UPSC Daily Current Affairs| Prelim Bits 28-04-2025

Measles-Rubella Elimination Campaign (2025-26)

Prelims – *Current events of national and international importance.*

Mains (GS II) – *Government policies and interventions for development in various sectors and issues arising out of their design and implementation.*

Why in news?

Recently, Union Health Minister launched the National Zero Measles-Rubella Elimination Campaign on first day of the World Immunization Week (24-30 April)

- **Launched by** – Ministry of Health and Family Welfare.
- **Objective** – To achieve ***100% immunization coverage*** to provide high quality life to children by administering them with two doses of Measles and Rubella vaccine.
- It is a significant step towards India's goal of eliminating Measles and Rubella by 2026.

Campaign Activities

- **Awareness programs** – Intensive IEC (Information, Education, and Communication) outreach campaign about vaccination in multilingual formats.
- **Data-based surveillance** – By leveraging the data available from Integrated Disease Surveillance Program (IDSP) and the U-WIN digital platform.

The Integrated Disease Surveillance Program (IDSP) launched in 2004 with World Bank assistance is a nationwide disease surveillance system to detect and monitor diseases, enabling timely policy decisions.

- **Targeted vaccination** – To reach out to remote and hard to reach areas, slums, migratory population, areas with frequent outbreaks.
- Achieve and maintain high population immunity with *at least 95% vaccination coverage with 2 doses of measles and rubella* containing vaccines in each district of the country.

The Universal Immunization Programme (UIP) is the world's largest vaccination program for pregnant women and newborns providing protection against 12 vaccine-preventable diseases.

India’s progress in Measles & Rubella (MR) elimination

- **Current MR vaccination coverage in India:**
  - First dose MR vaccination - 93.7%
  - Second dose MR vaccination - 92.2%
- **Reduction in MR cases** – In 2024, India has recorded a decline of 73% in Measles cases and a 17% reduction in Rubella cases in comparison with 2023.

Measles & Rubella
• **Measles** – It is an extremely ***contagious viral infection*** that usually causes high fever, rashes, cough, muscle pain, headache and red eyes. • Severe symptoms include *pneumonia and brain swelling, leading to death.* • **Rubella** – It is also a *contagious viral infection* that can cause Low-grade fever, sore throat, rash (*often mild and less severe than measles*), and swollen lymph nodes. • While it is mild in children and adults, it can lead to serious complications during pregnancy such as miscarriage, stillbirths, *birth defects and developmental problems*. • Both viral diseases can be *prevented by MMR vaccination*. *MMR is a **vaccine** for the prevention of measles, mumps, and rubella in individuals 12 months of age or older.*

Reference

PIB| Zero Measles-Rubella Elimination Campaign

Fourth Global Coral Bleaching

Prelims – *General issues on Environmental ecology, Bio-diversity*

Mains (GS III) – *Environmental Conservation, environmental pollution and degradation.*

Why in news?

Recently, scientists have confirmed that the world is experiencing its fourth global coral bleaching event, which has affected nearly 84% (83.7%) of the planet's coral reef area.

- **Coral reefs** – A coral reef is ***an underwater ecosystem*** formed of colonies of coral polyps.
- They are referred to as ***Rainforests of the sea*** and it supports 1/3rd of global marine species.
- **Symbiotic Relationship** – Corals rely on microscopic algae (zooxanthellae) living in their tissues, which provide food and energy through photosynthesis.
- **Global Distribution** – Coral reefs exist in the *Pacific, Atlantic, and Indian oceans*.
- ***Australia's Great Barrier Reef*** is the largest in the world.
- **Coral bleaching** – It is caused when the when reef water remains too hot for too long, putting corals under stress.
- The stress compels corals to expel marine algae (zooxanthellae) residing inside their tissues.
- These algae provide food and energy from the sun through photosynthesis.
- Once the algae are expelled, corals turn white (bleaching), exposing their skeleton and makes corals vulnerable to diseases.

- Prolonged and extreme heat exposure leads to *coral mortality*.
- Corals can recover from bleaching in conducive environments, but recovery can take years or even decades.
- **Global bleaching events** – It is the widespread mass bleaching of Coral reefs that affects coral reefs area globally.
    - **1st global coral bleaching event (1998)** - 21%
    - **2nd global coral bleaching event (2010)** - 37%
    - **3rd global coral bleaching event (2014-2017)** - 68%
    - **4th global coral bleaching event (2023-2025)** - 83.7%
- Mass coral bleaching has been recorded in at least *83 countries and territories.*
- This is the most widespread global bleaching event surpassing the previous global bleaching event.
- **Causes** – Record high ocean temperatures that remains elevated over a period of time across the Pacific, Atlantic, and Indian oceans.
- Climate models predicts that nearly every coral reef on the planet will experience annual bleaching events between 2040 and 2050.

- The Great Barrier Reef is currently undergoing its *6th mass bleaching event*, with its *1st mass bleaching occurred in 1998*.
- This is the 2nd time the Great Barrier Reef has experienced consecutive bleaching events, with the first being in 2016-17.

Reference

Down to Earth| Mass Global Bleaching Event

Entry Denial for transport vehicles in Delhi

***Prelims** – Current Events of National Importance*

***GS III** - Issues Relating to Development | Growth & Development | Renewable Energy | Environmental Pollution & Degradation*

Why in News?

Starting July 1, all End-of-Life (EOL) vehicles will be denied fuel in Delhi, with similar restrictions extended five high vehicle density (HVD) districts from Nov 1, 2025.

- **Areas of Restriction -** This ban will extend to five high vehicle density (HVD) districts like Gurugram, Faridabad, Ghaziabad, Gautam Buddha Nagar, and Sonipat and across the rest of NCR.
- **Purpose** - To curb the menace of polluting vehicles.
- **Banned vehicles** - All transport or commercial goods vehicles ***not compliant with BS-VI, CNG, LNG, or EV (electrical vehicle) standards,*** unless the vehicles are registered in the Capital.
- **End of Life Vehicles (EOL vehicles) -** Diesel vehicles, older than 10 years, and petrol vehicles, older than 15 years, are not allowed to ply in the Capital.

- **Directions from Centre -** Immediate legal action has been directed against EOL vehicles, including impoundment and disposal, except for exempted categories.
- The commission cited past directives from the National Green Tribunal (NGT) and the Supreme Court, which emphasized the role of overaged vehicles in worsening air quality.
- **Monitoring & Surveillance -** Delhi has been piloting a solution involving *Automated Number Plate Recognition (ANPR) camera systems*.
- These systems capture and display vehicle registration details in real-time.
- These are integrated with the ***centralized VAHAN database.***
- It is to identify EoL vehicles and those lacking a valid Pollution Under Control Certificate (PUCC), and relay audio alerts when a non-compliant vehicle is detected.

VAHAN database provides a nationwide search over the digitized data of Registered Vehicles.

- All fuel stations in Delhi are required to install these systems, as per the Commission's latest directive.
- The identification of polluting vehicles at the border entry points will also be intensified.
- **Exceptions** - Only those carrying essential commodities and services will be allowed until Oct 31, 2026.

Reference

The Indian Express | No entry in Delhi for transport vehicles

Regulatory Framework for Over-The-Counter (OTC) Drugs

Prelims *– Current Events of National Importance*

GS II *– Health | Human Resource*

Why in News?

India may soon have a streamlined regulatory framework around OTC drugs as the Central Drugs Standard Control Organisation (CDSCO) has approved the recommendations made by a special OTC sub-committee.

Over-the-counter (OTC) Drugs

• It is also known as nonprescription medicines, are pharmaceuticals that can be purchased without a prescription from a healthcare professional.
• These medications are generally considered safe and effective when used as directed on the label.
• This includes medications that are part of the National List of Essential Medicines (NLEM) and are approved for distribution by the CDSCO.
• Typically, drugs like analgesics, antiseptics, contraceptives, some vitamins, laxatives, cough syrups, etc. are dispensed as OTC.
• The duration for which these medicines can be used has been kept low to avoid misuse.

- **Recommendations -** The committee draw up a framework for OTC drugs, and also create a mechanism to determine which medicines can qualify as OTC.
- Around 27-30 drugs, primarily analgesics, topical ointments for pain, cough-and-cold medications, etc., could be part of India's first comprehensive OTC drugs list. More drugs can be added in future.
- The framework and guidelines can be formalized once it gets approval from the health ministry.
- **Health concerns** - Self-medication with drugs such as antibiotics, painkillers, and sedatives, commonly bought from chemists without a prescription, can lead to significant health risks and side effects.
- Antibiotics like amoxicillin, ciprofloxacin, and azithromycin are frequently used without medical guidance. Improper or incomplete use of antibiotics can lead to antibiotic resistance, making future infections harder to treat and spreading resistant bacteria in the community.
- Painkillers, especially Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) like ibuprofen, diclofenac, and naproxen are also commonly misused.
    - It can irritate the stomach lining, leading to ulcers and bleeding, and in some cases cause kidney damage or raise the risk of heart attack and stroke.

Prescription drugs are categorized into Schedules H, H1, and X of the Drugs Rules, 1945.

- **Advantage -** Experts have cautioned against self-medication across categories, and, therefore, having a clear list of OTC medications will help reduce misuse.
- **Disadvantage for pharma sector -** Clampdown on OTC drug sales could dent Indian Pharma Market (IPM) volume growth, especially in the acute therapy segment where self-medication is rampant in analgesics, antipyretics, and common cold medicines.

Reference

Business Standard | Regulatory framework for OTC drugs

Community led initiatives for Marine Protected Areas (MPAs)

Prelims *– Current Events of National Importance*

GS III *– Environmental Pollution & Degradation | Environmental Impact Assessment (EIA) | Conservation*

Why in News?

A new global initiative called 'Revive Our Ocean' was launched recently.

- **Marine Protected Areas (MPAs) –** MPAs are designated areas within the ocean where ***human activities are regulated*** to protect marine life and ecosystems.
- They are similar to land-based parks, but in the ocean, these areas offer special protection for natural or historic marine resources.
- MPAs restrict human activities like fishing or mining to conserve biodiversity and other natural resources.
- They are governed in different ways. Some are managed by national governments, others by local authorities, NGOs or through co-management with communities.
- **Community management initiatives – In Spain** - Medes Island in Spain is a small no-fishing zone which is just one square kilometre in size but brings in 16 million Euro every year from diving tourism.
- It is 25 times more than what fishing earns in the same area.
- **In Scotland -** Similarly, creating a no-fishing zone on Scotland's Isle of Arran helped marine life come back.
- The number of plants and animals on the seabed has more than doubled, and nearby waters are also seeing more life.
- **In Philippines -** ***RARE's Fish Forever program*** has helped communities set up no-fishing zones. In 5 years, the amount of fish in those areas doubled.
- **Global Initiative - Coastal 500 -** It includes global network of mayors and local government leaders who share knowledge and push for better policies, like banning industrial fishing near their shores.
- **Revive Our Ocean Initiative - Aim** – To scale up effective, community-led marine protected areas (MPAs) through local action.
- It hopes to ***remove key barriers*** that prevent coastal communities from protecting and managing their ocean spaces.
- **Pillars**
  - Inspire
  - Enable and
  - Equip
- It is rooted in successful models from across the world and will initially focus on 7 countries - The ***UK, Portugal, Greece, Turkey, the Philippines, Indonesia and Mexico.***
- **30X30 Target –** It is the target of the Kunming-Montreal Global Biodiversity Framework (KMGBF) that aims to protect 30% of the oceans by 2030.
- **Challenges in protecting MPAs -** Though more than 16,000 MPAs have been established globally, amounting 8% of the world's oceans, only 3% are currently under full protection.
- Most of these MPAs are either poorly managed or allow damaging activities like bottom trawling.

Reference

Down to Earth | Revive Our Ocean

One Liners 28-04-2025

History, Art and Culture

Passing of Historian Muttayil Govinda Sankara Narayanan

Recently, India mourns the demise of the eminent historian MGS Narayanan, widely known as M G S Narayanan, who passed away at 92, leaving a significant void in Indian historiography.

• **Early Life and Background -** Born on August 20, 1932, in Ponnani, Kerala, a region steeped in cultural history.

• **Leadership Roles in Historical Research -** Narayanan held key positions, serving as Member Secretary and later as Chairman of the esteemed Indian Council of Historical Research (ICHR), guiding historical scholarship in India.

• **Academic Contributions -** He was closely associated with the University of Calicut, making substantial contributions to its research endeavors and overall academic development.

• **Prolific Author and Researcher -** Authored over 200 books and articles, including an impressive 112 research papers published in renowned national and international journals.

• **Specialization in South Indian History -** His research extensively focused on Kerala's ancient history, temple inscriptions, Brahmin settlements, and broader social transformations across South India.

Geography

Extraordinary Bullseye Galaxy

LEDA 1313424, or the Bullseye Galaxy, is a captivating giant elliptical galaxy located 567 million light-years away in the Pisces constellation.

• It stands out due to an unprecedented phenomenon: nine glowing star rings encircling its core.

• **Basic Characteristics -** Approximately 2.5 times larger than our Milky Way, the Bullseye Galaxy spans about 250,000 light-years in diameter. Its defining feature is the spectacular series of stellar rings, resembling a cosmic bullseye.

• **Formation Through Galactic Collision -** Scientists believe these unique rings formed from a violent galactic collision. Around 50 million years ago, a smaller blue dwarf galaxy plunged through the Bullseye's center, triggering a ripple effect. This compressed gas and initiated waves of new star formation, leading to the distinct rings.

• **Unprecedented Number of Stellar Rings -** While typical ring galaxies might have one to 3 rings, the Bullseye Galaxy boasts nine distinct stellar rings, an unprecedented number that makes it a unique subject in galactic studies.

Krishna River Faces Early Drying

Krishna River to dry up prematurely this year due to extreme heat, severely impacting irrigation in Karnataka's Bagalkot, Vijayapura, and Yadgir districts.

• **Source and Course** - Originating near Mahabaleshwar in Maharashtra's Western Ghats, the Krishna River flows eastward for approximately 1,400 km, eventually emptying into the Bay of Bengal near Vijayawada in Andhra Pradesh.

• **Key Tributaries** - Include the Venna, Koyna, Panchganga, Dudhganga, Ghataprabha, Malaprabha, and Tungabhadra. The major left bank tributaries are the Bhima, Musi, and Munneru.

• **Unique Characteristics** – It is a 2nd -largest east-flowing river in Peninsular India and is heavily reliant on rainfall, leading to considerable fluctuations in its water flow throughout the year.

• **Major Hydroelectric Projects** - Installations along the river include Srisailam, Nagarjuna Sagar, and the Tungabhadra project.

• **Important Irrigation Projects** - Key irrigation initiatives include the Tungabhadra Project in Karnataka, the Srisailam and Nagarjuna Sagar Dams in Andhra Pradesh/Telangana, the Prakasam Barrage in Andhra Pradesh, and the Ghataprabha & Bhima Projects in Maharashtra.

Economy

Digilocker

Recently, at Indira Gandhi Stadium in New Delhi, the Union Minister of Youth Affairs & Sports and Labour & Employment inaugurated the digital issuance of sports certificates through DigiLocker.

Key points about DigiLocker

• Launched in 2015 under the Digital India program, it's a flagship initiative of the Ministry of Electronics & IT (MeitY).

• It's a government-approved application maintained with strict security protocols.

• The DigiLocker app allows users to securely store their digital records.

• It facilitates various processes like passport applications, marksheet verification, and identity proof during travel.

• As part of India's paper-free initiative, it enables users to access, verify, and store essential documents digitally for easy retrieval and presentation.

• Digitally issued documents in DigiLocker are legally equivalent to original physical documents, as per IT Rules, 2016.

• It employs robust security measures, including 2048 Bit RSA SSL encryption, multi-factor authentication (OTP), consent mechanisms, timed logouts, and regular security audits.

Environment

Similipal National Park

Recently, the ecologically significant Similipal in Odisha has been officially declared a national park by the state government. This makes it India's 107th national park and the second in Odisha, following Bhitarkanika's designation.

Key facts about Similipal National Park:

• **Located** - In the Mayurbhanj District of northern Odisha, it spans 2750 sq. km and features scenic waterfalls like Joranda and Barehipani.

• **Initially designated -** As tiger reserve in 1973 and a wildlife sanctuary in 1979, a 303 sq. km area was proposed as a National Park in 1980.

• **UNESCO recognized** - It as a Biosphere Reserve in May 2009, and it falls under the Mayurbhanj Elephant Reserve, including nearby wildlife sanctuaries.

• **Physical Features**- Characterized by high plateaus, hills (with Khairiburu and Meghashini as the highest peaks), undulating terrain, grasslands, and forests.

• **Vegetation** - Is diverse, primarily Northern tropical moist deciduous forests with some semi-evergreen areas.

• **Fauna**-The park is renowned for its tiger, elephant, and hill mynah populations, holding the highest number of tigers in Odisha.

Security

Successful Missile Test by INS Surat

Indian Navy's guided missile destroyer INS Surat recently conducted a successful test-firing of a medium-range surface-to-air missile in the Arabian Sea, demonstrating its operational capabilities.

• **Commissioned in** - Indian Navy in January 2025.

• **Design and Construction** - The warship was indigenously designed by the Navy's Warship Design Bureau and expertly built by Mazagon Dock Shipbuilders in Mumbai, highlighting domestic shipbuilding prowess.

• **Project 15B Destroyer** - INS Surat is the 4th and final ship of the Project 15B stealth guided missile destroyer class, also known as the Visakhapatnam class, marking a significant advancement in India's naval power

• **Indigenous Content -** It is equipped with cutting-edge weapon-sensor packages and advanced network-centric capabilities

• **Design and Construction** - The warship was indigenously designed by the Navy's Warship Design Bureau and expertly built by Mazagon Dock Shipbuilders in Mumbai, highlighting domestic shipbuilding prowess.

DRDO has achieved a significant advancement in scramjet engine technology

Recently, DRDL Hyderabad achieved a major milestone in hypersonic technology by successfully ground-testing an active cooled scramjet combustor for over 1,000 seconds at the newly built state-of-the-art Scramjet Connect Test Facility at Hyderabad.

Key points about hypersonic missiles:

• Hypersonic missiles travel at or above Mach 5 (five times the speed of sound).

• Their key differentiating feature from ballistic missiles is their manoeuvrability during flight.

• Unlike ballistic missiles that follow a predictable trajectory, hypersonic missiles can adjust their course to reach the target.

• There are two main types: Hypersonic Glide Vehicles (HGVs) and Hypersonic Cruise Missiles.

• HGVs are launched by a rocket and then glide, while hypersonic cruise missiles use scramjet engines for sustained high-speed flight after reaching their target.



Science

Landmark Gene Therapy Trial for Haemophilia

18. *BRIC-inStem, Bengaluru, in collaboration with CMC Vellore, has achieved a significant milestone by successfully conducting India's first-in-human gene therapy trial for Haemophilia.*

• **Gene Therapy -** Gene therapy is an innovative biomedical technique focused on modifying or replacing faulty genes within a person's cells to treat or prevent diseases by introducing functional genes or inactivating malfunctioning ones.

• **Targeting Root Causes -** Unlike traditional medicines that address symptoms, gene therapy aims at the fundamental genetic causes of diseases at a cellular level.

• **Approaches in Gene Therapy -** Current clinical trials employ methods like ex vivo modification of blood stem cells and T-lymphocytes, as well as in vivo gene delivery or gene-editing reagents directly into the patient.

• **Haemophilia -** Haemophilia is a rare inherited bleeding disorder characterized by impaired blood clotting due to mutations in genes on the X chromosome, predominantly affecting males.

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World Immunization Week (WIW) 2025: A Global Effort

WIW 2025, observed globally from April 24th to 30th, is a crucial campaign led by the World Health Organization (WHO).

• Goal - Is to champion the life-saving power of vaccines and underscore their vital role in public health

• Theme for 2025 - Immunization for all is Humanly Possible, stresses the importance of universal vaccine access for all ages to prevent deadly diseases and improve health.

• Universal Access to Vaccines – which encourages individuals, communities, and governments to ensure everyone has access to necessary vaccines for a long and healthy life.

• Life-Saving Impact - Since 1974, immunization has saved roughly 6 lives per minute, protecting against over 30 diseases.

• Promoting Awareness - The campaign aims to tackle challenges like missed vaccinations that cause disease resurgence by increasing awareness and public education about immunization's importance.

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