groundwater, ensuring the production of safe drinking water.
- The innovative process not only **eliminates arsenic** efficiently but also ensures environmentally friendly disposal of the removed pollutants.
- **The Problem: Arsenic and fluoride contamination** in groundwater is a significant concern across India, with numerous districts exceeding permissible limits set by regulatory bodies like the **Bureau of Indian Standards and the World Health Organization.**
  - These contaminants pose severe health risks to both humans and animals.
  - Traditional methods of water purification often neglect the crucial step of disposing of removed contaminants safely, leading to potential recontamination.

Factors contributing to contamination:

- **Naturally Occurring Contaminants:** Fluoride, arsenic, nitrate, iron, and heavy metals naturally exist in certain geological formations, affecting water quality.
- **Industrial Activities:** Untreated or poorly treated industrial effluents discharged into water bodies contaminate surface and groundwater sources.
- **Agricultural Activities:** Excessive use of pesticides, fertilizers, and agrochemicals in agriculture leads to water contamination over time.
- **Sanitation Practices:** Inadequate sanitation facilities and open defecation, especially in rural areas, contribute to water source contamination.
- **Geogenic Processes:** Geogenic processes, such as those causing uranium contamination, can occur naturally, exacerbated by groundwater overexploitation.
- **Improper Waste Disposal:** Improper disposal of biowaste contaminates groundwater and surface water, increasing the risk of waterborne diseases.

Impact of Groundwater Contamination

- **Public Health Risks:** Consumption of contaminated groundwater can lead to various health issues, including gastrointestinal disorders, neurological problems, skeletal deformities, and even cancer.
- **Common Contaminants and Health Impacts:**
  - **Arsenic:** Chronic exposure can lead to black foot disease and poses significant health risks.
  - **Fluoride:** High fluoride intake causes neuromuscular disorders, dental deformities, and skeletal fluorosis.
  - **Nitrates:** Excessive nitrate levels in water can result in methemoglobinemia and blue baby syndrome.
  - **Uranium:** Elevated uranium levels in drinking water can cause kidney toxicity.
  - **Radon:** Presence of radioactive radon in groundwater poses risks of lung cancer.
- **Economic Burden:** Treating water-related illnesses imposes significant healthcare costs on individuals and communities. Productivity losses due to sickness also impact economic development.
- **Environmental Degradation**: Contaminated groundwater affects ecosystems, harming aquatic life and disrupting biodiversity. It can also degrade soil quality and impair agricultural productivity.
- **Social Inequities**: Communities reliant on contaminated groundwater often face socio-economic challenges, including limited access to safe drinking water, reduced educational opportunities, and compromised livelihoods.
- **Long-Term Consequences**: Groundwater contamination can persist for decades or even centuries, posing ongoing risks to human health and the environment. Remediation efforts may require substantial time, resources, and technological interventions.

FACT BOX

Water Governance

- Water being a **State subject**, initiatives on water management, including its quality is primarily **States's responsibility.**
- The **Central Pollution Control Board (CPCB),** along with **State Pollution Control Boards/Pollution Control Committees (SPCBs/PCCs)**, enforces laws like the **Water (Prevention & Control) Act, 1974**, and the **Environment (Protection) Act, 1986** to manage water pollution.

Government Initiatives related to water management and conservation:

- Atal Bhujal Yojana
- Jal Shakti Abhiyan
- Aquifer Mapping and Management Programme (NAQUIM)
- Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)
- Water (Prevention and Control of Pollution) Amendment Bill, 2024

UPSC PYQ (PRELIMS QUESTION)

Q: Which of the following can be found as pollutants in the drinking water in some parts of India? (2013)

1. Arsenic
2. Sorbitol
3. Fluoride
4. Formaldehyde
5. Uranium

Select the correct answer using the codes given below.

(a) 1 and 3 only (b) 2, 4 and 5 only
(c) 1, 3 and 5 only (d) 1, 2, 3, 4 and 5

Solution: (c)

Mains Question

Q: The effective management of land and water resources will drastically reduce the human miseries. Explain. [2016]

WORLD BANK'S GLOBAL ECONOMIC PROSPECTS

Context:

The World Bank recently released its June edition of the **'Global Economic Prospects' report**, offering insights into the current and future state of the global economy. Among its findings, India stands out as a key player, retaining its position as the "**fastest-growing major economy" globally**, albeit with a projected slowdown in growth.

Key Findings:

- India's Growth Trajectory:
  - India is expected to maintain its status as the fastest-growing major economy, with a forecasted GDP growth rate of **6.6% for the fiscal year 2024-25.**
  - This growth, while slightly slower, is still robust, primarily driven by **strong public and private investment** despite a moderation in investment growth.
  - In the previous fiscal year (2023-24), India's GDP growth exceeded expectations, reaching 7.8%, contributing significantly to regional growth in South Asia.
- **South Asian Region:**
  - While India's growth is expected to moderate slightly, it will still play a crucial role in sustaining regional growth, with other economies like **Bangladesh, Pakistan, and Sri Lanka** anticipated to maintain or strengthen their economic activities.
  - **Fiscal and Trade Balances:**
    - Fiscal health in South Asian countries is gradually improving, with India's fiscal deficit projected to decrease relative to GDP due to increased revenues.
    - Trade deficits are narrowing, particularly in India, contributing to overall economic stability in the South Asian region.

Global Economic Outlook:

- The global economy is showing **signs of stabilization** in 2024 after a tumultuous period, with GDP growth projected at 2.6% for the year, a slight increase from earlier estimates.
- However, this stabilization remains weak compared to historical standards, with global growth expected to hover around 2.7% in the following years, driven by modest growth in trade and investment.
- **Global Inflation Projection:** Global inflation is expected to moderate but at a slower pace than previously anticipated, with central banks likely to remain cautious about easing monetary policy.
- **Risks to Global Growth:** Despite improved near-term prospects, the global outlook remains subdued, with geopolitical tensions, trade fragmentation, higher interest rates, and climate-related disasters posing significant risks.

Factors Driving India's Economic Growth:

- **Demographic Dividend:** India's large and youthful population serves as a significant driver of economic growth, providing a vast workforce and consumer base.
- **Infrastructure Development:** Government investments in infrastructure projects, such as roads, railways, and ports, improve connectivity and facilitate economic activities across the country.
  - Bharatmala project for roads and Sagarmala project for ports
- **Industrial and Services Sector Growth:** The industrial and services sectors, including manufacturing, IT services, and finance, have experienced robust growth, contributing significantly to India's GDP.
- **Foreign Direct Investment (FDI):** Liberalization of FDI policies has attracted foreign investment, fostering economic development and technological advancement in various sectors.

- **Urbanization and Urban Development**: Rapid urbanization has led to the growth of cities as hubs of economic activity, driving demand for housing, services, and consumer goods.
- **Innovation and Entrepreneurship:** India's thriving startup ecosystem and emphasis on innovation and entrepreneurship have led to the emergence of new businesses and industries, contributing to economic growth.
- **Policy Reforms**: Structural reforms aimed at simplifying regulations, improving ease of doing business, and promoting investment have bolstered economic growth and competitiveness.
- **Strengthened banking system:** Gross Non-Performing Assets (NPAs) reduced from 9.1% as of March 2019 to 3.2% as of September 2023 with the implementation of the Insolvency and Bankruptcy Code (IBC)
- **Boosting the manufacturing-focused sectors**: Policies like the Production Linked Incentives (PLI) schemes introduced across various sectors (electronics, mobile phones, pharmaceuticals, and food processing).
  - India's manufacturing sector contributes 17% to GDP and employs 27.3 million workers.
  - Government aims to raise manufacturing's share to 25% by 2025.
- **Sector-specific Initiatives:** The government launched initiatives and schemes targeting specific sectors, such as:
  - Make in India, Digital India, and Skill India
- **Emergence of gig workers,** currently constituting 1.5 percent of the workforce, is expected to increase their contribution to total employment to 4.1 percent by 2029-30.
- **Social Welfare Programs:** The government implements social welfare programs, such as the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and the National Health Mission (NHM),** to alleviate poverty, improve human capital, and enhance social inclusivity.
- **Important Government Interventions:** Digital India programme, Pradhan Mantri Kaushal Vikas Yojana, Startup India, Production-Linked Incentive in strategic sectors, PM Vishwakarma Yojana

Concerns for India

- **Inflation** has been a persistent concern in India's economy.
- **Income inequality**: Inequality in India has skyrocketed since the early 2000s, with the income and wealth share of the top one per cent of the population rising to 22.6 per cent and 40.1 per cent, respectively, in 2022-23.
- **Infrastructure Bottlenecks**: Inadequate transportation networks, power shortages, and urban congestion, hinder productivity, competitiveness, and sustainable development.
- **Agrarian Distress**: Share of agriculture in India's GDP declined to 15 per cent last fiscal year from 35 per cent in 1990-91
- **Unemployment and Underemployment**: With the massive increase in educational attainment, the unemployment problem is becoming centred around educated youth. (India Employment Report 2024)
  - As per the National Statistical Office's (NSO) Periodic Labour Force Survey (PLFS) report for 2021-22, the unemployment rate was 4.1%
- **Geopolitical Tensions**: Trade disputes, geopolitical conflicts (Russia-Ukraine, Israel-Hamas), and geopolitical shifts, can disrupt global supply chains, trade flows, and investor confidence, affecting India's economic prospects.
- **Climate Change** poses threats to public health, ecological sustainability, and long-term economic growth prospects.

PLI SCHEME

Context

The PLI scheme is expected to attract investments of Rs 3-4 lakh crore in the next four years and generate 2 lakh jobs as large projects in sectors, including **semiconductor and pharmaceutical intermediaries**, are expected to take off.

What is the role of PLI Scheme in Indian Economy?

- Production Linked Incentive scheme (PLI) has become a crucial part of the vision of making India a $ 5 trillion economy. In the post-pandemic scenario, PLI is proving to be a huge catalyst in creating 'AatmaNirbhar Bharat'.
- The scheme currently targets 14 sectors of strategic and economic importance for India's economic growth.
- The 14 sectors are: (i) Mobile Manufacturing and Specified Electronic Components, (ii) Critical Key Starting Materials/Drug Intermediaries & Active Pharmaceutical Ingredients, (iii) Manufacturing of Medical Devices (iv) Automobiles and Auto Components, (v) Pharmaceuticals Drugs, (vi) Specialty Steel, (vii) Telecom & Networking Products, (viii) Electronic/Technology Products, (ix) White Goods (ACs and LEDs), (x) Food Products, (xi) Textile Products: MMF segment and technical textiles, (xii) High efficiency solar PV modules, (xiii) Advanced Chemistry Cell (ACC) Battery, and (xiv) Drones and Drone Components.
- The purpose of the PLI Schemes is to
  - attract investments in key sectors and cutting-edge technology
  - ensure efficiency and bring economies of size and scale in the manufacturing sector
  - make Indian companies and manufacturers globally competitive
- These schemes have the potential of significantly boosting production, employment and economic growth over the next five years or so.

Significance of PLI Scheme for Economy:

It aims to enhance the country's manufacturing capacity, offering various benefits.

- **Stimulating Economic Growth**: It provides financial incentives to manufacturers, encouraging both domestic and foreign investment in critical sectors. This injection of funds is geared towards fostering economic growth and industrial development.
- **Reduced Reliance on Imports**: The scheme aims to reduce India's dependence on imported goods. It results in a more **balanced trade deficit and a stronger Indian rupee.**
- **Promoting Export Competitiveness**: Another objective of the scheme is to boost export competitiveness. By incentivizing production for export-oriented industries, it aims to elevate India's position in global trade and reduce reliance on imports.
- **Job Creation**: Increased local manufacturing under the PLI scheme is anticipated to generate significant employment opportunities. It is estimated to create around 60 lakh new jobs over the next five years, thus contributing to the country's socio-economic development.

UPSC PYQ

Q: Consider, the following statements : (2023)

1. **Statement-I** : India accounts for 3.2% of global export of goods.
2. **Statement-II** : Many local companies and some foreign companies operating in India have taken advantage of India's 'Production-linked Incentive' scheme.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

(c) Statement-I is correct but Statement-II is incorrect

(d) Statement-I is incorrect but Statement-II is correct

Solution: (d)

DOLLAR-BASED SYSTEM WITH NO REAL "ALTERNATIVE"

Context

The stability and dominance of the **United States dollar (USD)** in the global economy have been subjects of much debate and speculation since the **Bretton Woods Conference in 1944**. Despite numerous events (Nixon Shock, the rise of the euro, and China's economic ascent) and predictions of its downfall over the years, the USD continues to reign as the world's primary reserve currency.

What factors contribute to USD's continued dominance?

- **Strong economy**: The U.S. economy's size, depth of capital markets, and trusted financial institutions contribute to the USD's continued dominance.
- **Holding significant portion:** Unlike previous reserve currencies, the USD occupies a unique position in international commerce, accounting for a significant portion of **foreign reserve holdings** and facilitating the majority of **foreign exchange** transactions worldwide.
- **Trusted asset**: Its stability and liquidity make it a trusted asset for countries and consumers globally.
- **No significant alternative:** While emerging technologies and multilateral financial arrangements may test the USD's supremacy, significant alternatives have yet to emerge.

Challenges to Dollar Dominance:

- Despite its resilience, the USD faces challenges from rival currencies and geopolitical tensions.
- Efforts to de-dollarize trade and investment, coupled with technological advancements, pose incremental threats to the USD's hegemony.
- While rivals and partners alike seek to challenge the USD's hegemony, significant barriers, including trust, liquidity, and infrastructure, limit the emergence of viable alternatives. However, evolving geopolitical dynamics and technological innovations may gradually erode the USD's dominance over time.

India's Pursuit of De-dollarisation: Economic Implications

- India, as a BRICS member, is challenging traditional financial systems through de-dollarisation efforts.
- **Shift in Trade Dynamics:** Increased trade in local currencies, like the Indian Rupee, grants India more control over monetary policy and shields it from external shocks.
- **Monetary Policy Autonomy:** Reduced reliance on the U.S. dollar empowers India to set independent monetary policies, enhancing economic stability.
- **Enhanced Trade Relations:** Trade in local currencies fosters stronger economic ties, streamlines transactions, and reduces costs.
- **Strengthened Indian Rupee**: De-dollarisation can lead to a stronger rupee, boosting purchasing power and reducing inflationary pressures.
- **Economic Independence**: By diversifying away from the dollar, India reduces vulnerability to U.S.-led sanctions, enhancing economic independence.

GLOBAL DEBT CRISIS

Context

The world is facing a major debt crisis, hindering progress towards achieving the **Sustainable Development Goals (SDGs)** by 2030. Global debt, including loans taken by households, businesses, and governments, has soared to USD 315 trillion in 2024, three times the global GDP, as per a UN Report.

Key Points:

Report Title: *A world of debt 2024: A growing burden to global prosperity*

- **Unmanageable Debt Levels:** The amount of debt per person would be around USD 39,000 if divided among the world's population. Debt servicing, especially **interest payments,** consumes a significant portion of revenues, limiting funds available for crucial sectors like health and education.
- **Types of Debt:** Household debt is at USD 59.1 trillion, business debt at USD 164.5 trillion, and public debt at USD 91.4 trillion. This level of debt is comparable to historical highs seen during events like the Napoleonic Wars.
- **Changing Aid Dynamics:** Development aid has decreased, with concessional loans replacing aid, adding to developing countries' debt burden. Additionally, support to reduce debt among developing countries has declined significantly.
- In 2023, developing nations paid USD 847 billion in net interest, a 26% increase from 2021. They borrowed internationally at rates two to four times higher than the U.S. and six to 12 times higher than Germany.

What are the impacts?

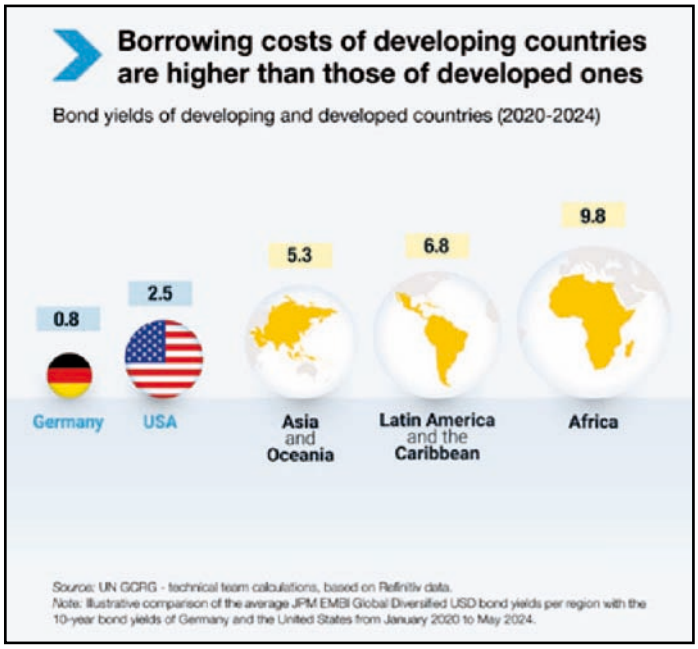
- **Risks and Consequences:** Countries risk defaulting on debt if they can't repay it, leading to budget cuts in vital development programs.
  - **For example,** African countries are spending a significant portion of government funds on debt interest payments, impacting education and health spending.
- **Impact on Development**: High public debt restricts spending on development sectors, particularly in developing and poor countries. Developing countries, which account for 30% of global debt, are experiencing a faster rate of debt growth compared to developed nations.
- **Impact on SDGs**: High debt levels are a major obstacle to achieving SDGs, as countries struggle to allocate resources towards sustainable development initiatives.

Required Measures

The report suggests a plan to overhaul the global financial system and enhance the UN's Sustainable Development Goals (SDG) stimulus package to address the current debt crisis. This involves:

- **Improving Developing Countries' Participation:** Ensure developing countries have a stronger say in global financial system governance to better represent their interests.
- **Addressing Debt Challenges:** Implement an effective mechanism to handle increasing debt costs and prevent countries from falling into severe debt situations.
- **Boosting Liquidity:** Provide more contingency finance to offer greater financial stability during crises, reducing the need for countries to resort to additional borrowing.
- **Expanding Access to Financing:** Increase access to affordable, long-term financing by mobilizing resources from multilateral development banks and private sectors on a large scale.

(see figure below)



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SECTION-B
QUICK BYTES

SATNAMI SECT

CONTEXT

The Satnami sect has recently made headlines due to their protest against the government in Chhattisgarh regarding the desecration of ***Jaitkham,*** a **sacred religious site** located in the Baloda Bazar district.

Who are the Satnamis?

- The Satnamis are a predominantly Scheduled Caste sect living mainly in Chhattisgarh and parts of Madhya Pradesh.
- Guru Ghasidas, an **18th-century saint** is revered as the spiritual leader of the Chhattisgarh Satnamis.
- Furthermore, the Satnamis find their roots in the teachings of Kabir, a **15th-century Bhakti poet** who advocated for the worship of an immanent, formless Absolute.
- **1657:** A mendicant named Birbhan, inspired by the teachings of Kabir, founded a Satnami community in Narnaul in present-day Haryana in 1657. Initially, most Satnamis belonged to an "untouchable" caste engaged in leatherwork.
- **Features:**
  - They rejected ritual and superstition
  - They forbid caste distinctions within their community.
  - Displaying sympathy towards the poor and skepticism towards authority and wealth

History of Protests

- **Revolt Against Aurangzeb:** During the Mughal era, the Satnamis rose against Aurangzeb's oppressive tax demands, leading to a significant rebellion in Punjab and Haryana. Despite facing severe suppression, they fought valiantly for their rights.
- **Revival under Guru Ghasidas:** Guru Ghasidas led the revival of the Satnami community in the mid-18th century, emphasizing the worship of one true God and rejecting idol worship. His teachings allowed the Satnamis to transcend social restrictions and embrace their spirituality.

FACT BOX

Guru Ghasidas (1756-1836)

- Guru Ghasidas was born in Chhattisgarh in an untouchable family. Ghasidas was born in a socio-political milieu of misrule, loot and plunder.
- He was a great social reformer and philosopher in Chhattisgarh.
- The Satnam Panth (sect) is said to be based on these principles formulated by Ghasidas.

Kabir Das (1440-1518)

- Kabir Das, a revered Indian saint and mystical poet, lived during the 15th and 16th centuries. His teachings have left a profound impact on Indian spirituality.
- **Philosophy of Oneness with God:** Kabir emphasized the **concept of unity with God** and saw karma as the true path to enlightenment. His teachings influenced people's attitudes towards kindness and righteousness.

- **Fusion of Hindu Bhakti and Muslim Sufi Beliefs** Kabir's love for God transcended religious boundaries, merging Hindu Bhakti and Muslim Sufi beliefs. He sought to unite Hindus and Muslims through a universal spiritual path.
- According to Kabir, every life is influenced by two spiritual truths: Jivatma (individual soul) and Paramatma (universal soul). He believed that ***moksha***, or liberation, occurs through the merging of these two heavenly truths.
- **Literary Contributions:** Kabir Das authored 72 works, including Kabir Bijak, Kabir Bani, and Anurag Sagar. His literary contributions continue to inspire spiritual seekers across generations.

KAZAKH STEPPE

CONTEXT

Przewalski horses, brought from Prague, took their first steps in the **Kazakh steppe,** their natural habitat. This is the beginning of a plan to release 40 of these **endangered horses** into the wild in Kazakhstan over the next five years.

About Kazakh Steppe

- The Kazakh Steppe, also known as the **Great Plains of Central Asia**, is a vast grassland region in northern Kazakhstan and adjacent parts of Russia.
  - **Steppe** is a plain without trees. It is a type of grassland biome.
- It's characterized by vast, open expanses of grasslands with few trees, making it ideal for **nomadic pastoralism.**
- This steppe is one of the largest dry grassland areas in the world, covering an area of over 800,000 square kilometers.
- It has a **continental climate** with hot summers and cold winters.
- It supports a variety of wildlife, including **saiga antelopes, wild horses, and various bird species.**
- Historically, it has been home to nomadic tribes such as the **Kazakhs**, who have relied on herding livestock for their livelihoods.

FACT BOX

Przewalski horses

- Przewalski horses are known as one of the last breeds of wild horses in the world.
- They are the only true wild horses alive today.

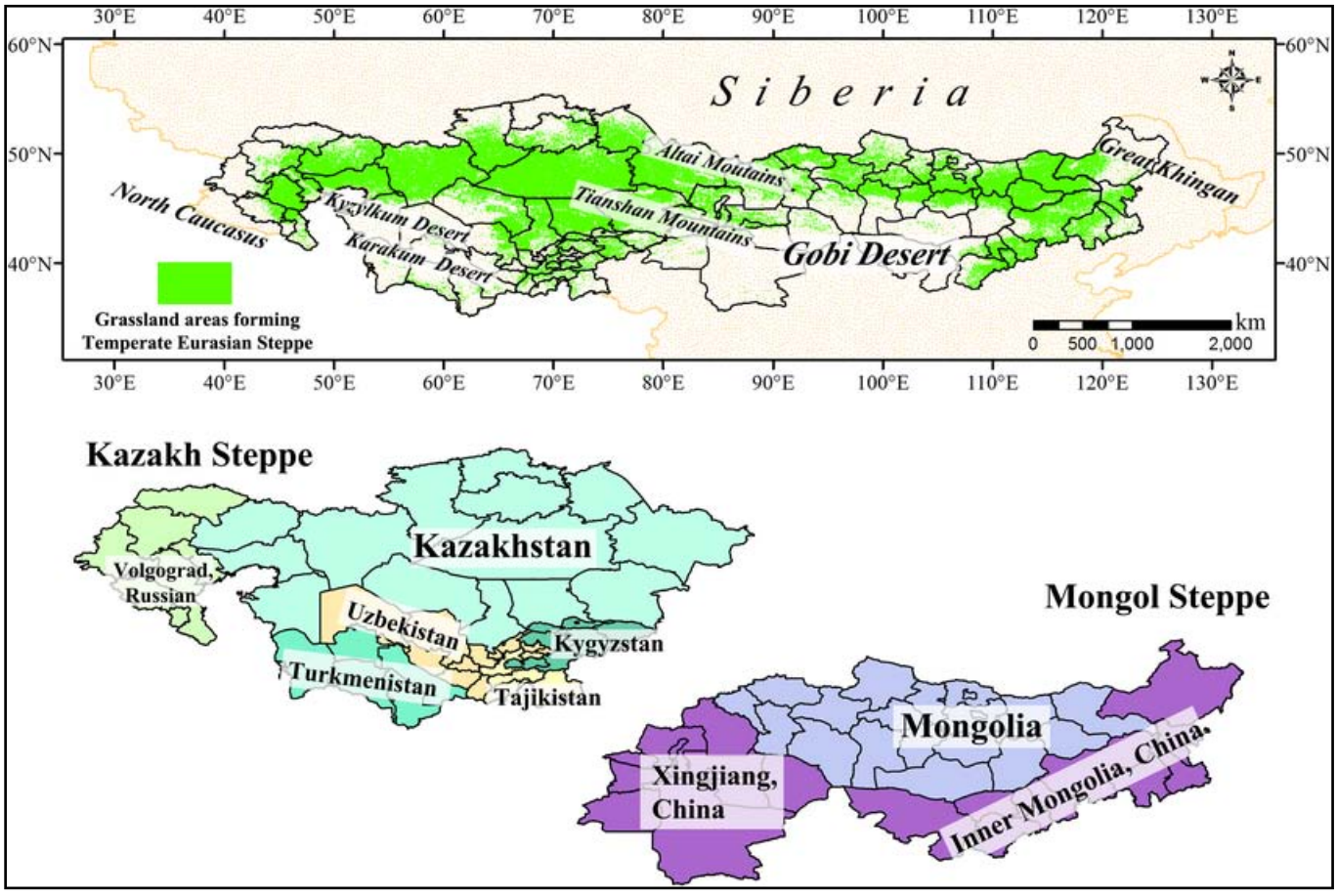

figure no. 1

- There are approximately 2,000 Przewalski horses worldwide, with most found in China and Mongolia. Some also reside in France, Russia, and even in the wild in the Chernobyl exclusion zone between Belarus and Ukraine.
- After the **Chernobyl disaster** in April 1986, 30 Przewalski horses were introduced to the area in 1998.
- Since then, the population has thrived, with the current number reaching 210.

LATIN AMERICA

CONTEXT:

Peru became the first latin American country to adopt the UPI based digital payment platform.

About:

- Latin America is composed of 20 countries.
  - **In North America**: Mexico.
  - **In Central America**: Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Panama.
  - **In South America**: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela.

KASHMIR'S WHITE GOLD

CONTEXT

Last year, the Geological Survey of India (GSI), announced that it had established lithium reserve of 5.9 MT in Jammu & Kashmir's Reasi district, putting India among the top 10 countries with such reserves. However, private companies have been reluctant to bid.

About Lithium:

- Lithium (Li) is a **non-ferrous metal** and is one of the key components in EV batteries.
- It's a silvery-white metal with a delicate texture.
- It is the lightest metal and the lightest solid element under normal circumstances.
- It must be kept in mineral oil since it is very reactive and combustible.
- It is both an alkali and a rare metal.
- **Application:** Rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles. Lithium is also used in some non-rechargeable batteries for things like heart pacemakers, toys and clocks.

Why Lithium is a Significant Material?

- **Increased Applicability:** Growing demand for bulk energy storage in renewable energy applications, notably in electric vehicles (EVs) and backup electric storage systems.
- **Advantages of Lithium-ion Batteries:** Good rate of charging and longer lifespan compared to other battery types. Higher energy density, enhancing battery performance.
- **Wide Usage**: Apart from batteries, used in various industries including glass, ceramics, rocket fuel, and lasers.

How Critical is Lithium for India?

- **Importance in Electric Mobility**: Crucial for India's focus on electric mobility in major cities like New Delhi, Mumbai, Bangalore, Kolkata, and Chennai.
- **Strategic Significance**: Considered strategically important due to its applications in nuclear and high-tech industries, including electronics, telecommunications, information technology, space, and defense.

G7 SUMMIT

CONTEXT

Prime Minister Narendra Modi is poised to participate in the annual G7 summit held in Italy. The summit holds significant importance in addressing pressing global issues, particularly amidst ongoing geopolitical tensions such as the Ukraine conflict.

About the G7 Summit:

- **Founded: 1975**
  - The G7 is an intergovernmental political and economic forum of industrialized democracies.
- **Composition:** United States, the United Kingdom, France, Italy, Germany, Canada, and Japan. **European Union (EU) is a "nonenumerated" member.**
- It is **not a formal institution** with a charter and a secretariat. The presidency rotates annually among member states.
- Currently presided over by Italy, the G7 aims to tackle global challenges while upholding the principles of the rules-based international system.
- **Agenda and Focus:** At the upcoming summit, a primary focus will be addressing the
  - Ukraine conflict
  - ongoing Middle East crisis and its implications for the global agenda

FACT BOX

Alternatives of G7

- **BRICS:** BRICS expansion saw **Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE** joining **Brazil, Russia, India, China, and South Africa** as full-fledged members. Now, the group comprises 36 per cent of global GDP (of which China alone accounts for 65 per cent of BRICS). However, G7 countries still dominate global GDP, accounting for 43.2%.
- **G20:** Many analysts believe that the power and prestige of the Group of Twenty (G20), a forum for finance ministers and central bank governors from nineteen of the world's largest countries, the EU, and the African Union (AU), has surpassed that of the G7. The G20 members represent around 85% of the global GDP, over 75% of the global trade.

CHINA-PAKISTAN ECONOMIC CORRIDOR (CPEC)

CONTEXT

Pakistan's Prime Minister Shehbaz Sharif is visiting China because China is Pakistan's biggest ally, and they're expected to announce the second phase of the China-Pakistan Economic Corridor (CPEC).

What is the CPEC and why is it significant?

- The CPEC is a $62-billion project started in 2015 by China to invest in infrastructure projects in Pakistan.
- **Objective:** to connect China's Xinjiang region with Pakistan's Gwadar and Karachi ports.
- It is part of **China's Belt and Road Initiative (BRI).**
- It's important because it helps China expand its influence and gives it direct access to the Indian Ocean through Pakistan.
- **First phase of CPEC**: In the first phase, some power projects and transport projects were completed, but progress has been slow overall, with many projects not yet started or completed.

Controversies surrounding CPEC

- **Ecological and Human Security Concerns**: Since 2015, people are worried about how CPEC could harm Balochistan's environment and the safety of its residents.
- **Debt Trap Allegations**: Some say CPEC might trap Pakistan in debt, and they doubt if the benefits are fairly shared.
- **Security Issues:** Attacks on Chinese workers by local groups have strained China-Pakistan relations.
- **Indian Opposition:** India stands against the CPEC, citing concerns over its impact on India's territorial integrity and sovereignty.

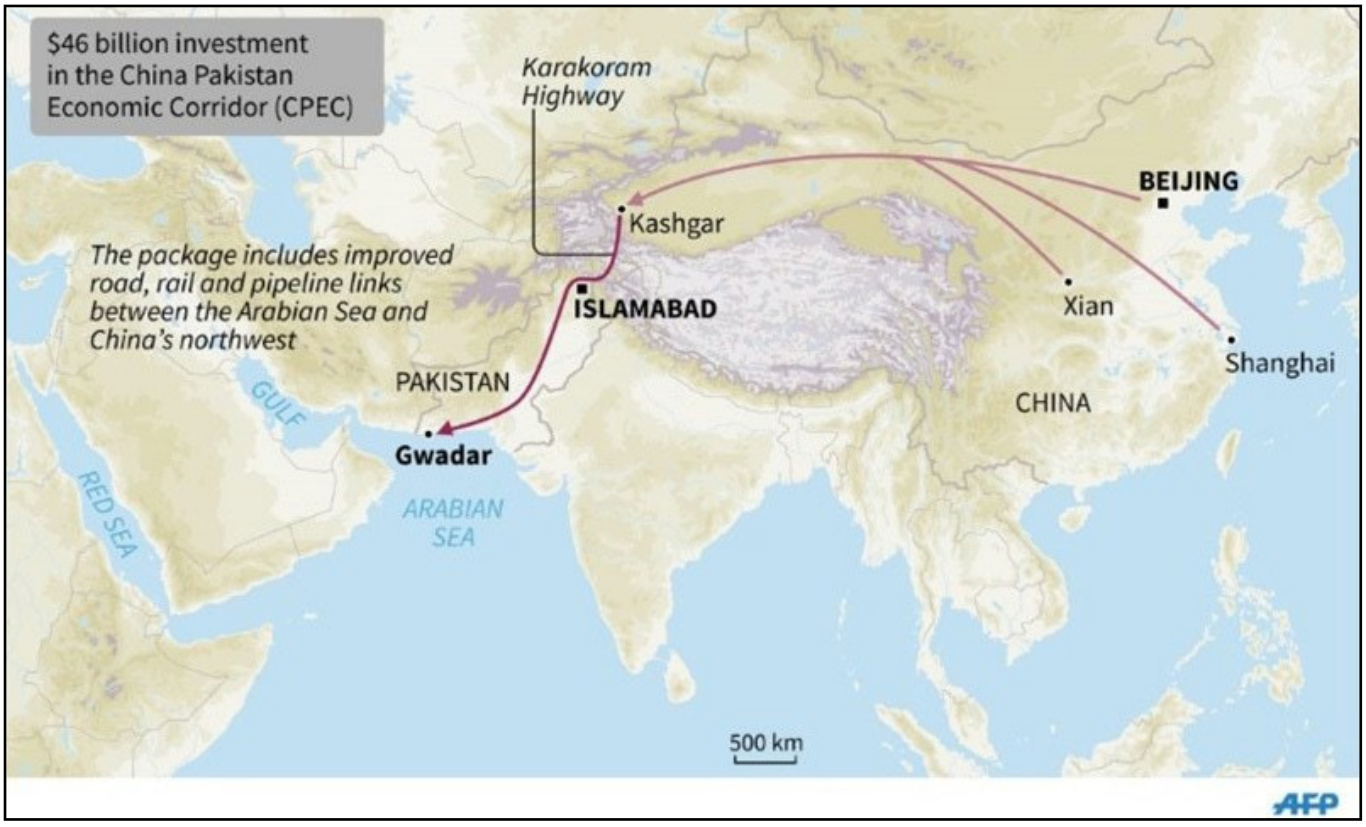

figure no. 2

PRADHAN MANTRI BHARATIYA JANAUSHADHI PARIYOJANA (PMBJP)

CONTEXT

Following Mauritius' successful adoption (first country to adopt the **Jan Aushadhi Scheme**) of India's 'Jan Aushadhi Scheme', Nepal has approached India to establish Jan Aushadhi Kendras in its country. This move aims to provide Nepalese citizens with access to low-cost, high-quality generic medicines manufactured in India.

About the Scheme:

- **Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP)** is a **flagship scheme** of the Indian government, aimed at making quality generic medicines available at affordable prices.
- This is achieved through dedicated outlets called **Pradhan Mantri Bharatiya Janaushadhi Kendras (PMBJK).**
- Currently, India boasts over 10,000 PMBJKs across the country, serving as vital hubs for dispensing affordable medicines to the public.
- **Aim**: to reduce **out-of-pocket expenditure** for consumers/patients by offering quality medicines and surgical items at affordable prices.
- By popularizing generic medicines, the scheme seeks to address the financial burden associated with healthcare and promote access to essential drugs for all segments of society.
- **Implementing Agency:** The scheme is executed by the **Pharmaceuticals and Medical Devices Bureau of India**, an autonomous society under the **Department of Pharmaceuticals.**
  - Through its extensive network of PMBJKs, the scheme ensures the availability of a wide range of generic medicines, catering to diverse healthcare needs across India.

PRADHAN MANTRI KISAN SAMMAN NIDHI (PM-KISAN) SCHEME

CONTEXT

Prime Minister Narendra Modi has approved the disbursal of the **17th installment of PM-Kisan Nidhi**, benefiting approximately 9.3 crore farmers with an estimated distribution of around Rs 20,000 crore.

Overview of PM-KISAN Scheme:

- **Started in:** 2019
- **Objective:** to provide income support to all landholder farmer families across India.
- Under **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Scheme**, eligible farmer families receive a financial benefit of Rs. 6,000 per year, provided in three installments of Rs. 2,000 each.
- Implemented as a Central Sector Scheme, PM-KISAN receives 100% financial support from the Central government.
- The financial assistance is directly transferred to the beneficiaries' bank accounts.
- **Implemented by:** Ministry of Agriculture and Farmers Welfare
- **PM-KISAN Mobile App:** Developed and designed by the National Informatics Centre in collaboration with the Ministry of Electronics and Information Technology

Major schemes in Agriculture

Central Sector Schemes	
Pradhan Mantri Kisan MaanDhan Yojana (PM-KMY)	**Launched:** 2019 **Aim:** providing security to vulnerable farmer families. It operates as a contributory scheme, where small and marginal farmers (SMFs) can opt to become members by paying monthly subscriptions to the Pension Fund, with matching contributions from the Central Government. **Life Insurance Corporation (LIC)** serves as the pension fund manager for PMKMY.
Pradhan Mantri Fasal Bima Yojana (PMFBY)	**Launched in:** 2016 **Objective:** To provide a straightforward and cost-effective crop insurance solution. **Coverage and Purpose:** The scheme aims to offer comprehensive risk protection for crops, safeguarding farmers against all non-preventable natural risks from pre-sowing to post-harvest stages.
Agriculture Infrastructure Fund (AIF)	• It was launched as part of the Aatmanirbhar Bharat Package. • **Objective:** to address existing infrastructure gaps and stimulate investment in agricultural infrastructure. • **Project Eligibility and Benefits:** ▸ Each entity can avail the scheme's benefits for up to 25 projects located in different LGD codes.

	➤ Eligible beneficiaries include a wide range of stakeholders such as farmers, agri-entrepreneurs, start-ups, cooperative societies, self-help groups, joint liability groups, and various other entities involved in agriculture and related activities.
National beekeeping and Honey Mission (NBHM)	⊙ **Launched in:** 2020 under Atma Nirbhar Bharat Abhiyan ⊙ **Objective:** overall promotion and development of scientific beekeeping & to achieve the goal of "Sweet Revolution".
Modified Interest Subvention Scheme (MISS)	⊙ ISS offers concessional short-term agricultural loans to farmers engaged in crop husbandry and allied activities such as animal husbandry, dairying, and fisheries.

Centrally Sponsored Schemes

- Rastriya Krishi Vikas Yojana Detailed Project Report based schemes (RKVY- DPR)
- Soil Health Card (SHC)
- Rainfed Area Development (RAD)
- Per Drop More Crop (PDMC)
- Micro Irrigation Fund (MIF)
- Paramparagat Krishi Vikas Yojana (PKVY)
- Sub-Mission on Agriculture Mechanization (SMAM)
- Agro-forestry
- National Food Security Mission (NFSM)
- Mission for Integrated Development of Horticulture (MIDH)
- National Bamboo Mission (NBM)
- Digital Agriculture

100-DAY ACTION PLAN FOR ANIMAL HEALTH, DAIRY, AND CONSERVATION

CONTEXT

The new Cabinet is expected to approve a **100-day action plan** focusing on **animal health, dairy, and conservation.** This plan aims to address challenges such as low availability of feed and fodder, poor livestock health, and the decline of indigenous breeds due to climate change.

Key Initiatives:

- **Revamped Rashtriya Gokul Mission (RGM):**
  - The RGM will focus on **developing and conserving indigenous bovine breeds** to enhance milk production and make it more profitable for farmers.
  - **Private sector participation** will be encouraged, with the formation of breeder associations in every state and Union Territory.
  - **Genetic upgradation techniques** like **in-vitro fertilization and genomic selection** will be utilized to improve breed productivity.
- **National Fodder Mission Convergence Framework:**
  - A convergence plan involving the agriculture and rural development ministries will be launched to increase fodder availability.
  - Resources from both government and private sectors will be pooled **to enhance fodder production, storage, and processing.**
  - The aim is to cultivate fodder on additional land and produce quality fodder seeds, with an allocated budget of Rs 300 crore.
- **Animal Health System Support for One Health (AHSSOH):**
  - AHSSOH will focus on preventing antimicrobial resistance (AMR) in animals, which occurs due to overuse of antibiotics.
  - Research will be conducted to develop medicines that combat AMR effectively, without creating resistance.

FACT BOX

About Rashtriya Gokul Mission (RGM)

- **Launched in:** 2014
- **Objective:** development and conservation of indigenous breeds through selective breeding in the breeding tract and genetic upgradation of nondescript bovine population.
- **Implementing Agency:** Department of Animal Husbandry and Dairying

India's Dairy Sector (Key Statistics)

- India has the world's largest bovine population and is a leader in milk production.
- In the past decade, milk production in India has increased by approximately 60%, while per person availability of milk has grown by around 40%.
- India's dairy sector is growing at a rate of 6%, compared to the global average of 2%.
- The number of milk corporations in the state has doubled from 12 to 23 in the last two decades.
- More than 36 lakh people are connected with the dairy industry, including 11 lakh women. Out of 16,384 milk houses, 3300 are entirely run by women.

- State-wise, Uttar Pradesh contributes the highest share of milk production at 15.7%, followed by **Rajasthan, Madhya Pradesh, Gujarat, and Andhra Pradesh.**

Government Initiatives:

- **AmritSarovars:** Over 60,000 AmritSarovars have been built across the country to benefit farmers and strengthen the rural economy.
- **Kisan Credit Card Facility:** Cattle farmers and fish farmers have been provided with the Kisan Credit Card facility.
- **National Programme for Dairy Development (NPDD):** Launched in 2014, NPDD aims to strengthen infrastructure for milk production and processing, encourage value addition in milk products, and increase farmers' access to organized markets.
- **Dairy Processing & Infrastructure Development Fund:** Initiated in 2017 to support the development of dairy processing infrastructure.
  - **RashtriyaGokul Mission:** Launched for the development and conservation of indigenous bovine breeds.
  - **Livestock Health and Disease Control Programme:** Focuses on the vaccination of animals of economic and zoonotic importance.

ANAMIKA RAJEEV BECOMES NAVY'S FIRST WOMAN CHOPPER PILOT

CONTEXT

Sub Lieutenant Anamika B. Rajeev became the Indian Navy's first woman helicopter pilot during a passing out parade held in the naval air station INS Rajali at Arakkonam in Ranipet district.

Women in Defence Forces

Indian Army:

- Women officers now have opportunities for **Permanent Commission** in various branches, ensuring gender parity.
- Women candidates in **National Defence Academy (NDA)** has been opened, with cadets joining every six months.
- Women officers can now serve as pilots in the **Corps of Army Aviation.**
- Provision for enrolment of women as **Other Ranks (ORs) in Corps of Military Police** introduced.

Indian Navy:

- Women officers are recruited in all branches, **except Submarine specialisation**, since June 2023.
- Women officers serve on board warships and as **Specialist Naval Air Operations (NAO)** officers.
- Women officers can join the **Remotely Piloted Aircraft (RPA) stream**.
- Entry for women cadets in **NDA and Indian Naval Academy (INA)** has been permitted, increasing vacancies for women cadets.

Indian Air Force:

- Facilities for women personnel are provided as per authorized scales.
- Recruitment of officers is gender-neutral, with women officers inducted in all branches and streams.
- Women officers can serve in combat roles without restrictions.
- Entry for women officers through NDA and NCC Special Entry has been initiated.
- Various induction publicity programmes are conducted to encourage women candidates to join IAF.

FACT BOX

The numbers

- A total of 11,414 women personnel are serving in the three services, with the Indian Army having the maximum of 7,054 of them, according to government data.
- The total number includes officers, other ranks, as well as those in medical, dental, and nursing services.
- The number of female personnel employed in the three services, excluding those in medical, dental, and nursing services, comes to 4,948.

INDIA'S CONSUMER PRICE INFLATION

CONTEXT

The recent report on **India's consumer price inflation** for May 2024 has garnered attention due to its implications for the country's economic landscape. Consumer price inflation is a crucial indicator of the cost of living for citizens and plays a significant role in shaping monetary policy decisions by the **Reserve Bank of India (RBI).**

Key Findings:

- **Easing of Consumer Price Inflation**: In May 2024, India witnessed a slight easing in consumer price inflation, reaching a one-year low of 4.75%, down from 4.83% in April.
- **Stagnant Food Prices:** Food prices, however, remained unchanged, with a significant spike of 8.7%, particularly impacting urban households with a sharper rise of 8.83%.
- **Comparison to Previous Year:** This is in contrast to the previous year when retail inflation stood at 4.31%, with food prices rising less than 3%.

- **Surge in Vegetable Prices:** Vegetable prices surged by 27.3% in May, contributing to the overall inflationary pressure, while other food items like cereals, eggs, fruits, and pulses also experienced significant inflation rates.
- **Challenges for Monetary Policy:** Despite retail inflation staying below 6% since September 2023, it remains above the central bank's target of 4%, posing challenges for monetary policy management.
- **Projections and Policy Response:** Projections suggest a potential moderation in food inflation, which could lead to a policy response from the RBI, such as a reduction in the policy interest rate to mitigate economic pressures.

FACT BOX

About Consumer Price Inflation (CPI)

- CPI refers to an increase in the price level of a selected basket of goods and services over a select period of time.
- It measures retail inflation by collecting data on the prices of goods and services that are consumed by the retail population of the country.
- CPI is used as a:
  - macroeconomic indicator of inflation
  - tool by the central bank and government for inflation targeting and for inspecting price stability
  - deflator in the national accounts.
- **Main component:** food and beverages, followed by cereals and pulses, and milk and products.
- **CPI formula:** (Price of basket in current period / Price of basket in base period) x 100

DIGITAL PAYMENTS INTELLIGENCE PLATFORM

CONTEXT:

The Reserve Bank of India plans to set up a centralised digital payments intelligence platform for sharing data on a real-time basis across digital payment ecosystem aimed at detecting fraud.

What is Digital payments intelligence platform?

- A Digital Payments Intelligence Platform is a sophisticated technology solution that leverages big data analytics, artificial intelligence (AI), and machine learning (ML) to provide insights into digital payment transactions. It's designed to analyze vast amounts of transaction data in real-time, identify patterns, detect anomalies, and predict future trends.
- AI and ML play a crucial role in these platforms. They help in fraud detection by identifying unusual patterns or anomalies in transactions that could indicate fraudulent activity.
- To advance this initiative, the RBI has formed a committee chaired by **A.P. Hota**.
- According to the annual report released by the RBI, there was a significant surge in the number of financial frauds reported by banks, increasing by 166% year-on-year in the financial year 2023-24. This starkly contrasts with the 13,564 cases reported in the previous fiscal year.

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)-BASED TOLLING

CONTEXT:

The **National Highway Authority of India (NHAI)** has invited expressions of interest for the implementation of a satellite-based electronic toll collection system.

About the initiative:

- **Spearheaded by:** Indian Highways Management Company Limited (IHMCL)
- This initiative aims to enhance tolling efficiency and transparency while providing a seamless experience for highway user.
- The introduction of GNSS-based electronic toll collection is poised to streamline vehicular movement on national highways. These include
  - barrier-free tolling
  - enhancing the overall driving experience
  - introducing distance-based tolling, where users are charged solely for the distance travelled on the highway
- Its implementation will involve an **On-Board Unit (OBU),** or a tracking device, fitted inside a vehicle whose location can be mapped using **GAGAN**, the Indian satellite navigation system with an approximate accuracy of 10 metres.
- NHAI plans to integrate the **GNSS-based electronic toll collection (ETC) system** within the existing **FASTag ecosystem**, initially adopting a hybrid model alongside **Radio Frequency Identification (RFID)-based ETC.**

FACT BOX

National Highways Authority of India (NHAI)

- **Formed in:** 1988
- **Ministry:** Ministry of Road Transport and Highways
- NHAI is a Central Authority to develop, maintain and manage the National Highways.

India's Road Network

- India has the world's second-largest road network, covering approximately 66.71 lakh kilometers, with national highways constituting 2% and carrying over 40% of total traffic.
- There are currently 599 national highways spanning 1,46,145 kilometers (December 2023).
- **Classification:** These highways are classified into various categories such as
  - North-South Corridors
  - East-West Corridors
  - Golden Quadrilateral **(connecting Delhi, Mumbai, Chennai, and Kolkata)**
  - 3-D Highways **(highway with 3 digit number, secondary branch of the main highway)**

DISCOVERY OF FROST ATOP MARS' VOLCANOES

CONTEXT

Recent discoveries have challenged assumptions about **Mars' climate**, with researchers detecting **frost on equatorial volcanoes**. This finding contradicts expectations of hot, arid conditions in the planet's equatorial regions and suggests a more complex climate system than previously thought.

Key Findings:

- **Frost Discovery**: Researchers have detected **frost** atop volcanoes in **Mars' Tharsis region**, near the planet's equator. This discovery challenges previous assumptions about the planet's climate, which were thought to **preclude frost formation** in equatorial regions due to **high temperatures**.
  - The frost was observed within the **calderas of Martian volcanoes**, large hollows at their summits.
  - The frost, with a thickness of about a hundredth of a millimeter (roughly the width of a human hair), covers a significant area within the calderas of Martian volcanoes.
  - Although ephemeral, lasting only a few hours after sunrise before evaporating in sunlight, this frost contributes to the cycling of water between the Martian surface and atmosphere during the cold seasons.
- The frost was first spotted by **ESA's ExoMars Trace Gas Orbiter (TGO)** atop **the massive Olympus Mons volcano** (nearly three times the height of Mount Everest)

Factors (likely) responsible for frost formation:

- The researchers propose that a **unique microclimate** created by **air circulation** above these mountains allows for the formation of frost despite **Mars' thin atmosphere and relatively high daytime temperatures.**
- The presence of frost on Martian volcanoes suggests

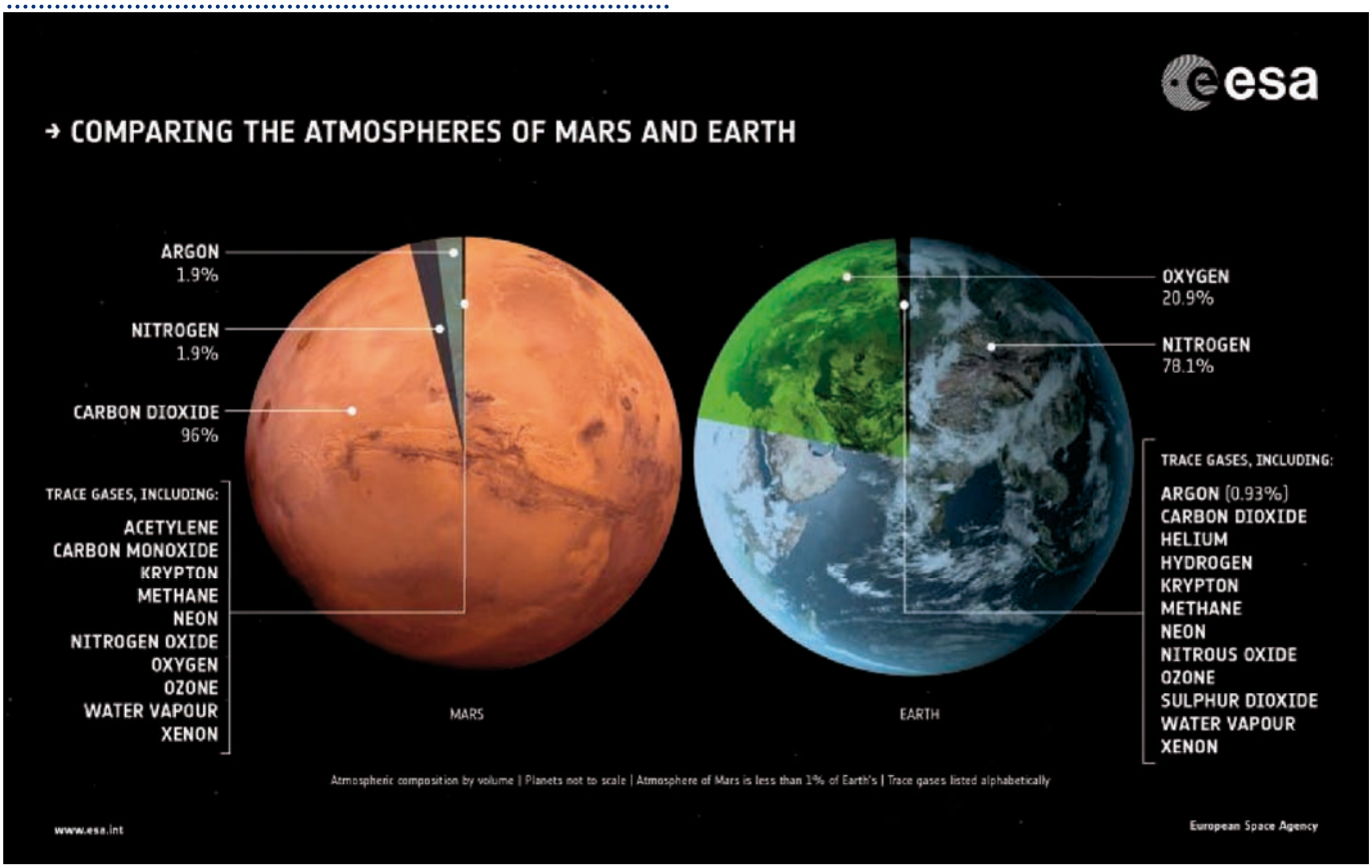

figure no. 3

the possibility of an ancient climate cycle on Mars, involving **past precipitation** and even snowfall on these volcanic peaks.

FACT BOX

Mars' Atmosphere dynamics

- Mars' atmosphere is over 100 times thinner than Earth's
- Composition: 95% carbon dioxide, 3% nitrogen, 1.6% argon
- Features: Volcanoes, vast craters and massive ridges
  - Just like Earth, Mars too has big volcanos, including the largest volcano in the solar system, Olympus Mons, which is 100 times larger by volume than Earth's largest volcano of Mauna Loa in Hawaii.
- **India's Mars Orbiter Mission (MOM)** or Mangalyaan is the country's first mission to the Red Planet to test key technologies for interplanetary exploration
- **Natural satellites:** Deimos and Phobos

About Frost

- Frost is a thin layer of ice on a solid surface that forms from water vapor turning solid.
- Simply put, it is water vapor, or water in gas form, that becomes solid.
- Frost occurs when the temperature of the air in contact with the ground is below the freezing-point of water.
- **Types of frost:** Ground frost, air frost, hoar frost

(see figure no. 3)

ISRO'S ADITYA-L1 SPACECRAFT CAPTURES SOLAR ACTIVITY

CONTEXT

ISRO's Aditya-L1 spacecraft, equipped with two remote sensing instruments - **Solar Ultra Violet Imaging Telescope (SUIT) and Visible Emission Line Coronagraph (VELC)**, has captured recent solar activity.

Key-highlights:

- Aditya-L1 reached the **Lagrangian point (L1)** in January 2024, 127 days after its launch on in September 2023. L1 is approximately 1.5 million km from Earth, allowing continuous observation of the Sun.
- **Remote Sensing Instruments:** SUIT and VELC onboard Aditya-L1 have recorded dynamic activities of the Sun during May 2024.
  - SUIT captures **solar ultraviolet images**, while VELC observes **visible emission lines** from the Sun.
- **Solar Events Recorded:** Several X-class and M-class flares, accompanied by Coronal Mass Ejections (CMEs), were detected during May 2024, leading to significant geomagnetic storms.

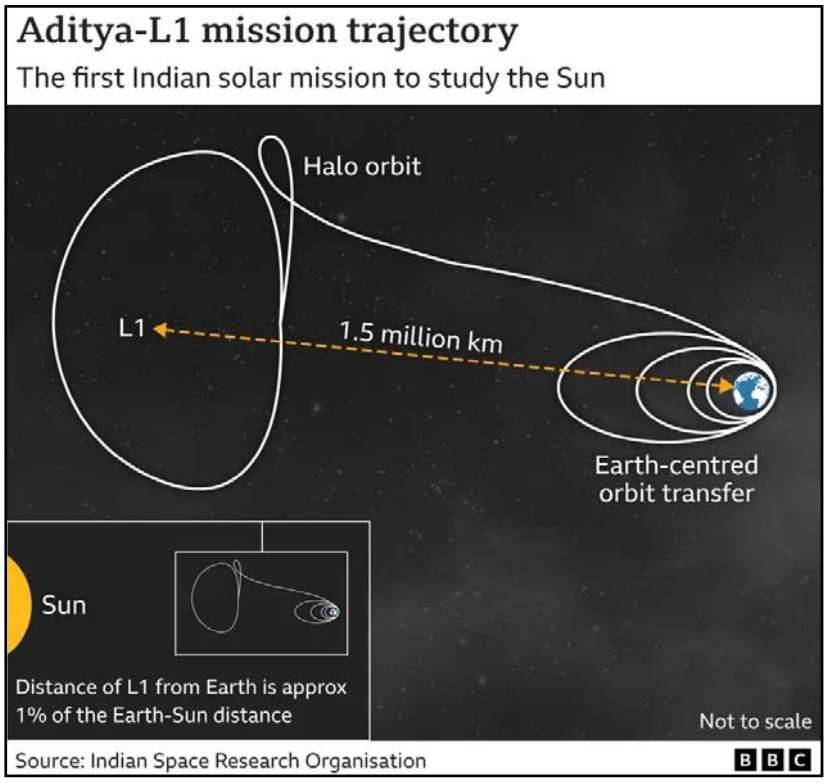

figure no. 4

- The **active region AR13664** on the Sun erupted **multiple X-class and M-class flares** during May. These events caused major **geomagnetic disturbances.**

FACT BOX

About Aditya-L1

- Aditya-L1 is a satellite dedicated to the comprehensive study of the Sun.
- The orbiter carries seven scientific instruments to observe and study-
  - the solar corona (the outermost layer)
  - the photosphere (the Sun's surface or the part we see from the Earth)
  - the chromosphere (a thin layer of plasma that lies between the photosphere and the corona)
- Aditya L1 is India's first space-based mission to study the solar system's biggest object

Basic Concepts:

- **Coronal Mass Ejections (CMEs):** Powerful eruptions of solar plasma and magnetic field from the Sun's corona into space.
- **Solar Flares:** Sudden bursts of energy and radiation from the Sun's surface, often associated with magnetic disturbances and emissions across the electromagnetic spectrum.
- **Geomagnetic Storms**: Disturbances in Earth's magnetic field caused by interactions with solar wind and CMEs, potentially leading to disruptions in communication systems and power grids.
- **Lagrangian point (L1):** L1 is a location in space where the gravitational forces of two celestial bodies, such as the Sun and Earth, are in equilibrium. This allows an object placed there to remain relatively stable with respect to both celestial bodies. L1 is located 1.5 million km (932,000 miles) from the Earth, which is 1% of the Earth-Sun distance.

(see figure no.: 4 on previous page)

SPACEX'S STARSHIP TEST FLIGHT

CONTEXT

SpaceX successfully completed the fourth test flight of its Starship rocket, marking a significant advancement in rocket technology. The 400-foot-tall Starship rocket was launched atop a thundering pillar of fire.

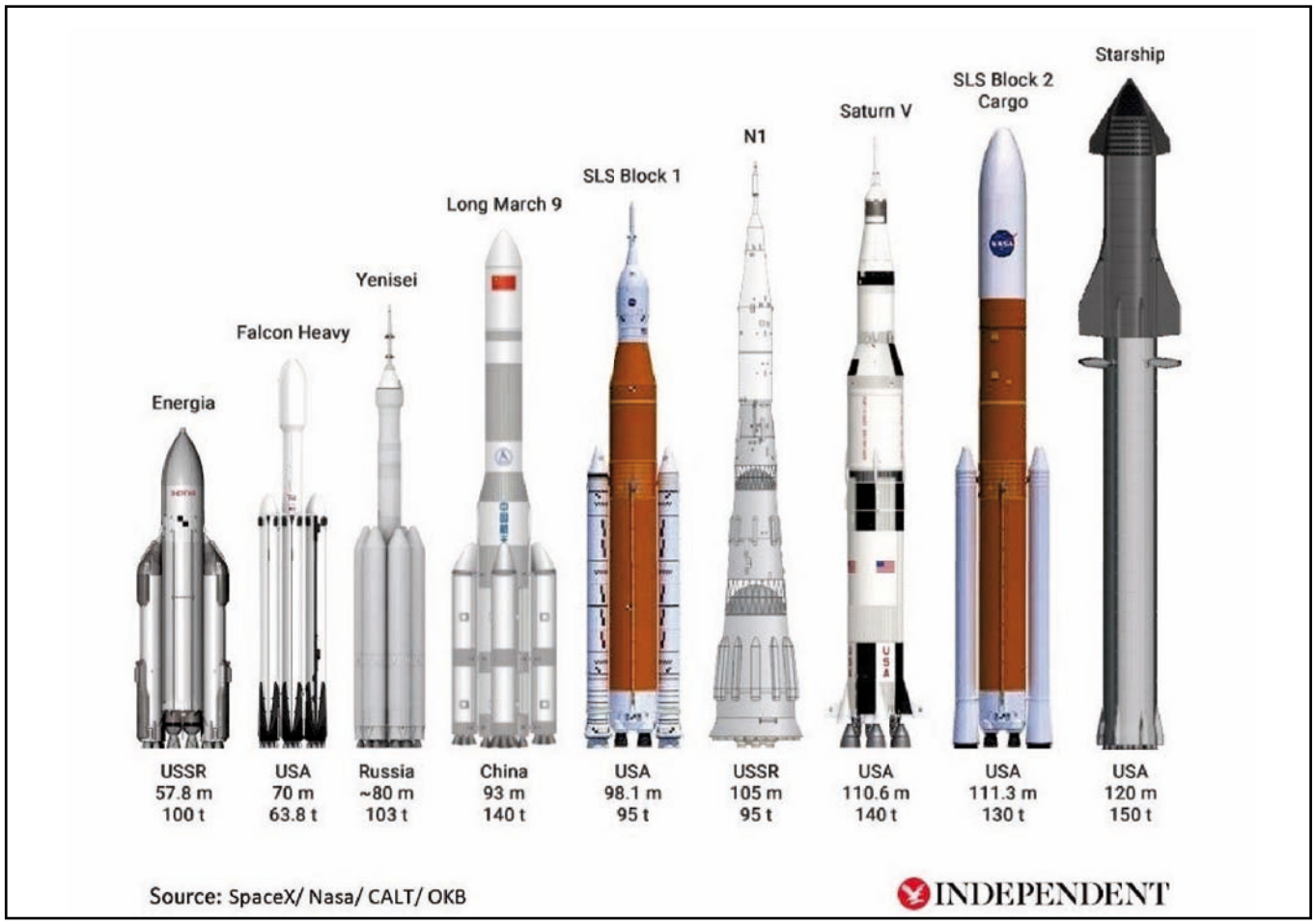

figure no. 5

Key-highlights:

- The main objectives were to bring down Starship's first-stage booster, known as Super Heavy, for a soft splashdown in the Gulf of Mexico.
- Additionally, the goal was to achieve a controlled reentry of the 165-foot-tall upper stage, called Starship or Ship.
- Both the Super Heavy booster and the Ship successfully made water landings, eliciting cheers from spectators at SpaceX's mission control at Starbase.

Significance of Starship:

- The Starship system is designed to be fully reusable and aims to revolutionize space travel by ferrying cargo and people beyond Earth.
- It is critical to NASA's plan to return astronauts to the moon, with SpaceX winning a multibillion-dollar contract from the agency to use Starship as a crewed lunar lander as part of the Artemis moon program.

FACT BOX

About Starship:

- Starship is the tallest and most powerful rocket ever launched, standing at 397 feet tall when fully stacked on the Super Heavy booster.
- The Super Heavy booster, standing 232 feet tall, is equipped with 33 Raptor engines, producing 16.7 million pounds of thrust.
- Starship itself is 165 feet tall and has six Raptor engines, powered by liquid oxygen and liquid methane.
- The rocket requires more than 10 million pounds of propellant for launch.

PORTABLE OPTICAL ATOMIC CLOCKS

CONTEXT

A recent study introduced a **portable optical atomic clock** suitable for onboard ships. This innovation, utilizing **molecular iodine** as a frequency standard, represents a significant advancement in **optical timekeeping**. Miniaturization of components like the **spectrometer, laser system, and frequency comb** enables compact designs suitable for various applications.

Key-highlights:

- **Testing:** Initial tests demonstrated the stability and accuracy of these portable optical atomic clocks.
- The clocks exhibited resilience to environmental factors like temperature fluctuations and humidity changes.
- **Features:**
  - Optical atomic clocks operate at **optical frequencies**, leveraging lasers to stimulate atomic transitions.
  - The coherent light emitted by lasers ensures precise and stable measurements.
  - **Strontium (Sr) and ytterbium ions** are commonly used in optical atomic clocks due to their narrow linewidths and stable optical transitions.
  - **Accuracy:** While not as accurate as **laboratory-based optical atomic clocks**, these portable variants offer sufficient precision for real-world applications.
  - **Quality:** accuracy, portability, and robustness
  - **Application:** poised to revolutionize various industries, from maritime navigation to space exploration

FACT BOX

About Atomic clock

- An atomic clock is a device that uses the vibrations of atoms to measure time
- Specifically, it uses the oscillations of the electrons in in atoms to keep time
- They work by using a type of atom called a "cesium atom".
- To measure time using cesium atoms, an atomic clock uses a device called a "microwave cavity".
- **Types of atomic clocks:** There are two types of atomic clocks: cesium atomic clocks and hydrogen maser atomic clocks.
  - Cesium atomic clocks are the most common and are used to define the international standard for time, called Coordinated Universal Time (UTC).
  - Hydrogen maser atomic clocks are even more accurate than cesium atomic clocks and are used in scientific research.
- **Application:** It is used in many applications that require precise timing, such as:
  - GPS systems and scientific research navigation
  - emergency responses, and military operations

(see figure 6 on next page)

INTERNATIONAL YEAR OF QUANTUM

CONTEXT

The United Nations has declared **2025 as the International Year of Quantum Science and Technology** to increase public awareness of the importance of quantum science and to bolster support for using it to address current challenges.

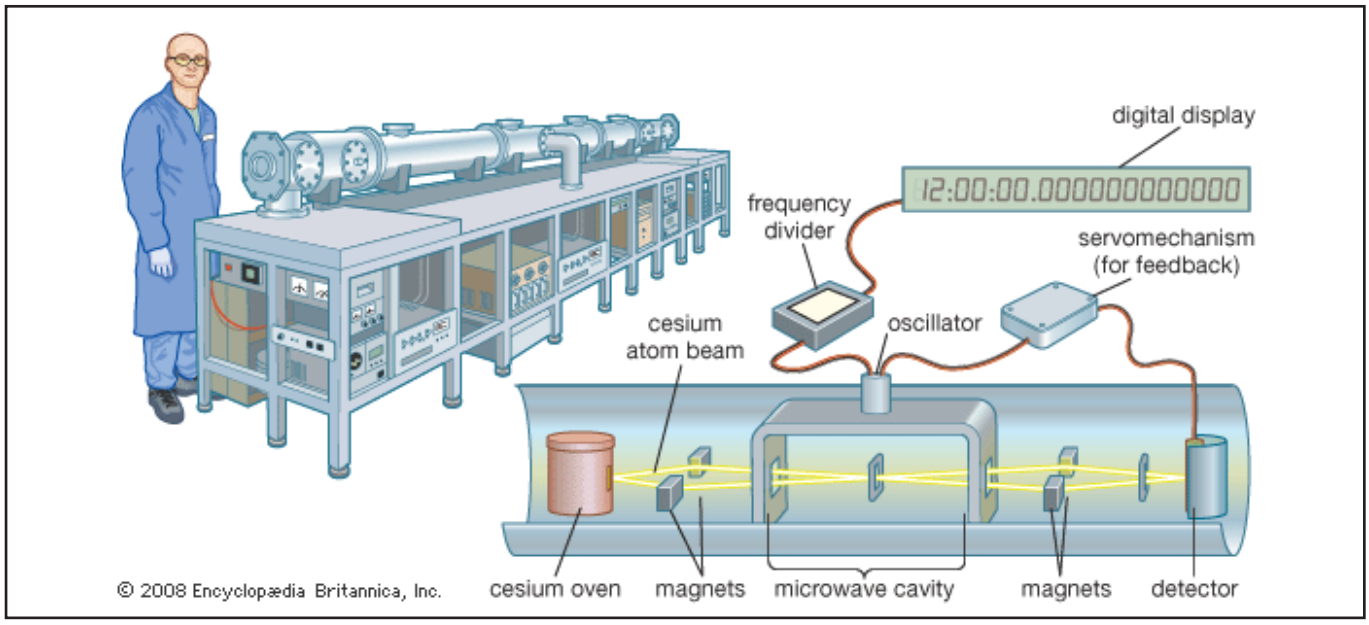

figure no. 6

What is Quantum Computing?

- Quantum computing is a revolutionary field at the intersection of computer science, physics, and mathematics.
- It harnesses the principles of quantum mechanics to solve complex problems faster than classical computers.
- This advantage stems from leveraging quantum phenomena like superposition and entanglement.
- **Types of Quantum Technologies** Various qubit technologies are being explored, including gate-based ion trap processors, gate-based superconducting processors, photonic processors, neutral atom processors, Rydberg atom processors, and quantum annealers.
- In 2023, India became the **seventh country** to have a **National Quantum Mission**, after the US, Austria, Finland, France, Canada and China, dedicated to the development of quantum technologies.

Quantum Mechanics Basics

- Quantum mechanics explores the behavior of particles at a microscopic scale. In this realm, particles behave differently from what we observe in the macroscopic world. Key to quantum computing is the concept of qubits, which can exist in superposition states, unlike classical bits.
  - A **qubit (or quantum bit) is the quantum mechanical analogue of a classical bit**.

Principles of Quantum Computing

- **Superposition:** Qubits can exist in multiple states simultaneously, providing inherent parallelism for quantum computers.
- **Entanglement:** When qubits become entangled, the state of one qubit instantly correlates with another, regardless of distance.
- **Decoherence:** Environmental factors can disrupt the quantum state of qubits, leading to decoherence. Overcoming this challenge is crucial for building stable quantum computers.

Applications of Quantum Computing

Quantum computing holds immense potential across industries:

- **Machine Learning:** Quantum computing can enhance data analysis and prediction capabilities.
- **Optimization:** Quantum algorithms can optimize complex processes, leading to cost reduction and efficiency improvements.
- **Simulation:** Quantum computers can tackle simulations that are currently intractable for classical computers, particularly in chemistry and materials science.

Use Cases in Various Industries

Industries are exploring quantum computing for diverse applications:

- **Machine Learning:** Predicting market movements and improving manufacturing operations.
- **Optimization:** Optimizing loan portfolios, supply chains, and production processes.
- **Simulation:** Conducting accurate simulations in chemistry and materials science, enabling breakthroughs in drug discovery and materials research.

PYQ

Q: Which one of the following is the CONTEXT in which the term "Qubit" is mentioned? (2022)

(a) Cloud Services

(b) Quantum computing

(c) Visible light communication technologies

(d) Wireless Communication Technologies

Solution: (b)

DONANEMAB, NEW ALZHEIMER'S DRUG

CONTEXT

The **US Food and Drug Administration (FDA)** has unanimously voted in favor of administering **Donanemab**, a new Alzheimer's drug.

What is Donanemab?

- Donanemab is a monoclonal antibody, much like its predecessor Lecanemab, designed to target amyloid beta protein plaques in the brain, a characteristic feature of Alzheimer's disease that can be observed through imaging techniques.
- Other amyloid-fighting drugs, such as Leqembi and Biogen, were approved by the FDA last year.
- Donanemab can significantly slow down cognitive decline in early Alzheimer's patients by 35.1% over a span of 76 weeks.
- It is currently the only one of its class available to Alzheimer's patients, outside clinical trials.

Side Effects and Risks

- Studies indicate that it may result in slightly higher adverse events compared to Lecanemab.
- Apart from infusion-related reactions, the main concern lies in amyloid-related imaging abnormalities (ARIA), including brain swelling and bleeding.
- The study revealed that 24% of participants experienced ARIA involving brain swelling, and 19.7% had ARIA involving brain bleeds. However, it's worth noting that most of these cases were asymptomatic.

FACT BOX

Alzheimer's Disease

- Alzheimer's disease is a progressive neurological disorder characterized by the degeneration and eventual death of brain cells. This degeneration leads to a range of symptoms, including:
- Symptoms:
  - Memory loss
  - Difficulty with language (speaking or writing)
  - Impaired judgment
  - Changes in mood and personality
  - Confusion regarding time or place
  - Progression and Severity
- The disease is believed to be caused by the **abnormal accumulation of proteins** in and around brain cells. Two key proteins involved in Alzheimer's pathology are:
  - **Amyloid**: Abnormal deposits of amyloid protein form plaques around brain cells.
  - **Tau:** Tangled formations of tau protein disrupt neuronal communication in the brain.
- **Dementia in India report 2020** estimates that there are 5.3 million people over the age of 60 years living with dementia in India, with the prevalence projected to increase to 14 million by 2050.

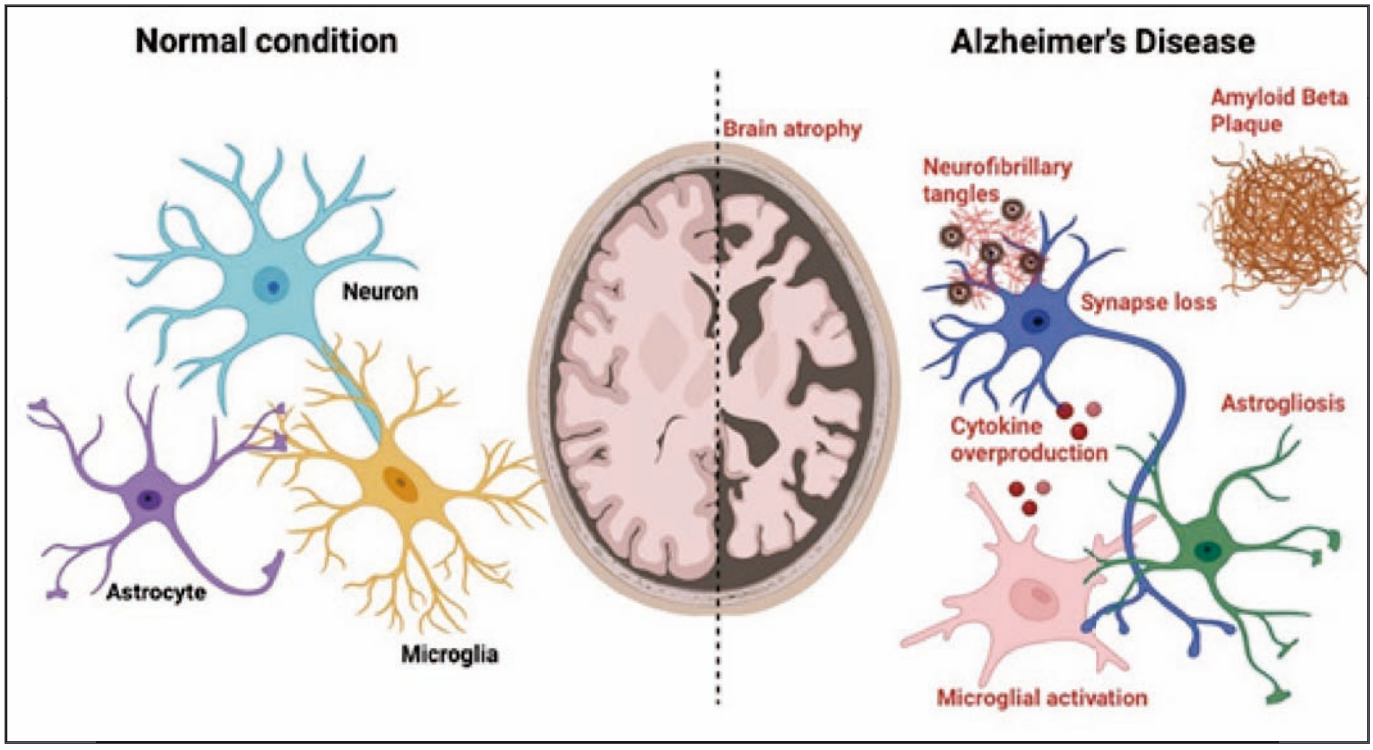

figure no. 7

INFLAMMATORY BOWEL DISEASE (IBD)

CONTEXT

UK scientists have identified a significant genetic weakness present in 95% of people with IBD. This weakness makes certain immune cells, particularly macrophages, more prone to triggering excessive inflammation in the bowels.

Key Findings:

- **Role of Macrophage**s: Macrophages, a type of white blood cell, play a crucial role in IBD by releasing inflammatory chemicals called cytokines in the intestines. Excessive inflammation caused by macrophages is a key characteristic of IBD.
- **Master Regulator Gene:** Through deep genetic analysis, researchers discovered a specific section of DNA that acts as the "master regulator" for inflammation in macrophages. Individuals with a particular version of this gene are more susceptible to developing IBD due to their heightened inflammatory response.
- **Potential Treatment Avenue**: Drugs already approved for other conditions, such as cancer, have shown promise in reducing inflammation in IBD patients' samples. These drugs target the problematic macrophages and could potentially serve as a treatment for IBD in the future.

About Inflammatory Bowel Disease (IBD)

- Inflammatory Bowel Disease (IBD) is a group of chronic conditions affecting the digestive tract, including Crohn's disease and ulcerative colitis.
- These conditions cause inflammation and damage to the gastrointestinal (GI) tract, leading to symptoms like **abdominal pain, diarrhea, and fatigue**.
- While the exact cause of IBD is unclear, both genetic and environmental factors are believed to play a role.
- There is currently no cure for IBD.
- The disease is distinct from **irritable bowel syndrome (or IBS)** although some of the symptoms overlap.
- A diagnosis of IBD is only made if there is inflammation in the bowels.

PAKISTAN REPORTS FIFTH POLIO CASE

CONTEXT:

Pakistan has confirmed the fifth polio case of the year, more than a fortnight after the victim's death, jolting the country's efforts to eradicate the crippling disease.

What is Polio?

- Polio, short for **poliomyelitis**, is a **highly contagious viral disease** that primarily affects children under 5 years old.
- It is caused by the **poliovirus.**
- Poliovirus spreads easily from person to person, mainly through contaminated feces entering the mouth (faecal-oral route). Less commonly, it can spread through contaminated water or food.
- **Symptoms and Effects**: Initially, poliovirus infects the throat and intestines, causing flu-like symptoms. In severe cases, it can invade the nervous system, leading to **paralysis,** especially in the limbs. In rare instances, it can be fatal.
- **Variations of Poliovirus:** There are three types of poliovirus:
  - Wild Poliovirus Type 1
  - Wild Poliovirus Type 2
  - Wild Poliovirus Type 3
- Wild poliovirus types 2 and 3 have been eradicated globally, and type 1 remains in a few areas. Type 1 is most likely to cause paralysis.
- **Vaccines available to fight polio:** Inactivated poliovirus (IPV), Oral polio vaccine (OPV):
- According to the World Health Organisation, polio remains endemic in only two countries: **Pakistan and Afghanistan.**

India's Case:

- In 2012, the WHO removed **India from the list of countries** with active **endemic wild poliovirus transmissio**India launched the **Pulse Polio immunisation programme** in 1995 after a resolution for a global initiative of polio eradication was adopted by the **World Health Assembly (WHA)** in 1988.

AIR POLLUTION CRISIS

CONTEXT

A recent study conducted by researchers from Singapore reveals alarming statistics regarding the health impacts of air pollution. The study using data for 40 years sheds light on the **significant number of premature deaths** worldwide attributed to man-made emissions and natural sources of pollution.

Key Findings:

- Between 1980 and 2020, approximately **135 million premature deaths globally** were associated with exposure to **particulate matter 2.5 (PM 2.5),** tiny particles harmful to human health when inhaled.
- Diseases such as **stroke, heart and lung disease, and cancer** were responsible for premature deaths, highlighting the need for pollution mitigation strategies.
- Weather phenomena like **El Nino and the Indian Ocean Dipole** exacerbated the effects of pollution, leading to a 14% increase in premature deaths.
- **Asia,** particularly **China and India**, bore the highest burden of premature deaths attributable to PM 2.5 pollution, with over 98 million deaths recorded.

- Other countries such as **Pakistan, Bangladesh, Indonesia, and Japan** also experienced significant numbers of premature deaths ranging from 2 to 5 million people.
- Climate events like **El Nino can elevate pollution levels**, further contributing to premature deaths from PM 2.5 pollution.
- The World Health Organization highlights that ambient and household air pollution contribute to approximately 6.7 million premature deaths worldwide annually.

Major Air Pollutants

The major air pollutants include **PM 10, PM 2.5, Nitrogen Dioxide, Ozone, Carbon, etc.**

- **PM 10 and PM 2.5:** Extremely fine particulate matter (PM) particles, with diameters smaller than 10 and 2.5 microns, respectively.
  - **Sources include** vehicle emissions, industrial processes, wildfires, and dust storms.
- **Nitrogen Dioxide (NO2):** Results from burning of fuel, including emissions from vehicles and power plants.
  - **Impact:** Short-term exposure can worsen respiratory diseases like asthma, while long-term exposure may contribute to asthma development and respiratory infections.
- **Ozone (O3):** Forms at surface level by reaction of atmospheric pollutants in sunlight.
  - **Impact:** Associated with increased risk of hospital admissions for Chronic Obstructive Pulmonary Diseases (COPD) and cardiovascular and respiratory deaths.
- **Sulphur Dioxide (SO2):** Emitted from burning fossil fuels by power plants and industrial facilities.
  - **Impact:** Harmful to the cardiovascular system and respiratory health; can react with other compounds to form particulate matter.
- **Ammonia (NH3):** Found in high concentrations due to increased fertilizer use and livestock waste.
  - **Impact:** Contributes to aerosol pollution, harmful algal blooms, and reduces air and water quality.
- **Lead (Pb):** Toxic metal found in the Earth's crust, with increased quantities from mining, smelting, and manufacturing.
  - **Impact:** Particularly harmful to children, causing intellectual disability and behavioural disorders, even at low levels of exposure.
- **Carbon Monoxide (CO):** Toxic gas released from burning carbon-containing fuel.
  - **Impact:** Can cause unconsciousness and death at high levels; long-term exposure linked to increased risk of heart disease.

RISING NITROUS OXIDE EMISSIONS

CONTEXT

A recent report highlights the **sharp increase in nitrous oxide emissions** from agricultural activities. Nitrous oxide, a potent greenhouse gas, is being emitted at alarming rates due to the use of chemical fertilizers and animal waste on croplands.

Key Findings:

- **Surging Emissions:** Between 1980 and 2020, nitrous oxide emissions soared by 40%, primarily driven by the intensified use of chemical fertilizers and animal waste in agriculture.
- **Top Emitters:** Countries like China, India, and the US are among the top 10 emitters of nitrous oxide. Brazil, Russia, Pakistan, Australia, Indonesia, Turkey, and Canada also contribute significantly to these emissions.
- **Rapid Increase in Nitrogen Fertilizers**: The use of commercial nitrogen fertilizers has seen a dramatic rise, from 60 million metric tonnes in 1980 to 107 million metric tonnes in 2020.
  - Additionally, animal manure contributed 101 million metric tonnes in 2020, resulting in a combined usage of 208 million metric tonnes.

FACT BOX

About Nitrous Oxide (N20)

- Nitrous oxide, commonly known as laughing gas or happy gas, is a colorless, non-flammable gas.
- Nitrous oxide is a highly potent greenhouse gas with a global warming potential approximately 300 times greater than CO2.
- It poses severe consequences for the environment and human health.
  - **Environmental Impact:** Soil, water, and air pollution. It also contributes to ozone layer depletion and exacerbates climate change. One pound of N2O warms the atmosphere about 300 times the amount that one pound of carbon dioxide does over a 100 year timescale.
  - **Health Risks**: Paralysis and even death.

PROTECTING THE WESTERN GHATS

CONTEXT

The Centre has proposed **eco-sensitive areas (ESAs)** in six states, including **Karnataka, Maharashtra, and Goa**, to safeguard the Western Ghats. However, these states are seeking a reduction in the extent of ESAs to facilitate development projects.

Key Demand: Rationalizing ESAs

- The states are advocating for a rationalization of ESAs, which currently cover **56,825 sq km** in the Ghats.
- They argue that reducing the ESAs would allow for essential development activities in the region.
- **State's demands:**
  - **Karnataka's Opposition**: Karnataka opposes the original draft based on the **K Kasturirangan panel report,** citing potential impacts on livelihoods.
  - **Goa's Demands**: Goa seeks a reduction in ESAs in specific talukas to accommodate development projects.

What are ESAs?

- ESAs are **designated areas** surrounding **national parks and wildlife sanctuaries** aimed at preserving the **ecological balance and biodiversity of sensitive regions** like the **Western Ghats.**
- They act as buffer zones between highly protected areas and places with less protection.
- These areas restrict certain activities to prevent environmental degradation and maintain the natural habitat.
- **Purpose:** to lessen human impact on these special places.
- **Extent:** Usually within 10 km of park or sanctuary boundaries. If there are important natural pathways beyond 10 km, they might stretch further.
- They're similar to ecotones, those transition zones between different ecosystems.
- **Notified by:** They are notified by the Ministry of Environment, Forests and Climate Change, Government of India around Protected Areas, National Parks and Wildlife Sanctuaries.

FACT BOX

Categories of Activities in ESAs

- **Prohibited:** Commercial Mining, Setting of Saw Mills, Setting of industries causing pollution, the establishment of major hydroelectric projects etc.
- **Regulated:** Felling of Trees, Establishment of hotels and resorts, erection of electrical cables, drastic change of agricultural systems etc.
- **Permitted:** Ongoing agriculture and horticulture practices by local communities, rainwater harvesting, organic farming etc.

About Western Ghats

- The Western Ghats run along India's west coast, starting from Gujarat through Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
- Covering 160,000 square kilometers, they're a massive mountain range.
- Anamudi, in Tamil Nadu, is their highest peak.
- Recognized for their significance, they're on the UNESCO World Heritage list.
- **Biological Diversity:** Among the world's top 8 hotspots for biodiversity.
- Role in Water Systems:
  - They act as a water source for rivers that provide water to 40% of India.
  - Rivers flowing from here are crucial for agriculture and life in the region.
- Climate Influence:
  - Their winds influence the climate by bringing in moisture. These winds cause monsoon rains in summer
  - They are also responsible for the drying up and cooling of the peninsula in winter.

GREATER ONE-HORNED RHINO (RHINOCEROS UNICORNIS)

CONTEXT:

Adivasi farmers being evicted from Kaziranga, among Asia's most militarised protected areas

About:

- The greater one-horned rhino (Indian rhino) is the largest of the rhino species.
- **Habitat:** Tropical grassland, shrublands, savanna
- **Distribution:** Northern India (Kaziranga national park in Assam, Pobitora wildlife sanctuary) and southern Nepal.
- **Conservation status:**
  - **IUCN Status:** Vulnerable
  - **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** Appendix-I
  - **Wildlife Protection Act, 1972:** Schedule I

The one-horned rhino has just one horn, setting it apart from its African counterparts. However, it's not the only rhino with one horn—the **Javan rhino** also sports a single horn.

- They live in areas with very fertile soil; people use the same land for farming purposes.

FACT BOX

- Rhinoceroses are **large, herbivorous mammals** identified by their characteristic horned snouts.
- They belong to the family Rhinocerotidae
- There are currently five species of Asian and African rhinoceros
  - **Black rhinos, Sumatran rhinos and Javan rhinos:** Critically Endangered
  - **Greater one-horned rhinos:** Vulnerable
  - **White rhinos:** Near-Threatened

(see figure no :8)

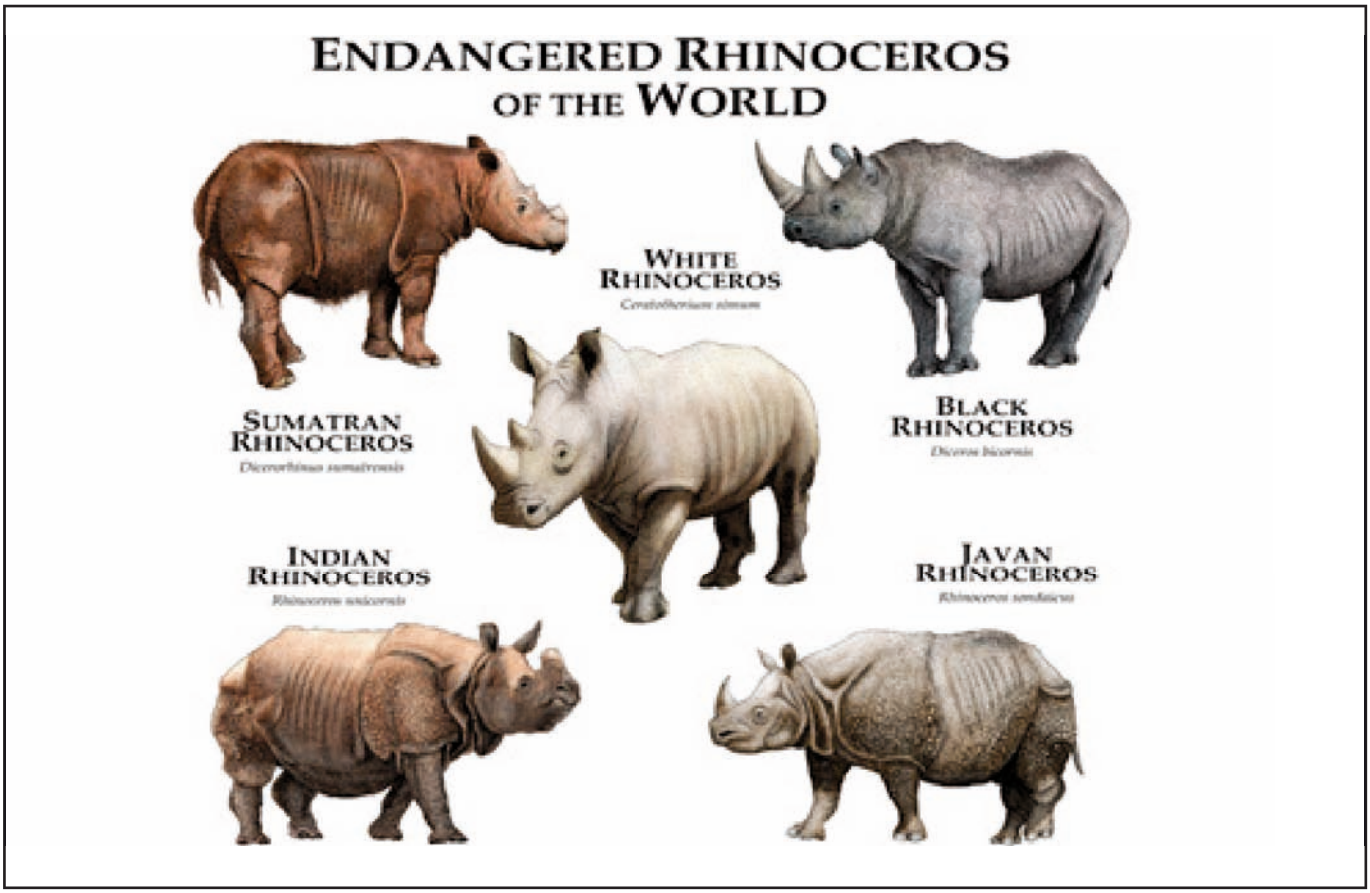
ENDANGERED RHINOCEROS
OF THE WORLD
WHITE RHINOCEROS
SUMATRAN RHINOCEROS
BLACK RHINOCEROS
INDIAN RHINOCEROS
JAVAN RHINOCEROS

figure no. 8

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SECTION-C
TERMS OF THE WEEK

S.No.	Term	About
1	**Coalition Government**	A coalition government is a government formed jointly by more than one political party
2	**Codex Alimentarius**	The Codex Alimentarius, also known as the "Food Code", is a collection of internationally recognized standards, guidelines, and codes of practice related to food, food production, food labeling, and food safety.
3	**Consumer Price Index (CPI)**	CPI is a measure of the average change overtime in the prices paid by consumers for a market basket of consumer goods and services.
4	**De-dollarisation**	De-dollarisation refers to the gradual shift away from the dominance of the U.S. dollar in international trade and finance.
5	**First-past-the-post System**	It is a voting system, in which the candidate with the highest number of votes in a constituency is declared the winner.
6	**Gross enrollment ratio (GER)**	Gross enrollment ratio (GER) is an indicator of educational progress. It calculates by dividing enrollments by corresponding population in that age group.
7	**Hydrogen Line**	The "hydrogen line" refers to a specific frequency of electromagnetic radiation emitted by neutral hydrogen atoms. It has a wavelength of about 21 centimeters, which corresponds to a frequency of approximately 1420 megahertz (MHz). This spectral line is significant in astronomy because it is used to study the distribution and motion of hydrogen gas in the universe.
8	**Infrared radiation (IR)**	Infrared radiation is a type of electromagnetic radiation with longer wavelengths than those of visible light. Despite being invisible to the human eye, infrared radiation is pervasive in our environment and plays crucial roles in various scientific, technological, and everyday applications.
9	**Kinetic energy**	Kinetic energy is a fundamental concept in physics that encapsulates the energy possessed by an object due to its motion.

10	**Lithium Triangle**	The Lithium Triangle is a region of the Andes that is rich in lithium reserves, encompassed by the borders of Argentina, Bolivia, and Chile.
11	**Lagrangian Point (L1)**	Lagrangian Point (L1) is a location in space where the gravitational forces of two celestial bodies, like the Sun and Earth, achieve equilibrium. L1 is situated approximately 1.5 million km (932,000 miles) away from Earth, which accounts for just 1% of the vast distance between the Earth and the Sun.
12	**Macrophages**	Macrophages are a type of white blood cell that play an integral part in the immune system. They help eliminate foreign substances by engulfing foreign materials and initiating immune responses.
13	**Microclimate**	Microclimate is the suite of climatic conditions measured in localized areas near the earth's surface.
14	**Market Capitalisation**	Market cap is the total value of a company's stock, found by multiplying the stock price by the number of outstanding shares.
15	**Settler colonialism**	Settler colonialism is a complex and enduring form of colonialism characterized by the settlement of a foreign group of people on land inhabited by indigenous populations. Unlike other forms of colonialism focused primarily on resource extraction or political control, settler colonialism aims to permanently displace indigenous communities and establish a new society in their place.

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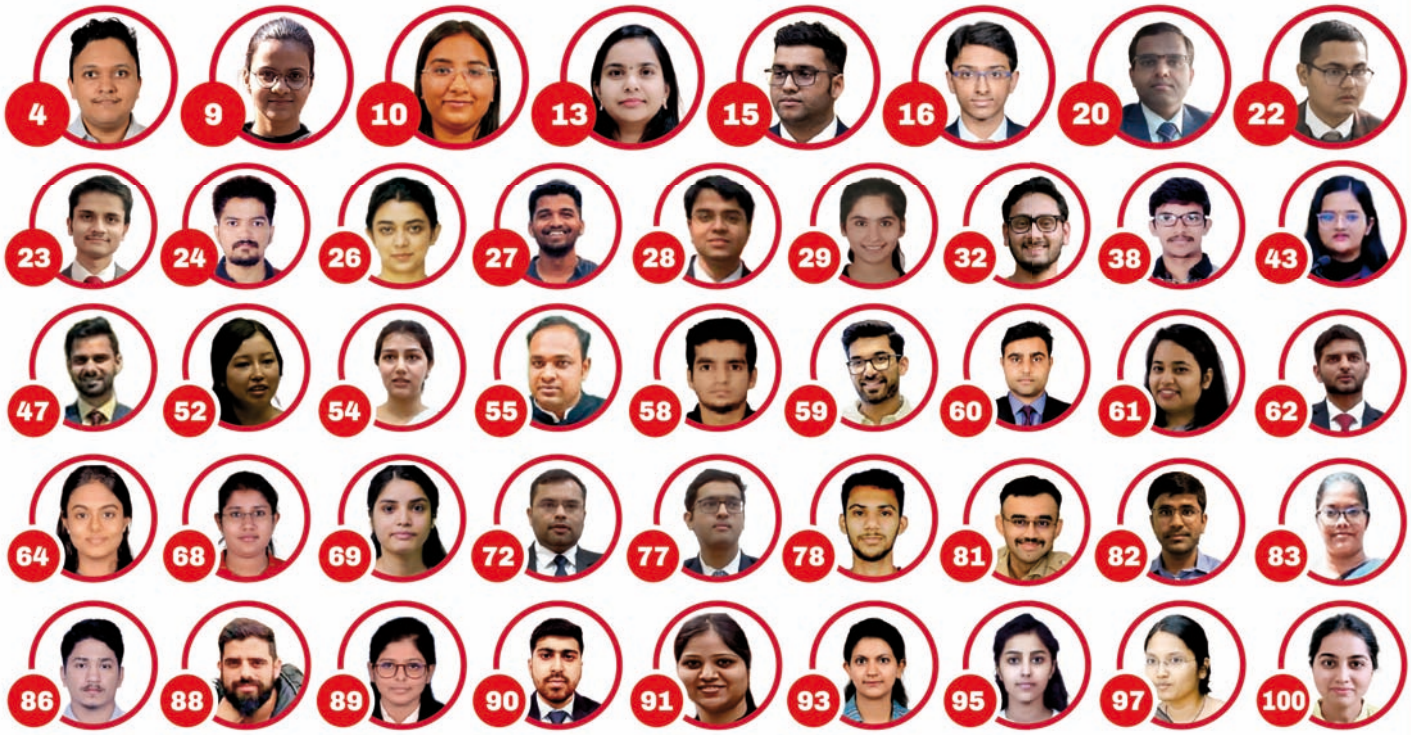

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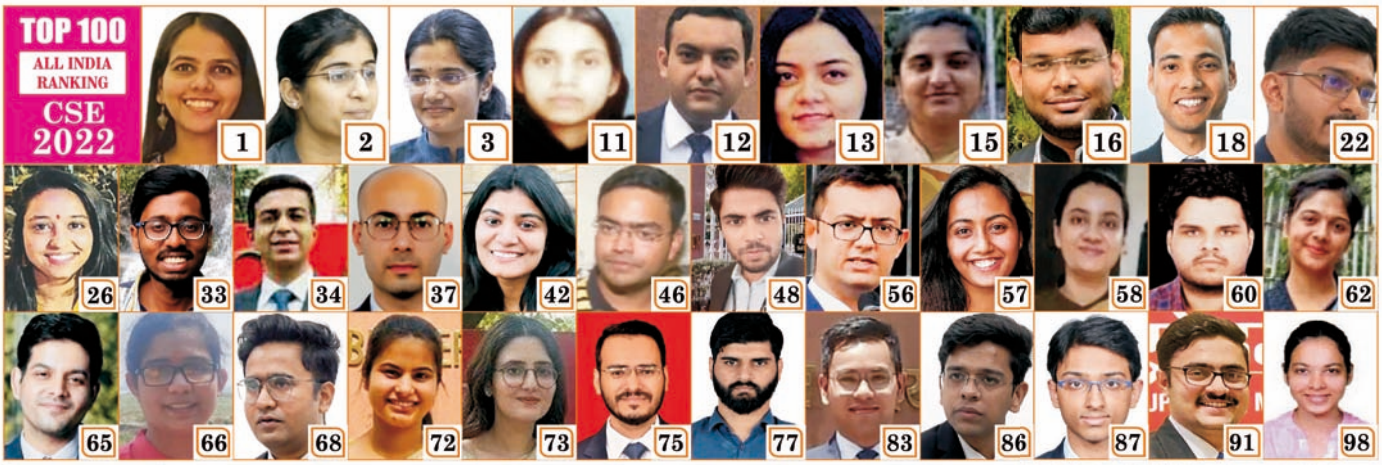

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