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WEEKLY CURRENT AFFAIRS

YOJNA IAS WEEKLY CURRENT AFFAIRS

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WEEKLY CURRENT AFFAIRS

CONTENTS

GEOSPATIAL ARTIFICIAL INTELLIGENCE (GEOAI)

This article covers "Daily Current Affairs" and the topic details "Geospatial Artificial Intelligence (Geo-AI)". The topic "Geospatial Artificial Intelligence (GeoAI)" has relevance in the "Science and Technology" section of the UPSC CSE exam.

For Prelims:

What is Geospatial Artificial Intelligence (GeoAI)?

For Mains:

GS3: Science and Technology

Why in the news?

Recently, the National Institute of Advanced Studies (NIAS) initiated a pilot project integrating GEOAI and random forest technology to monitor air quality in Bengaluru.

Geospatial Artificial Intelligence (GeoAI)

- Geospatial artificial intelligence (GeoAI) combines artificial intelligence (AI) with geospatial data, science, and technology for enhanced decision-making across various sectors such as to quickly grasp business potential, environmental effects, and operational risks.
- This fusion enables the extraction of valuable insights from geospatial data by applying AI algorithms, leading to improved spatial analysis, predictive modeling, and informed decision support.

Key Components:

- **Geospatial Data Collection:** GeoAI relies on diverse geospatial data sources, including remote sensing platforms, GPS, drones, and GIS databases. These data sources provide a wealth of information about the Earth's surface, environment, and infrastructure.
- **Artificial Intelligence Algorithms:** AI algorithms, such as machine learning and deep learning, play a pivotal role in GeoAI. These algorithms learn from historical geospatial data to make predictions, classify objects, detect anomalies, and generate valuable insights.

Benefits:

- **Enhanced Analysis:** GeoAI enables the processing of large-scale geospatial datasets with speed and accuracy, leading to more insightful analyses and informed decision-making.
- **Predictive Modeling:** By identifying patterns and trends in historical data, GeoAI supports the creation of predictive models, helping organizations anticipate future scenarios and plan accordingly.
- **Efficient Resource Allocation:** In urban planning and disaster management, GeoAI assists in optimizing resource allocation by mapping high-risk areas and identifying infrastructure gaps.
- **Environmental Monitoring:** GeoAI aids in real-time monitoring of environmental parameters, such as air quality, deforestation rates, and ocean temperature, contributing to sustainability efforts.

Challenges:

- **Data Complexity:** Geospatial data can be complex, diverse, and voluminous, posing challenges in data preprocessing, integration, and feature extraction.
- **Algorithm Selection:** Selecting appropriate AI algorithms and models for specific geospatial tasks requires expertise and domain knowledge.

How is GeoAI Utilised?

GeoAI finds application across diverse industries and scenarios, addressing challenges and capitalising on opportunities.

Application	Description
Government	Accelerates government services, predicts resource availability, and detects land-use changes.
Natural Resources	Transforms precision agriculture, monitors assets, and provides insights into tree volume.
National Mapping	Boosts productivity, speeds up GIS updates, and extracts data from big data.
Defence and Intelligence	Expedites data extraction, identifies entities, and assesses remote sensing data.
Public Safety	Improves public safety, predicts accidents, and identifies damaged infrastructure.
Insurance	Accelerates insurance claim processing, identifies damage, and facilitates recovery.
AEC (Architecture, Engineering, Construction)	Revolutionizes AEC, extracts insights from imagery, and enables energy-efficient designs.
Business Insights	Drives informed business decisions, provides market insights, and assesses new market viability.

Geospatial Artificial Intelligence (GeoAI) has emerged as a game-changer across diverse sectors. Its capabilities in optimizing decision-making, enhancing environmental monitoring, and revolutionizing urban planning are evident through multifaceted applications. By effectively addressing contemporary challenges and offering data-driven insights, GeoAI stands as a transformative force that propels various sectors towards sustainable development and better living conditions.

Additional Information:

Random Forest Technology

- Random forest technology is a widely employed machine learning algorithm that amalgamates outcomes from multiple datasets to produce a final output.
- In the context of air quality prediction, researchers utilize historical data amassed from diverse air quality monitoring stations across a city.
- By employing the random forest algorithm, they forecast the Air Quality Index with enhanced accuracy and reliability.

More about the News:

- During the India Clean Air Summit (ICAS), an event focused on addressing air quality issues, the National Institute of Advanced Studies (NIAS), Bengaluru, introduced this innovative initiative.
- GeoAI employs artificial intelligence, satellite imagery, mobile technology, and citizen science to pinpoint sources of air pollution.
- This pilot project aims to evolve into a predictive tool for effectively monitoring air quality within the city. By utilizing historical data and employing conventional artificial neural network techniques, the project team develops a robust predictive model.
- The initiative operates within a comprehensive geospatial framework, integrating various data sources into a curated database. Beyond addressing air pollution, the project aligns with broader sustainable development goals (SDGs), encompassing issues like water pollution and electromagnetic radiation.

Sources:

NIAS launches pilot project involving GEOAI and random forest tech to monitor air pollution in Bengaluru | Bangalore News – The Indian Express

Q1. With reference to GeoAI, consider the following statements:

1. Geospatial artificial intelligence (GeoAI) combines artificial intelligence (AI) with geospatial data, science, and technology for enhanced decision-making.
2. GeoAI relies solely on satellite imagery for geospatial data, excluding sources like GPS, drones, and GIS databases.
3. GeoAI focuses on analysing historical data, without the capability to make future predictions or classify objects.

Which of the statements given above is/are correct?

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

Answer: (a)

Q2. Consider the following:

1. Predict accidents for improved public safety
2. Damage identification and classification in Insurance
3. Provides market insights
4. Detects land-use changes

How many of the above are applications of geoAI?

(a) Only one

(b) Only two
(c) Only three
(d) All Four
Answer: (d)

Q3. Discuss the transformative impact of Geospatial Artificial Intelligence (GeoAI) in diverse sectors and its role in addressing contemporary challenges.

NANO LIQUID UREA

This article covers "Daily Current Affairs" and the topic details "Authenticity of Nano Liquid Urea". The topic "Authenticity of Nano Liquid Urea" has relevance in the Science and technology section of the UPSC CSE exam.

For Prelims:

What is Liquid Nano Urea?

For Mains:

GS 3: Science and Technology
What is the Context?
What are the Issues Highlighted in the Paper?
Farmers Fertilizer Cooperative Limited (IFFCO)?

Why in the news:

A recent publication in the "Plant and Soil" journal has voiced apprehensions regarding the scientific credibility of the Nano Liquid Urea manufactured by the Indian Farmers and Fertilizer Cooperative (IFFCO).

What is Liquid Nano Urea?

- Liquid Nano Urea is a **nanoparticle-based version of urea**, designed to **serve as a liquid nutrient for plants** as an innovative substitute for traditional urea fertilizers.
- Urea is a chemical fertilizer known for its white crystalline appearance, supplying plants with essential nitrogen nutrients.
- The primary goal of Liquid Nano Urea **is to replace conventional urea by reducing its usage by up to 50%.**
- In a 500 ml container, it holds 40,000 mg/L of nitrogen content, equivalent in impact to the nitrogen supplied by a standard bag of traditional urea.

Development Origin:

- The development of Liquid Nano Urea was accomplished at the Nano Biotechnology Research Centre situated in Kalol, Gujarat. This achievement aligns with the concepts of self-reliant India

(Atmanirbhar Bharat) and self-sustaining agriculture (Atmanirbhar Krishi).
- India typically relies on imports to fulfill its urea demand.

Significance:

- It has demonstrated its effectiveness in enhancing plant nutrition, resulting in increased agricultural productivity and improved nutritional qualities of crops.
- By reducing excessive urea application and enhancing soil balance, it contributes to robust and healthier crops while safeguarding against lodging.
- The utilization of Liquid Nano Urea also positively affects groundwater quality, significantly reduces global warming, and contributes to sustainable development, thereby influencing climate change.

What is the Context?

- In the backdrop of the development of nano liquid urea, IFFCO put forth the assertion that even a small quantity of this innovative solution could replace a significant portion of conventional urea.
- Both the central government and IFFCO have set ambitious objectives for the production and export expansion of nano urea.
- However, concerns have been raised by researchers regarding the potential repercussions of these plans, expressing apprehensions that exaggerated claims might result in substantial yield losses, impacting both food security and the livelihoods of farmers.

What are the Issues Highlighted in the Paper?

Discrepancy Between Claims and Outcomes:

- Nano liquid urea was introduced with great promise, positioned as a viable substitute for traditional granular urea.
- Regrettably, the application of nano liquid urea in real-world agricultural settings has not yielded the anticipated results. Farmers adopting this fertilizer have encountered elevated input costs without corresponding enhancements in crop yield.
- This glaring disparity underscores the contrast between the claims made about the product and the actual results it produces in practical scenarios.

What is the Indian Farmers Fertilizer Cooperative Limited?

- The Indian Farmers Fertilizer Cooperative Limited (IFFCO) stands as one of India's largest cooperative societies, entirely owned by Indian cooperatives.
- Established in 1967 with a modest count of 57 cooperatives, it has grown into a confluence of more than 36,000 Indian cooperatives. Its operational scope spans diverse areas including General Insurance, Rural Telecom, and its core function of manufacturing and vending fertilizers.

Primary Goal:

- IFFCO's central objective revolves around facilitating the prosperity of Indian farmers by ensuring the timely provision of dependable, high-quality agricultural inputs and services. This mission is pursued while maintaining environmental sustainability, and it encompasses additional endeav-

ors geared towards enhancing the well-being of farmers.

In Conclusion:

The controversy surrounding Nano Liquid Urea acts as a poignant reminder of the imperative for transparency and conscientious innovation within the agricultural domain.
Striking a harmonious equilibrium between technological progress and ecological sustainability emerges as a critical factor not only for the welfare of farmers and food security but also for the overall health of our planet.

SOURCE:
https://www.downtoearth.org.in/news/agriculture/-no-scientifically-proven-effects-of-nano-liquid-urea-on-crops-research-pokes-holes-in-iffco-s-claims-91298

Q.1 With reference to the 'Nano Urea' recently seen in news, consider the following statements:
1. Nano urea is a form of urea fertilizer that is designed to enhance crop yield and reduce nitrogen losses.
2. Nano urea particles are larger in size compared to conventional urea particles, which leads to slower nutrient release.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
ANSWER: A

Q.2 With reference to the 'Nano Urea' recently seen in news, consider the following statements:
1. One of the potential benefits of nano urea is its ability to mitigate soil and water pollution caused by excessive nitrogen runoff.
2. Nano urea is exclusively designed for foliar application and cannot be used as a soil-applied fertilizer.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
ANSWER: A

Q.3 Discuss the potential of nano urea in contributing to sustainable agricultural practices.

CARE PROTOCOL FOR BABIES

This article covers "Daily Current Affairs" and the topic details "Care Protocol for Babies". The topic "Care Protocol for Babies" has relevance in the "Social Justice" section of the UPSC CSE exam.

For Prelims:

What is the neonatal period?
What are IMR, MMR, NMR?

For Mains:

GS2: Social Justice

Why in the news?

Earlier this week, Lucy Letby, a former British nurse, was sentenced to life imprisonment in what has been described as the most egregious case of child serial killing in the history of the United Kingdom.

Patient Safety Measures in India

- Patient safety is a cornerstone of public healthcare, holding immense importance. According to the document titled **'National Patient Safety Implementation Framework (2018-2025)**' by the Union Health Ministry, **patient safety refers to ensuring that patients are shielded from unnecessary harm or potential harm related to the provision of healthcare.**
- In India, patients' safety is safeguarded through a multifaceted but fragmented legal framework.
  - The foundational principles of patient safety are enshrined in the Hippocratic Oath.
  - The Consumer Protection Act of 2019 addresses concerns regarding medical negligence and inadequacy of medical services.
  - The Clinical Establishment Act of 2010 further delineates patients' legal rights.
  - Both the National Pharmaceutical Pricing Authority and the Drugs Controller General of India oversee regulatory mechanisms to ensure patients' rights regarding medications and medical devices, preventing overcharging and ensuring protection.

What is the neonatal period?

- The neonatal period, spanning the first four weeks (28 days) of life, is characterized by rapid changes, including the establishment of feeding patterns and parental bonding.
- While it's a time of essential development, the heightened vulnerability to infections and the early potential for detecting birth defects highlight the need for vigilant care during these crucial early weeks.

Neonatal Issues:

- **Persisting Neonatal Mortality:**
  - Despite a global decline in neonatal deaths from 5 million in 1990 to 2.4 million in 2019, newborns continue to face significant mortality risks.
  - The first 28 days of life are critical, as evidenced by the fact that 47% of all under-five deaths in 2019 occurred during this period.

- Disturbingly, nearly one-third of neonatal deaths happen on the day of birth, and around three-quarters occur within the initial week.

Factors Contributing to Neonatal Deaths:

- Several factors contribute to neonatal mortality. These include pre-term birth, intrapartum-related complications (such as birth asphyxia), infections, and birth defects.
- These conditions often arise due to a lack of quality care during and immediately after birth.

Addressing Challenges:

- **Role of Midwife-led Continuity of Care:**
- Research suggests that midwife-led continuity of care (MLCC), provided by professionally trained and regulated midwives adhering to international standards, can significantly impact neonatal outcomes.
- Women receiving MLCC are 16% less likely to experience infant loss and 24% less likely to have pre-term births.
- **Importance of Prompt Medical Care: .**
- Families are advised to seek prompt medical care if newborns display danger signs, such as feeding difficulties, reduced activity, breathing issues, fever, convulsions, jaundice within 24 hours of birth, yellowing of palms and soles, or coldness.
- Immediate attention can mitigate health risks for newborns.
- **Vital Role of Birth Registration and Vaccination:**
- Birth registration and timely vaccination are crucial for newborns' well-being. Families are encouraged to register births and adhere to national vaccination schedules.
- These steps contribute to comprehensive healthcare and disease prevention for neonates.
- **Enhanced Care for Vulnerable Newborns:**
- Certain newborns require heightened attention and care both during hospitalization and at home to minimize health risks. .
- Tailored support and monitoring are essential to ensure their optimal health and development.

Additional Information:

Term	Definition	Purpose and Importance	2019 Data
IMR (Infant Mortality Rate)	The number of deaths of infants under one year of age per 1,000 live births in a given population within a specific time frame.	Measures the overall health and well-being of infants within a society.	30/1000
MMR (Maternal Mortality Rate)	The number of maternal deaths (deaths of pregnant or postpartum women) per 100,000 live births in a given population and time period.	Assesses the quality of maternal healthcare and the well-being of women during pregnancy, childbirth, and the postpartum period.	8.1
NMR (Neonatal Mortality Rate)	The number of deaths of newborn infants (neonates) within the first 28 days of life per 1,000 live births in a given population.	Provides insight into newborn health and survival during the vulnerable initial weeks of life.	22/1000

Sources:
Explained | What is the care protocol for babies in India? – The Hindu

Q1. With reference to Mortality Rates, consider the following statements:
1. IMR (Infant Mortality Rate) is the number of deaths of infants under one year old per 1,000 live births.
2. MMR (Maternal Mortality Rate) is the number of maternal deaths per 1000 live births.
3. NMR (Neonatal Mortality Rate) is the number of deaths of newborns within the first 28 days of life per 1,000 live births.

Which of the statements given above is/are correct?
(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2 and 3
Answer: (b)

Q2. Explain the concept of the neonatal period and its significance in infant health. Elaborate on the factors contributing to neonatal mortality and the strategies to address these challenges.

SEETHAKALI FOLK DANCE

This article covers "Daily Current Affairs" and the topic details "Seethakali Folk Dance". The topic "Seethakali Folk Dance" has relevance in the Art and Culture section of the UPSC CSE exam.
GS 1: Art and Culture

Why in the news:

For the first time, the 20-member ensemble from the Perinad Seethakali Sangham is gearing up to present the Seethakali art form outside of Kerala.outside the state of Kerala.
This marks a significant milestone for this traditional Dravidian dance form, which combines songs, storytelling, and dynamic movements, as it ventures beyond its regional boundaries.

Seethakali: A Historical Dance Form:

Seethakali, a centuries-old dance form, is distinguished by its fusion of **rhythmic movements, narrative storytelling, and musical accompaniments**. Originating in **Perinad, Kollam district**, this art form traces its roots back approximately **150 years**. It was traditionally **performed by the Vedar and Pulayar communities as part of the Onam festivities.**

Thematic Basis:

At its core, **Seethakali draws inspiration from episodes within the epic Ramayana**. It encapsu-

lates the **journey of Seetha, encompassing her exile to the forest (vanayatra) and her symbolic descent into the earth (andardhanam)**. Key mythological characters such as Rama, Seetha, Ravana, and Hanuman bring this narrative to life.

Melodic Companions:

Central to Seethakali performances are the enchanting folk songs that accompany the dancers. **Passed down through generations, these oral traditions enrich the storytelling aspect of the dance.**

Traditional Instruments and Props:

Seethakali embraces nature in its instruments and props, crafted from materials like bamboo and palm leaves. Musical accompaniments include instruments such as the **ganjira, manikatta, chiratta, and kaimani.**

Vibrant Attire and Visual Elements:

Costumes and makeup in Seethakali are notable for their vividness. Characters like **Rama and Laxmana are adorned in green attire**, as this hue symbolizes divinity in line with traditions seen in Kathakali.

Perinad Seethakali Sangham:

The Perinad Seethakali Sangham stands as the sole registered performing group dedicated to Seethakali within Kerala. Recognized by the Kerala Folklore Akademi in 2018, this group's affiliation has played a pivotal role in reviving this distinct art form, which was once on the brink of fading into obscurity.

By expanding beyond its native region, the Perinad Seethakali Sangham not only showcases the artistic and cultural richness of Seethakali but also contributes to preserving and sharing a piece of Kerala's cultural heritage on a broader stage.

SOURCE:
https://www.thehindu.com/news/national/kerala/artistes-breathe-a-new-life-into-seethakali-folk-art/article67234768.ece

Q.1 Seethakali, a traditional Dravidian dance form that combines songs, storytelling, and dynamic movements is associated with:
(a) kerala
(b) karnataka
(c) Tamil nadu

(d) Andhra Pradesh
ANSWER: A

Q.2 Consider the following statements:
1. The dance form Seethakali draws inspiration from episodes within the epic Ramayana.
2. Seethakali dancers wear monochrome costumes during performances.
3. Folk songs accompany Seethakali performances and are passed down orally through generations.

How many of the above statement/s is/are correct?
(a) Only one
(b) Only two
(c) All three
(d) None
ANSWER: B

KAMPALA DECLARATION

This article covers "Daily Current Affairs" and the topic details "Kampala Declaration". The topic "Kampala Declaration" has relevance in the "Environment and Ecology" section of the UPSC CSE exam.

For Prelims:

What is the Kampala Declaration?

For Mains:

GS3: Environment and Ecology

Why in the news?

A total of 48 African nations have recently endorsed the Kampala Ministerial Declaration on Migration, Environment, and Climate Change (KDMECC).

Kampala Declaration:

- Kampala Ministerial Declaration on Migration, Environment, and Climate Change (KDMECC) is **co-hosted by the governments of Kenya and Uganda** with support from the **International Organization for Migration (IOM)** and the **United Nations Framework Convention on Climate Change (UNFCCC).**
- The KDMECC is a pioneering initiative led by member states to effectively address the interconnected challenges of human mobility and climate change in Africa.
- It represents a **practical and action-oriented framework aimed at dealing with climate-induced migration**. The declaration's expansion across the continent was a subject of discussion during a conference.

Significance:

- Africa stands as one of the most susceptible continents to the repercussions of climate change. The increasing occurrence and severity of extreme weather events directly impact migration patterns.
- Recent reports indicate that there were over 7.5 million new internal displacements due to disasters in the preceding year. If no substantial actions are taken, the number of internal migrants within Africa could soar to as high as 105 million individuals.
- Consequently, addressing the connection between human mobility, climate change, and environmental shifts has gained substantial global importance and urgency.

Climate Change Challenges:

- **Greenhouse Gas Emissions:** Global emissions of greenhouse gases continued to escalate in 2022. Carbon dioxide levels reached 149% of pre-industrial levels, methane surged to 262% of pre-industrial levels, and nitrous oxide reached 124%.
- **Global Mean Temperature:** 2022 witnessed the planet being 1.15 ± 0.13 °C warmer than the pre-industrial average. This marked the eighth consecutive year of record warmth.
- **Precipitation Patterns:** Disparities in precipitation prevailed in 2022, with regions experiencing excessive rainfall while others faced deficits. Areas of above-normal precipitation included significant parts of Asia, the Caribbean, and parts of Africa.
- **Ocean Heat Content:** The atmosphere's increasing GHG concentrations led to warming temperatures on land and in the oceans. Projections indicate a continuous ocean warming trajectory, irreversible on long time scales. In 2022, marine heatwaves impacted 58% of the ocean's surface.
- **Sea Level Rise:** Global mean sea level persisted in its upward trend in 2022, rising approximately 3.4 ± 0.3 mm annually over the past three decades.
- **Extreme Events:** Escalating global temperatures contributed to more frequent and severe extreme weather incidents worldwide, encompassing heatwaves, floods, droughts, wildfires, and storms.

Global Impacts: Climate change consequences reverberated globally:

- Indian monsoons deviated from their usual timing.
- Northeast India faced both floods and dry spells.
- Pakistan encountered devastating floods affecting millions.

- Europe's record temperatures triggered droughts and reduced river flows.
- North America and Australia battled extensive forest fires.

Recommendations and Way Forward: Addressing climate challenges requires substantial efforts, including:

- **Investments in Resilience**: Prioritising investments to bolster resilience, encompassing agricultural risk mitigation, food security, and the enhancement of warning systems against floods and cyclones.
- **Review of Paris Targets:** Reevaluation of the Paris Agreement's voluntary targets to ensure they effectively restrict temperature escalation.
- **COP28 and Progress Assessment:** The 2023 United Nations Climate Change Conference (COP28) in Dubai will serve as a pivotal juncture to evaluate global progress under the Paris Agreement. The conference is expected to identify actions necessary to bridge existing gaps and enhance climate action worldwide.

Sources:
Kampala Declaration on climate change, human mobility now has 48 African countries as members (downtoearth.org.in)

Q1. Which of the following correctly describe Kampala Declaration:
(a) An economic initiative focused on improving trade relations among African countries.
(b) A political alliance formed by African nations to counter global superpowers.
(c) A practical framework aimed at addressing the nexus of human mobility and climate change in Africa.
(d) A treaty focusing solely on wildlife conservation efforts in Africa
Answer: (c)

Q2. Consider the following counties:
1. Somalia
2. South Sudan
3. Ethiopia
4. Kenya
5. Democratic Republic of Congo

How many of the abovementioned countries share a land boundary with Uganda?
(a) Only one
(b) Only two
(c) Only three
(d) All Four
Answer: (c)

Q3. Examine the significance of the Kampala Ministerial Declaration on Migration, Environment, and Climate Change (KDMECC) in the context of Africa's vulnerability to climate change.

EQUATORIAL ORIGIN CYCLONES AND PACIFIC DECADAL OSCILLATION

This article covers "Daily Current Affairs" and the topic details "Equatorial Origin Cyclones and Pacific Decadal Oscillation". The topic "Equatorial Origin Cyclones and Pacific Decadal Oscillation" has relevance in the Geography section of the UPSC CSE exam.

For Prelims:

What are Equatorial-Origin Cyclones?
What is the Pacific Decadal Oscillation?
ENSO and PDO Interaction

For Mains:

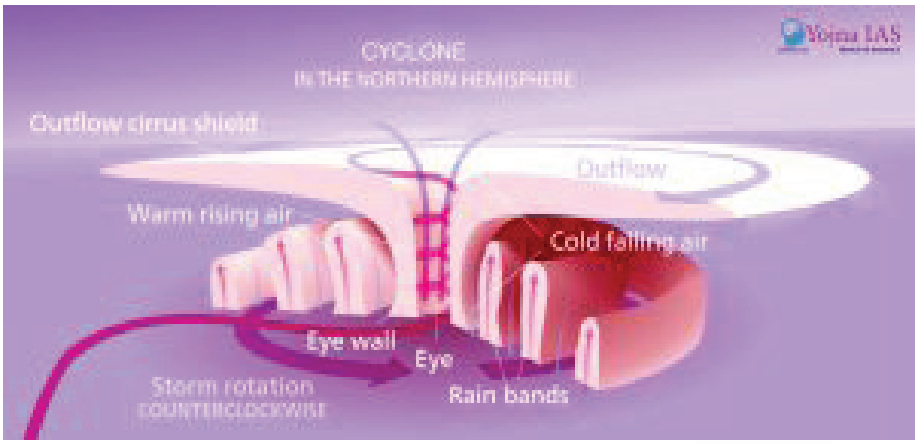
GS 1: Geography
PDO's impact?

Why in the news:

In recent years, there has been a noticeable decrease in the activity of equatorial-origin cyclones.However, a study featured in the journal Nature Communications proposes a potential shift in this pattern. It suggests that the interplay between global warming and the Pacific Decadal Oscillation (PDO) might lead to an increased occurrence of these cyclones in the forthcoming decades

What are Equatorial-Origin Cyclones?

- Equatorial-Origin or Low Latitude Cyclones (LLCs) are cyclonic systems originating **between 5°N and 11°N latitude.** These cyclones **are generally smaller in size compared to those formed at higher latitudes** but tend to intensify more rapidly under certain conditions.
- While cyclones forming near the equator are **relatively uncommon**, when the sea surface temperatures are warm, these systems can gather more moisture and energy, leading to increased intensity. The **Western Pacific Ocean is a prominent area where a majority of these cyclones originate.**
- An example of such a cyclone is the 2017 Cyclone Ockhi, which had an equatorial origin and traveled over 2000 km, causing significant devastation in regions like Kerala, Tamil Nadu, and Sri Lanka.
- During the post-monsoon season (October to December), the north Indian Ocean (NIO) becomes a hotspot for the formation of LLCs. Despite constituting about 60% of all Tropical Cyclones formed in the NIO since 1951, these low-latitude cyclones have received relatively less attention in terms of research and study.



What is the Pacific Decadal Oscillation?

- The Pacific Decadal Oscillation (PDO) is a prolonged pattern of oceanic variation in the Pacific Ocean. It is characterized by cyclical shifts that occur over a span of approximately 20 to 30 years. Similar to the El Niño-Southern Oscillation (ENSO), the PDO exhibits alternating 'warm' and 'cool' phases.
- During a positive (warm) PDO phase, the western Pacific Ocean experiences cooler sea surface temperatures while the eastern side becomes warmer. Conversely, during a negative (cool) PDO phase, the pattern reverses with warmer temperatures in the western Pacific and cooler temperatures in the east.
- The term "Pacific Decadal Oscillation" was introduced around 1996 by Steven Hare to describe this long-term oscillation.

PDO's impact :

- **Global Climate**: The PDO's phase can substantially influence the global climate. It affects the frequency of Pacific and Atlantic hurricane activity, the occurrence of droughts and floods around the Pacific region, the productivity of marine ecosystems, and the overall temperature patterns across the globe.
- **Cyclones:** Notably, the PDO phase has implications for cyclone activity. A positive (warmer) PDO phase tends to result in fewer equatorial-origin cyclones. This is due to the altered sea surface temperature patterns affecting the conditions conducive for cyclone formation and intensification.
- **Recent Trends:** In 2019, the PDO shifted into a cooler, negative phase. If this trend continues, it could lead to an increase in the frequency of equatorial-origin cyclones during the post-monsoon months.

ENSO and PDO Interaction:

- **Positive ENSO with Positive PDO:** This combination can lead to intensified impacts. A positive ENSO phase (El Niño) involves warmer-than-average sea surface temperatures in the central and eastern Pacific. If this aligns with a positive PDO phase (warmer eastern Pacific), the impacts of El Niño, such as droughts and altered rainfall patterns, might be exacerbated.
- **Negative ENSO with Positive PDO:** While a negative ENSO phase (La Niña) generally brings more rain to India, it might result in even wetter conditions in certain regions if it coincides with a positive PDO phase.

PDO vs ENSO:

- **Time Scale:** ENSO events, characterized by El Niño and La Niña phases, typically occur over a 2 to 7-year cycle. In contrast, PDO operates on a longer time scale, with its phases lasting about 20 to 30 years.

Detection: ENSO phases can be identified relatively quickly, with their impacts becoming evident within a year. On the other hand, determining whether the PDO is in a positive or negative phase requires observing ocean temperatures and atmospheric interactions over several years.

Source:
https://www.thehindu.com/sci-tech/energy-and-environment/warming-pacific-points-to-rise-in-cyclones-over-india-study/article67245627.ece

Q.1 Consider the following statements regarding Equatorial-Origin or Low Latitude Cyclones (LLCs):

1. LLCs intensify more rapidly in colder sea surface temperatures near the equator.
2. The Cyclone Ockhi is an example of an equatorial-origin cyclone.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

ANSWER:B

Q.2 Consider the following statements regarding Pacific Decadal Oscillation (PDO) and El Niño-Southern Oscillation (ENSO).

1. PDO's positive phase is associated with cooler sea surface temperatures in the western Pacific and warmer temperatures in the eastern side.
2. A combination of positive ENSO and positive PDO phases can intensify climate impacts, including droughts and altered rainfall patterns.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

ANSWER:B

Q.3 Examine the characteristics and significance of Equatorial-Origin or Low Latitude Cyclones (LLCs) in the context of cyclone formation. How do these cyclones differ from their higher latitude counterparts

SUPER BLUE MOON

This article covers "Daily Current Affairs" and the topic details "Super Blue Moon". The topic "Super Blue Moon" has relevance in the "Geography" section of the UPSC CSE exam.

For Prelims:

What is the Super Blue Moon ?
What is apogee and perigee?

For Mains:

GS1: Geography

Why in the news?

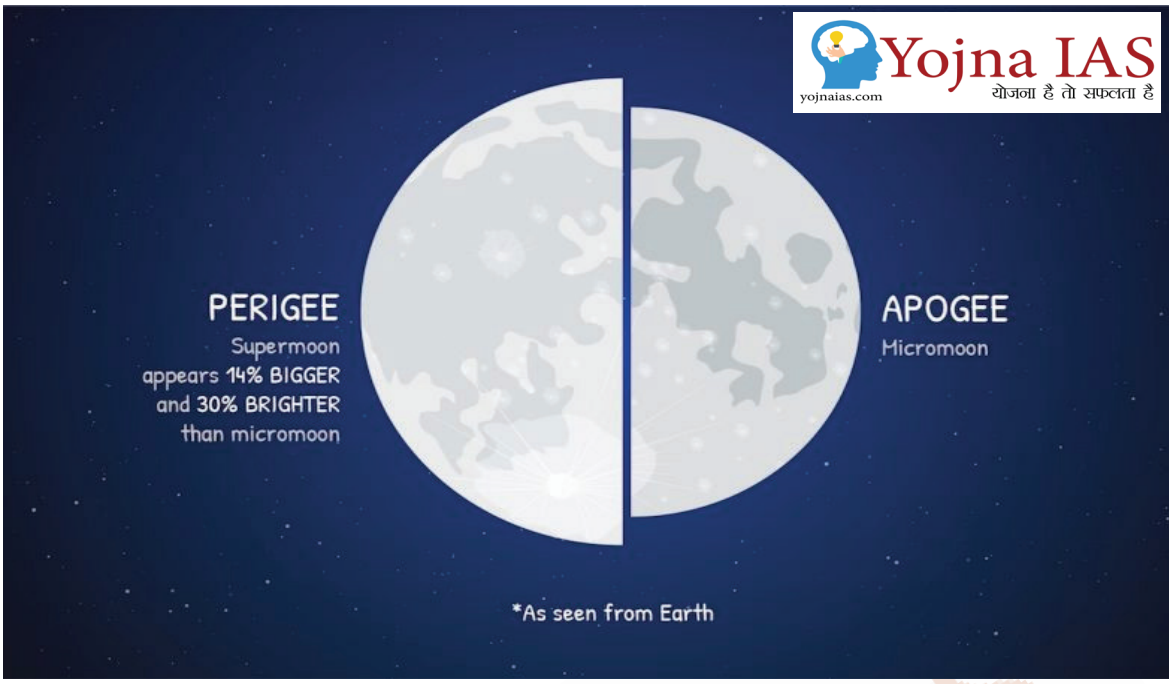
The full moon during Raksha Bandhan on August 30-31 is attracting attention for its uniqueness as it will be both a "blue moon" and a "super moon."

What is a Supermoon?

- The moon's orbit around the Earth is not a perfect circle but an elongated or elliptical shape.
  - It takes the moon 27.3 days to complete one orbit around the Earth, but 29.5 days from one new moon to the next.
  - This slight difference arises because both the Earth and the moon are in motion around the sun.
  - Consequently, it takes extra time for the sun to illuminate the moon the same way it does at the start of every Earth orbit.
  - A full moon occurs when the moon is directly opposite the sun from Earth's perspective, resulting in the entire illuminated side facing Earth.
- **A super moon happens when the moon is passing through or is close to its perigee, the point closest to Earth in its elliptical orbit, and it's also a full moon.** While this also happens with new moons, they remain invisible.
- A full moon at perigee, or a super moon, appears approximately 14% larger and 30% brighter than a full moon at apogee, known as a "micro moon," according to NASA.

Additional Information:

- **Perigee** is used to describe the point in an object's orbit around a celestial body, such as a planet or a moon, where it is closest to that body.
  - In simpler terms, it is the lowest point or the **closest distance** an object reaches in its orbit to the celestial body it is orbiting.
- **Apogee** is used to describe the point in an object's orbit around a celestial body, such as a planet or a moon, where it is farthest from that body.
  - In simpler terms, it is the highest point or the **greatest distance** an object reaches in its orbit away from the celestial body it is circling.



What is a Blue Moon?

- **A blue moon is a term used when two full moons occur in a single calendar month.**
  - Since the time between new moons is about 29.5 days, there are occasions when the first full moon of a month happens at the beginning, leaving days for another full cycle to be completed in the same month.
- Consequently, a month featuring a full moon on the 1st or 2nd day will also have a second full moon on the 30th or 31st. NASA notes that this phenomenon occurs every two or three years.
- Importantly, **the term "Blue Moon" has no relation to the moon's actual colour**, as the moon can appear differently hued due to atmospheric conditions.

How Rare is a Blue Supermoon?

- According to NASA, blue supermoons are exceedingly rare events. They typically **occur only once every ten years** due to specific astronomical conditions.
- On occasion, the gap between blue supermoons can extend to as long as twenty years. The next pair of super blue moons is expected in 2037, appearing in January and March.

Sources:

In pictures | Rare blue supermoon dazzles stargazers around the globe – The Hindu

Q1. With reference to Supermoon, consider the following statements:

1. A super moon happens when the moon is passing through or is close to its apogee.
2. According to NASA, a full moon at perigee is known as a micro moon.
3. The term "Blue Moon" is related to the actual colour of the moon, as atmospheric conditions can cause the moon to exhibit a blue colour.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only

(c) 3 only
(d) None
Answer: (d)

Q2. Consider the following:
1. Perigee is the point in an object's orbit where it is at its closest distance to the celestial body it is orbiting.
2. The apogee is the point where it reaches its greatest distance away from that celestial body.
3. A full moon at perigee appears approximately 14% larger and 30% brighter than a full moon at apogee.

How many of the abovementioned statements are correct ?
(a) Only one
(b) Only two
(c) All three
(d) None
Answer: (c)

Q3. Discuss the scientific phenomena behind a Super Blue Moon and its occurrence. How does it differ from a regular full moon?

OBC RESERVATION IN LOCAL BODIES

This article covers "Daily Current Affairs" and the topic details "OBC Reservation in Local Bodies". The topic "OBC Reservation in Local Bodies" has relevance in the Governance section of the UPSC CSE exam.

For Prelims:

key points regarding this decision?

For Mains:

GS 2: Governance
What are the General Arguments in Favor of OBC Reservation in Local Body Elections?
Arguments Against?

Why in the news:

The state government of Gujarat has recently increased the reservation for Other Backward Classes (OBCs) from the current 10% to 27% in panchayats and urban local bodies.

key points regarding this decision:

- The decision was made based on recommendations from the **Justice K S Jhaveri Commission**, which was established following a 2022 Supreme Court directive aimed at suggesting measures for OBC (Other Backward Classes) reservation in local bodies in Gujarat.

- The expanded OBC reservation of 27% will be applicable **across all levels of local bodies**, including municipal corporations, municipalities, gram panchayats, taluka panchayats, and district panchayats.
- However, this increased OBC reservation will **not be enforced in regions governed by the PESA Act of 1996**, **where the Scheduled Tribe (ST) population exceeds 50%.** In such areas, OBC candidates will receive a reservation of 10%.
- It's important to note that the existing quotas for Scheduled Castes (SCs) at 14% and Scheduled Tribes (STs) at 7% remain unchanged, ensuring compliance with the 50% reservation cap mandated by the Supreme Court.

What is the Supreme Court's stance on reservation in local bodies?

- In a landmark decision by a five-judge Constitution Bench in the case of **K. Krishnamurthy (Dr.) v. Union of India (2010),** the Supreme Court interpreted **Article 243D(6) and Article 243T(6)**, which allow for the reservation of seats for backward classes in panchayats and municipal bodies, respectively.
- The Supreme Court also emphasized that the obstacles to political participation differ from those hindering access to education and employment, as seen in Article 15(4) and Article 16(4), which pertain to reservation in education and employment.
- However, the Supreme Court clarified that while reservations in local bodies are permissible, they are contingent on empirical evidence of backwardness specific to these bodies. This determination is based on what is known as the "triple test," comprising the following conditions:
  1. The establishment of a dedicated Commission to conduct a thorough empirical inquiry into the nature of backwardness in local bodies.
  2. The specification of the proportion of reservation required to be allocated on a local body-by-body basis.
  3. The assurance that such reservation does not exceed an aggregate of 50% of the total seats reserved for Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs) combined.

What are the General Arguments in Favor of OBC Reservation in Local Body Elections?

- Empowerment, Inclusivity, and Participation: Reservation offers OBC individuals a chance to actively engage in local governance, enabling them to voice their concerns, represent their communities, and play a role in shaping policies that affect their lives.
- Relevance of Policies: Elected representatives from OBC backgrounds are more likely to comprehend the unique challenges faced by their communities and work effectively to address them.
- Skill and Leadership Development: Reservation provides increased opportunities for individuals to acquire experience in leadership positions, public speaking, and decision-making.
- Heightened Political Awareness: It fosters political awareness and engagement among community members, motivating them to participate more actively in the political process.
- Long-Term Positive Impact: Advocates argue that over time, this approach may lead to a fairer distribution of resources, improved socio-economic indicators, and reduced disparities among various segments of society.

Arguments Against:

- **Caste-Based Division:** Some critics argue that reservations based on caste perpetuate societal

divisions, emphasizing differences instead of promoting unity.

- **Disadvantaged Groups Within OBCs:** Concerns exist regarding varying levels of privilege within the OBC category, with some groups considered more privileged (referred to as the "creamy layer") than others. Implementing reservations for the entire OBC category might lead to relatively more privileged groups benefiting disproportionately, while the most marginalized OBCs continue to be underrepresented.
- **Reservation Efficacy:** Skeptics also raise doubts about the long-term effectiveness of reservations in genuinely addressing socio-economic disparities. They advocate for alternative approaches such as targeted welfare programs and skill development initiatives.
- **Impact on Local Governance:** There are concerns that political considerations may take precedence over governance priorities when candidates are elected through reservations. This could potentially hinder effective decision-making and the overall development of local governing bodies.

SOURCE:

https://www.thehindu.com/news/national/other-states/gujarat-government-hikes-reservations-for-obcs-to-27-in-panchayats-and-ulbs/article67248279.ece#:~:text=The%20Congress%20recently%20held%20a%20sit%2Din%20demanding%20reservations%20for%20the%20community&text=The%20Gujarat%20government%20on%20August,panchayats%20and%20urban%20local%20bodies.

Q.1 Local self-government is most accurately described as a manifestation of:

(a) Federalism
(b) Democratic decentralization
(c) Administrative delegation
(d) Direct democratic engagement

ANSWER: B

Q.2 Consider the following statements:

1. To become a member of a Panchayat, an individual must be at least 25 years old.
2. If a Panchayat is reconstituted due to premature dissolution, it will exist only for the remaining duration of its original term.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

ANSWER: B

Q.3 "Discuss the evolving dynamics of reservation policies in India, considering the recent decision by the Gujarat state government to raise OBC reservations in panchayats and urban local bodies. Analyze the constitutional and social implications of such changes, and evaluate their impact on social justice and governance."

CATTLE GENOMICS SCHEME

This article covers "Daily Current Affairs" and the topic details "Cattle Genomics Scheme". The topic "Cattle Genomics Scheme" has relevance in the "Economy" section of the UPSC CSE exam.

For Prelims:

What is the Cattle Genomics Scheme?
What is genomics?

For Mains:

GS3: Economics of Animal Rearing
GS3: Science and Technology

Why in the news?

The Cattle Genomics Scheme has garnered significant attention in the news due to its multifaceted approach and potential impact on farmers and the rural economy.

Cattle Genomics Scheme:

- The Cattle Genomics Scheme, launched by the **Department of Biotechnology (DBT)** in collaboration with the Union Ministry of Science and Technology and Earth Science, aims to empower farmers and bolster the rural economy.

Aim of Cattle Genomics Scheme:

- **Creating Farmer-Scientist Networks:**
  - Establishing direct connections between farmers and scientists to enhance productivity through scientific interventions and education.
  - Selected research institutes will play a pivotal role in advancing cattle genomics.
- **Selective Breeding for High-Yielding, Disease-Resistant Livestock:**
  - The scheme's core objective is to promote selective breeding of local livestock, ensuring the development of high-yielding, disease-resistant, and resilient cattle.

Importance of Cattle Genomics Scheme:

- **Poverty Reduction and Rural Livelihoods:** Livestock's significant role in reducing poverty and supporting rural livelihoods.
- **Meeting Growing Demand for Animal Products**: Increasing demand for animal food products by 2020 highlights the need to enhance livestock productivity.
- **Overcoming Limitations of Traditional Selection:** Traditional selection methods for genetic improvement have inherent limitations. Genomic selection provides a more precise and sustainable alternative.
- **Cost and Time Reduction with High-Density DNA Chips:** Development of high-density DNA chips reduces the cost and time required for breeding programs.

Benefits of Cattle Genomics:

- **Improved Cattle Health:** Genomic tools contribute to enhancing cattle health, particularly in combating infectious diseases.
- **Reducing Economic Burden of Infectious Diseases:** Genomic selection minimises the economic burden associated with infectious diseases, reducing reliance on vaccines and antibiotics.
- **Development of Disease-Resistant Livestock:** Genomic tools facilitate the creation of breeding programs focused on developing less susceptible livestock.

Future Application of Cattle Genomics Scheme:

- **Enhancing Production Performance and Disease Resistance:** Research in cattle germplasm improvement is crucial for enhancing production performance and disease resistance.
- **Global Adoption of Genomic Selection:** Genomic selection has successfully been applied in various countries, predicting economically important traits and disease susceptibility.
- **Accelerating Genetic Gains in Developing Countries:** Developing nations like India are adopting genomic selection to expedite genetic improvements in large animals.

Additional Information

What is Genomics?

- Genomics is the study of an organism's complete set of DNA, encompassing all genes and their interactions.
- Genomics involves DNA sequencing, bioinformatics, and genetic analysis to understand the structure and function of genomes.
- It aids in predicting future genetic potential and optimizing breeding programs for livestock.

Genomics is applied across various domains:

- **Human Health:** It aids in developing novel diagnostic tests and treatments for diseases like cancer, heart disease, and Alzheimer's disease.
- **Agriculture:** Genomics enhances crop yields and boosts resistance to pests and diseases in agriculture.
- **Environmental Science:** It contributes to the study of pollution and climate change impacts on organisms in environmental science.
- **Evolutionary Research:** Genomics helps comprehend the evolutionary relationships among diverse organisms.

IndiGau

- **IndiGau, India's first Cattle Genomic Chip** was launched by National Institute of Animal Biotechnology (NIAB), Hyderabad.
- This chip **aims to conserve pure varieties of indigenous cattle breeds**, including Gir, Kankrej, Sahiwal, Ongole, and more.
- **IndiGau is the world's largest purely indigenous cattle chip.**
- Its primary objective is to conserve indigenous cattle breeds with desirable traits, contributing to the goal of doubling farmers' income by 2022.

- The development of this chip aligns with the Rashtriya Gokul Mission and showcases India's self-reliance (Atmanirbhar Bharat).
- Moreover, the chip demonstrates the application of scientific knowledge and innovations for enhancing the quality of life for all segments of society.

Sources:
Press Information Bureau (pib.gov.in)

Q1. With reference to Cattle Genomics Scheme, consider the following statements:
1. The Cattle Genomics Scheme aims to empower farmers and bolster the rural economy by establishing direct connections between farmers and scientists.
2. Cattle genomics can be used to breed high-yielding, disease-resistant cattle.
3. The Scheme is launched by the Department of Animal Husbandry and Dairy.

Which of the statements given above is/are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) None
Answer: (a)

Q2. Consider the following:
1. Personalised Medicine
2. Crop Improvement
3. Disease Diagnosis
4. Forensic Analysis
5. Weather Forecasting
6. Evolutionary Biology

How many of the abovementioned are applications of Genomics?
(a) Only two
(b) Only three
(c) Only five
(d) All six
Answer: (c)

Q3. Discuss the significance of genomics in agriculture and livestock development, focusing on its potential impact on the Indian rural economy. Elaborate on the objectives and benefits of the Cattle Genomics Scheme.

RASHTRIYA POSHAN MAH

This article covers "Daily Current Affairs" and the topic details "Rashtriya Poshan Mah". The topic "Rashtriya Poshan Mah" has relevance in the Social Justice section of the UPSC CSE exam.

For Prelims:

What Are the Key Highlights of Poshan Mah 2023?

For Mains:

GS 2: Social Justice

What Is Poshan Abhiyaan??

What Are Saksham Anganwadi and Poshan 2.0?

Why in the news:

The Ministry of Women and Child Development (MoWCD) has observed the 6th Rashtriya Poshan Mah.

What Are the Key Highlights of Poshan Mah 2023?

Focus and Objective:

- The primary emphasis is on a comprehensive approach to combat malnutrition, a fundamental component of Mission Poshan 2.0.
- The primary goal is to increase awareness of critical life stages, including pregnancy, infancy, childhood, and adolescence, with the aim of promoting improved nutrition throughout India.

Theme:

- The theme for this year is 'Suposhit Bharat, Sakshar Bharat, Sashakt Bharat' (Nutrition-rich India, Educated India, Empowered India), underscoring the significance of nutrition, education, and empowerment in fostering a healthier and more robust nation.

This Year's Initiatives:

- Throughout this month-long initiative, the Ministry of Women and Child Development (MoWCD) will lead nationwide campaigns to enhance awareness of nutrition, with a particular focus on essential themes like Exclusive Breastfeeding and Complementary Feeding.

These efforts encompass activities such as:

- Swasth Balak Spardha (Healthy Child Competition) aimed at fostering healthy competition for enhanced nutrition and overall well-being.
- Poshan Bhi Padhai Bhi (Nutrition and Education), which seeks to enhance nutrition through Mission LiFE (Lifestyle for Environment), sensitize tribal communities regarding nutrition, and address anemia via a Test, Treat, Talk approach.

Progress in 2022:

- In the Poshan Maah of 2022, there were over 170 million sensitization activities carried out, with a particular emphasis on nutrition-related themes.
- As part of the Jan Andolan movement, more than 600 million activities were organized during both Poshan Pakhwadas (in March) and Poshan Maahs (in September) each year.

What Is Poshan Abhiyaan?

Poshan Abhiyaan is a flagship initiative undertaken by the Government of India (GoI) with the aim of addressing malnutrition comprehensively.

Objective:

- This initiative seeks to establish an integrated nutrition support program that enhances the quality, delivery, reach, and overall outcomes of nutritional services.
- The primary emphasis is on promoting practices that enhance health, well-being, and immunity against diseases and malnutrition.

Target Audience: Poshan Abhiyaan is designed to benefit pregnant women, lactating mothers, adolescent girls, and children under the age of 6.

Poshan Tracker App: In 2021, the Ministry of Women and Child Development (MoWCD) introduced the Poshan Tracker application.

As of February 2022, the count of beneficiaries registered on the Poshan Tracker app:

Total Beneficiaries	Lactating Mothers	Pregnant Women	Children 0-6 M	Children 6M-3Y	Children 3-6Y
10,10,50,463	52,41,440	80,40,215	45,95,834	4,06,33,040	4,25,39,934

What Are Saksham Anganwadi and Poshan 2.0?

In the fiscal year 2021-22, the government undertook a restructuring of several schemes into Saksham Anganwadi and POSHAN 2.0. This restructuring includes the following sub-schemes:

1. Integrated Child Development Services (ICDS)
2. POSHAN Abhiyaan
3. Scheme for Adolescent Girls (SAG)
4. National Creche Scheme

Funding: Poshan 2.0 is an ongoing Centrally-Sponsored Scheme that is executed through the state governments and union territory administrations. It operates based on a cost-sharing arrangement between the Central and State Governments.

Vision:

- The primary objective is to address the critical issue of malnutrition among children up to the age of 6 years, adolescent girls (aged 14-18 years), and pregnant and lactating women.
- The program design is aligned with the achievement of Sustainable Development Goals (SDG 2 on Zero Hunger and SDG 4 on Quality Education).
- The focus is on recognizing the pivotal role of nutrition and early childhood care and education in ensuring the well-being, growth, and development of children into healthy and productive adults.

Components:

1. Nutrition Support for POSHAN, including Supplementary Nutrition Program (SNP) for children aged 6 months to 6 years, pregnant women, and lactating mothers (PWLM).
2. For Adolescent Girls aged 14 to 18 years, with a specific focus on Aspirational Districts and the North Eastern Region (NER).

3. Early Childhood Care and Education for children aged 3-6 years, and early stimulation for those aged 0-3 years.
4. Anganwadi Infrastructure, encompassing modern and upgraded Saksham Anganwadi centers, as well as Poshan Abhiyaan initiatives.

SOURCE:

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1953756

Q.1 Consider the following statements regarding the Poshan 2.0:

1. It is a program under the Ministry of Health.
2. Its primary focus is on Child nutrition only.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

ANSWER: D

Q.2 Discuss the significance and impact of the Poshan 2.0 Mission in addressing malnutrition in India. Analyze the key components and strategies of these initiatives and their contribution to achieving Sustainable Development Goals (SDGs).