Factly Weekly

Compilation

2024

For UPSC CSE Prelims Exam

1st Week

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INDEX

UPSC Syllabus: Defence exercises

Exercise 'GARUD SHAKTI'

Why in news?

Recently, Indian Army personnel departed for Cijantung, Jakarta, Indonesia, to participate in the 9th edition of the India-Indonesia Joint Special Forces Exercise GARUD SHAKTI 24.

About EXERCISE 'GARUD SHAKTI'

Source: PIB

Aspects	Description
Location	Cijantung, Jakarta, Indonesia
Duration	1st to 12th November 2024
Participants	Indian Contingent involving 25 personnel from the Parachute Regiment (Special Forces) and Indonesian Contingent involving 40 personnel from the Indonesian Special Forces Kopassus.
Objective	**i) Enhance Cooperation and Interoperability:** Strengthen mutual understanding, cooperation, and interoperability between Indian and Indonesian Special Forces. **ii) Exchange of Best Practices:** Share information on weaponry, equipment, innovations, tactics, techniques, and procedures. **iii) Cultural Exchange:** Gain insights into each other's culture and lifestyle to foster stronger military cooperation.
Activities and Training Focus	**i) Special Operations Training:** Planning and executing special operations and advancing special forces skills. **ii) Joint Tactical Exercises:** Conducting joint tactical drills, including special Forces operations in jungle terrain, Simulated strikes on terrorist camps and a Validation Exercise integrating basic and advanced special forces skills

Significance	**i) Strengthening Bilateral Relations:** This exercise enhances military cooperation and strengthens bonds between the Indian and Indonesian armies. **ii) Shared Security Objectives:** It provides a platform to work towards common security goals. **iii) Skill Development and Exchange:** It offers an opportunity to share expertise and best practices in special forces operations.

VAJRA PRAHAR Exercise

Why in the News?

Recently, the Indian Army departed for the VAJRA PRAHAR Exercise with the US.

About VAJRA PRAHAR Exercise

Aspects	Description
About	1. This is the 15th edition of the India-US joint Special Forces exercise VAJRA PRAHAR. 2. The previous edition was conducted at Umroi, Meghalaya in December 2023. 3. It is the second joint exercise between the Indian and US Army in 2024, following Exercise YUDH ABHYAS held in Rajasthan in September.
Location of Exercise	Orchard Combat Training Centre, Idaho, USA
Duration	November 2 – November 22, 2024
Participants	Each contingent consists of 45 personnel. Indian Army represented by Special Forces units and US Army represented by Green Berets.
Objectives of Exercise	i) Strengthen military cooperation and partnership between India and the US. ii) Enhance interoperability, joint tactics, and mutual understanding in special operations.
Focus Areas of Training	**i) Physical Fitness:** Emphasis on maintaining high levels of physical preparedness. **ii) Joint Planning and Tactical Drills:** Collaborative strategies for mission execution. **iii) Special Operations Tactics:** Desert and semi-desert operations.
Expected Outcomes	i) Improved combined capabilities for joint Special Forces Operations. ii) Exchange of best practices and operational experiences. iii) Development of camaraderie and mutual trust between the forces.

Sagarmala Parikrama

Why in news?

Recently, an autonomous surface vessel built by Sagar Defence Engineering has completed a 1,500-km journey from Mumbai to Thoothukudi without human intervention.

About Sagarmala Parikrama

1. Sagarmala Parikrama was undertaken in collaboration with the Indian Navy to advance autonomous maritime technology.

2. It was supported by the Indian Navy's Naval Innovation and Indigenisation Organisation (NIIO). It received backing from the Technology Development Acceleration Cell (TDAC) and Innovations for Defence Excellence (iDEX) under the Defence Innovation Organisation (DIO).

3. The project was virtually launched by Defence Minister Rajnath Singh on October 29, during the Swavlamban event organized by NIIO.

4. Significance of the Journey: It marks a major milestone in India's capabilities in autonomous and unmanned maritime systems.

It also highlights India's strides towards self-reliance (Aatmanirbharta) in advanced defence technologies.

5. Future Implications: The success of Sagarmala Parikrama sets the foundation for deploying autonomous vessels for: Monitoring critical sea lanes, coastal surveillance, anti-piracy operations and also aligns with global advancements in autonomous surface and underwater systems.

About Autonomous Surface Vessel (ASV)

1. Autonomous Surface Vessels is also known as unmanned surface vessels (USVs). They are watercraft that operate on the surface of the water without a crew on board.

2. These vessels are equipped with advanced sensors, navigation systems, and AI-based decision-making software that enable them to perform a variety of functions autonomously or under remote control.

3. ASVs are used in multiple domains, including marine research, defense, offshore industries, and environmental monitoring.

Key Features:

1. Sensors and Navigation: It is equipped with GPS, radar, LiDAR, sonar, and other sensors for obstacle detection, navigation, and mapping.

2. Artificial Intelligence: It utilizes AI to process data, make real-time navigation decisions, and optimize routes, enhancing operational efficiency and autonomy.

3. Remote and Autonomous Operation: It can be operated remotely or autonomously based on pre-programmed routes and tasks.

4. Energy Sources: It is often powered by a combination of batteries, solar panels, or small engines for sustainability and long-duration operations.

2nd Edition of Indian Military Heritage Festival (IMHF)

Why in news?

The 2nd annual IMHF will commence in New Delhi on November 8, 2024, spanning two days.

About 2nd Edition of Indian Military Heritage Festival (IMHF)

1. The second edition of the Indian Military Heritage Festival (IMHF) was held on November 8–9, 2024, at the India International Centre in New Delhi.

2. It was organized by the United Service Institution of India (USI). It is the country's oldest defense think tank.

3. Aim: The festival aimed to engage global and Indian think tanks, corporations, public and private sector undertakings, non-profits, academicians, and research scholars focusing on India's national security, foreign policy, military history, and military heritage.

4. Purpose: It is to engage global and Indian think tanks, corporations, public and private sector entities, non-profits, academicians, and research scholars.

5. Scope: It focusses on India's national security, foreign policy, military history, and military heritage.

About Project 'Shaurya Gatha'

1. This initiative is a collaboration between the Department of Military Affairs and the United Service Institution (USI) of India.

2. It aims to conserve and promote India's military heritage through education and tourism.

3. Project 'Shaurya Gatha' focuses on educational initiatives and tourism to raise awareness of the nation's defense history among citizens and visitors. The project seeks to instill a sense of pride and understanding of the country's military legacy.

Bandhavgarh Tiger Reserve

Why in news?

The Ministry of Environment, Forest, and Climate Change's Wildlife Crime Control Bureau (WCCB) has set up a team to investigate the death of ten elephants in the Bandhavgarh Tiger Reserve, Madhya Pradesh.

About Bandhavgarh Tiger Reserve

Aspects	Description
About	i) It is situated in the Umaria district of Madhya Pradesh, India. The reserve is part of the Vindhya Hills and spans an area of 1,536 sq km. ii) It was originally declared a national park in 1968 and later became a tiger reserve in 1993 under Project Tiger. iii) Bandhavgarh Fort which is an ancient fort, said to be over 2,000 years old. It is situated on a hill inside the reserve. iv) The park consists of three distinct areas i.e. 'Bandhavgarh National Park', 'Panpatha Wildlife Sanctuary' which make up the "Core Area" and the adjoining notified "Buffer Area" spread across the districts of Umaria, Shahdol and Katni.
Adjacent protected areas	Bandhavgarh Tiger Reserve lies between two other major protected Areas of Madhya Pradesh: Kanha Tiger Reserve on the southern side and Sanjay National Park on the north-eastern side.
Terrain	It is characterized by rugged cliffs, dense forests, and open meadows, creating a diverse habitat for wildlife.
Fauna	It features a mix of Sal forests, mixed deciduous forests, grasslands, and bamboo stretches.

Fauna	The Prominent mammal species of Bandhavgarh are spotted deer or Chital, Sambar, barking deer or Muntja, Chousingha or Four-horned antilope, Nilgai or Blue bull, Indian Gazelle or Chinkara, Gaur, Tiger, Leopard, Wild dog or Dhole, Hyaena, Indian Wolf, Jackal, Wild boar, Sloth bear, Common langur and Rhesus monkey.
Cultural and Ecotourism Importance	**Ecotourism Initiatives:** Focus on sustainable tourism helps fund conservation efforts and supports local livelihoods. **Cultural Heritage:** The reserve is dotted with ancient caves and temples that add cultural depth to the wildlife experience.
Conservation Efforts	i) Bandhavgarh is a critical part of the Project Tiger initiative aimed at protecting Bengal tigers and their habitats. **ii) Anti-Poaching Measures:** Continuous patrolling and surveillance systems are in place to prevent poaching and protect wildlife. **iii) Community Involvement:** The reserve collaborates with local communities to promote eco-tourism and spread awareness about wildlife conservation.

UPSC Syllabus: Environment

Turtle Wildlife Sanctuary

Why in news?

National Green Tribunal (NGT) has castigated the UP officials for granting mining permissions in turtle sanctuary.

About Turtle Wildlife Sanctuary

Source: experiment with perspective

Aspects	Description
Location	1. The sanctuary is located in Varanasi District, Uttar Pradesh. It was declared on 21 December 1989. 2. It was created to ensure the survival of turtles released into the Ganga River. 3. Turtle (Kachhua) Wildlife Sanctuary is the first turtle sanctuary in India. It is also the world's only protected area dedicated to fresh water turtles.
Flora	**1. Riparian Vegetation:** This zone near water features trees, shrubs, grasses, and plants adapted to moist conditions. **2. Riverine Trees:** Along the Ganga's banks, trees like peepal, banyan, neem, sheesham, and willows provide shade, stabilize banks, and enhance biodiversity. **3. Aquatic Plants:** Water hyacinth, lotus, water lilies, and submerged plants thrive in the sanctuary supporting water quality, offering habitat, and serving as food for turtles and other wildlife.
Fauna	In the Kachhua (tortoise) Sanctuary mainly Aspederites Gangetic (self shell turtles), Geoclamis, Hamiltonai, Chitra Indica and Lasimous which are carnivorous species and hard shelled herbivorous tortoise- Pechra Kachhua, Sundri Kachhua, Kachhua Tentoria, Kachhua Tongoka are in abundance. Rohu, Bhakur, Tengra, Prawn, Nain, Bam etc. fish are also found in the Sanctuary. Gangetic dolphin can also be seen especially during rainy season here.

Markhor

Why in news?

The Markhor is currently fighting for survival in Jammu and Kashmir.

About Markhor

Source: .Greaterkashmir

Aspects	Description
About	1. The Markhor is scientifically known as Capra falconeri. 2. Markhor is the largest wild goat in world. 3. It is known for its thick fur, flowing beard and corkscrew horns.
Physical Features	1. Markhors are known for their distinctive spiral-shaped horns, which can grow up to 160 cm (63 inches) in males. 2. They have long, thick fur that varies from brown to grey, providing camouflage in rocky environments. 3. Male markhors can weigh between 80-110 kg (176-243 lbs), while females are smaller, weighing around 32-50 kg (70-110 lbs).
Habitat	1. They primarily inhabit mountainous regions at altitudes ranging from 600 to 3,600 meters (2,000 to 11,800 feet). 2. They are found in parts of Pakistan, Afghanistan, India, and Tajikistan.
Diet	Markhors are herbivores, mainly grazing on grasses, leaves, and herbs. In winter, they consume woody plants when other vegetation is scarce.
Behaviour	They are social animals, often found in small groups. While males are usually solitary or in small bachelor groups, females and young tend to stay together in larger herds.
Threat	Major threats include illegal hunting for their horns, loss of habitat due to human activities, and competition for food with livestock.
Conservation Status	The Markhor is listed as Near Threatened by the IUCN. Population numbers have been impacted by habitat loss, poaching, and competition with domestic livestock.

Black-footed ferret

Why in news?

Recently, Smithsonian National Zoo and Conservation Biology Institute (NZCBI) researchers successfully witnessed the birth of two black-footed ferret kits by a cloned mother. This birth is significant for conservation efforts, as black-footed ferrets are one of the most endangered mammals in North America, with an estimated 370 left in the wild.

About black-footed ferret

Source:Black-Footed Ferret

Aspects	Description
About	1. The black-footed ferret (Mustela nigripes) is a rare and only native ferret species to North America's prairies. 2. This slender, weasel-like animal is the only ferret species native to North America and is known for its distinct black face mask, black-tipped tail, and black feet, which give it its name. 3. These ferrets are solitary by nature, coming together only for breeding or when females are raising their young.
Physical Description	1. Their fur is mostly yellow-buff with lighter areas on the belly, forehead, muzzle, and throat, while distinctive black markings cover their face, feet, and the tip of their tail. 2. Their legs are short but strong, with large front paws and claws that are well-adapted for digging. 3. They are equipped with large ears and eyes. 4. Ferrets likely have acute hearing and sight; however, their sense of smell is considered their primary tool for locating prey underground in the dark.
Diet	1. About 90% of their diet consists of prairie dogs, and one ferret may consume over 100 prairie dogs each year. 2. They also eat small mammals like mice, rats, ground squirrels, rabbits, and occasionally birds, reptiles, and insects.
Communication	Highly vocal animals, black-footed ferrets use distinct sounds to communicate. A loud chatter serves as an alarm, while a hiss indicates fear or agitation. Female ferrets often whimper to encourage their young to follow.
Conservation Status	IUCN: Endangered

Vehicular Emissions as Primary Pollutant in Delhi

Why in news?

A recent study identified vehicular emissions as the primary contributor to air pollution in Delhi, surpassing other sources like stubble burning in neighboring states. The analysis covers the period from October 12 to November 3.

About Air Quality Statistics

1. Poor Air Quality: Delhi recorded "very poor" air quality on Wednesday, reflecting the severity of pollution in the city.

2. Pollution Source Breakdown:

Sources	Contribution
Neighbouring Districts	34.97% to Delhi's air pollution.
Delhi's Local Sources	Accounted for 30.34% of the pollution.
Farm Fires	only 8.19% of the pollution during the analyzed period.
Other Sources	The remaining pollution originates from areas beyond the National Capital Region.

3. Primary Local Pollutants

Sources	Contribution
Vehicular Emissions	Constituted the largest share of local pollution at 51.5%.
Dust Particles	Accounted for 3.7% of pollution from local sources.

PM-Vidyalaxmi Scheme

Why in news?

The Union Cabinet has approved the PM Vidyalaxmi scheme.

About the PM-Vidyalaxmi Scheme

1. It is a central initiative aimed at supporting meritorious students financially, ensuring that economic constraints do not hinder access to higher education.

2. Objective: This scheme is rooted in the National Education Policy (NEP) 2020, underscores the policy's emphasis on making financial aid available to deserving students in both public and private higher education institutions (HEIs).

3. Under PM Vidyalaxmi, any student admitted to a recognized Quality Higher Education Institution (QHEI) will be eligible for a collateral-free, guarantor-free loan from banks and financial institutions to cover full tuition fees and related course expenses.

4. The scheme applies to institutions ranked within the top 100 in the National Institutional Ranking Framework (NIRF) across various categories, including state government HEIs in the 101-200 range and all central government institutions, covering an initial 860 QHEIs with potential to benefit over 22 lakh students.

Digital Payment Solutions: Interest subvention will be disbursed via E-vouchers and Central Bank Digital Currency (CBDC) wallets, ensuring secure, digital payments.

5. PM Vidyalaxmi complements existing schemes like the Central Sector Interest Subsidy (CSIS) and Credit Guarantee Fund Scheme for Education Loans (CGFSEL) under PM-USP, offering a holistic support system for deserving students in quality institutions.

6. Credit Guarantee: Loans up to ₹ 7.5 lakhs will have a 75% credit guarantee from the Government of India to support banks in offering coverage to more students.

7. Interest Subvention Benefits: For Students with Annual Family Income up to ₹ 8 Lakhs:

i) 3% interest subvention on loans up to ₹ 10 lakhs during the moratorium period.

ii) Priority for students from government institutions, especially those in technical/professional courses. It covers 1 lakh students annually.

8. For Students with Annual Family Income up to ₹ 4.5 Lakhs: Full interest subvention during the moratorium period on loans up to ₹ 10 lakhs under PM-USP.

9. Implementation Mechanism: A mission-mode mechanism will facilitate the scheme's rollout, ensuring easy access and high coverage. Students can apply through a unified portal where applications and interest subvention can be processed.

UPSC Syllabus: Schemes and Programmes

Supreme Court Overrules 1967 Verdict on AMU's Minority Status

Why in news?

In a 4:3 majority decision, the Supreme Court recently declared that an institution founded by a minority community retains its minority status even if it is later recognized by statute.

Background of the Case

1. The 1967 judgment in S. Azeez Basha vs. Union of India had denied minority status to AMU, considering it a central university, thus ineligible for Article 30(1) protections.

2. Article 30(1) allows religious and linguistic minorities the right to establish and manage their own educational institutions.

3. The AMU (Amendment) Act of 1981 restored the university's minority status, but the Allahabad High Court struck down the relevant provision in 2006, leading to the present review by the Supreme Court.

About the Judgement

1. Interpretation of Article 30: Article 30(1) as both anti-discriminatory and a special rights provision for minorities. The right ensures autonomy for minority institutions and protects them from discriminatory legislation or actions that could restrict the establishment or management of these institutions.

2. Requirement for Minority Status: The onus is on the community to demonstrate that the institution was established to serve and preserve its cultural identity. This intent can be evidenced through founding documents, speeches, and other primary sources related to the institution's formation.

3. Scope of Minority Institutions' Rights: The court clarified that Article 30(1) applies not only to institutions offering religious education but also to those imparting secular education. The Chief Justice emphasized that institutions don't lose their minority status if their administration includes members from outside the community, especially in fields requiring specific expertise like law or medicine.

UPSC Syllabus: Polity and nation

Agrivoltaic farming

Why in news?

The Seventh Session of the International Solar Alliance (ISA) concluded today in New Delhi, featuring a visit to a farm site in Najafgarh on the final day. During this visit, delegates from various countries observed the practical application of agrivoltaic systems in action.

About Agrivoltaic farming

1. Agrivoltaic farming, also known as agrophotovoltaics, combines agriculture with solar energy production by placing solar panels over crops or farmland.

2. This dual-use system leverages sunlight not only to grow plants but also to generate clean, renewable energy, enhancing land productivity.

Benefits of Agrivoltaics

1. Agrivoltaics addresses the issue of land competition between agriculture and solar farms. Instead of using land solely for solar panels or crops, it integrates both, making it especially valuable in areas with limited space.

2. This system is particularly advantageous for regions aiming to boost food and energy production without expanding land use.

3. Microclimate Benefits: The shade provided by solar panels creates a cooler microclimate beneath, which can reduce water evaporation from the soil, benefiting crops in arid regions.

4. This shade can protect certain plants from extreme heat, increasing their yield and resilience during hot, dry periods.

5. Improved Energy Efficiency: Solar panels tend to perform better when kept cool, and the plants beneath them create a cooling effect, improving the panels' efficiency. This synergy can lead to higher energy output than standalone solar farms in certain climates, maximizing renewable energy generation.

6. Economic Incentives: Agrivoltaics offers farmers an additional income stream by generating electricity, which can be sold back to the grid or used to power farm operations, reducing energy costs.

This extra revenue can be especially valuable for small-scale or struggling farms, helping them remain financially viable and resilient against market fluctuations.

7. Challenges:

i) Despite its benefits, agrivoltaic farming has some challenges. Setting up dual-use systems requires higher initial costs and specialized infrastructure.

ii) The placement of panels must be optimized to avoid excessive shading for crops needing more sunlight.

iii)Additionally, the design must allow for agricultural machinery to navigate and access the land efficiently, which requires tailored engineering solutions.

Future Potential

Agrivoltaic farming holds substantial promise for sustainable agriculture and renewable energy production. As technology advances and costs decrease, this approach could be instrumental in meeting food and energy needs for a growing global population, particularly in regions affected by climate change.

Asian Buddhist Summit 2024

Why in news?

The First Asian Buddhist Summit (ABS) takes place on November 5-6, 2024, in New Delhi, India.

About the First Asian Buddhist Summit (ABS)

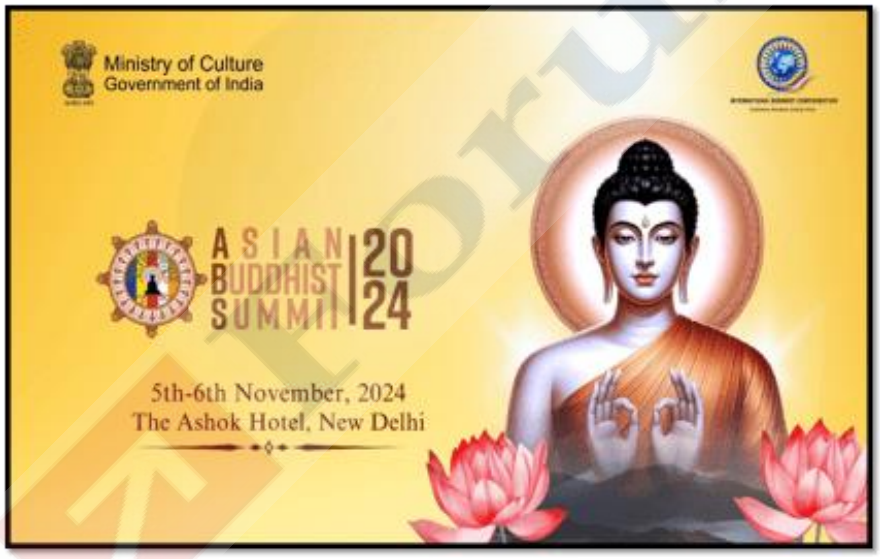
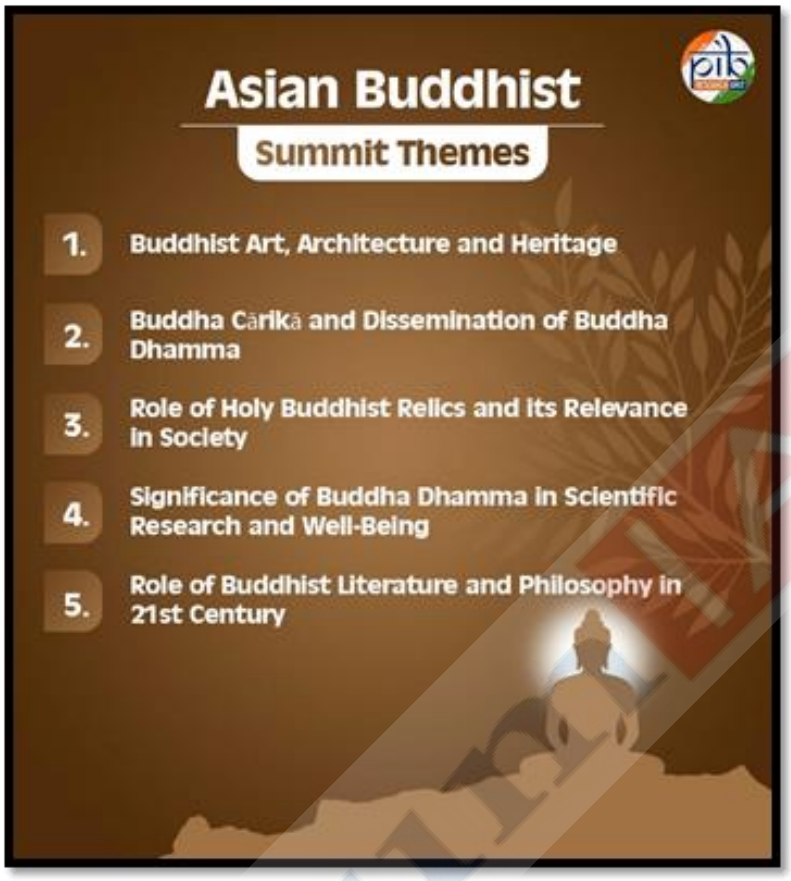


Figure 1.Source:PIB

1. **Organizers:** Hosted by India's Ministry of Culture in collaboration with the International Buddhist Confederation (IBC).

2. **Theme:** "Role of Buddha Dhamma in Strengthening Asia" – exploring Buddhism's impact across Asia. Chief Guest: The President of India, underscoring the significance of the event.

Summit Focus Areas



Source: PIB

1. Buddhist Art, Architecture, and Heritage: It reflects the spiritual and cultural ties within Buddhism. Indian landmarks like Sanchi stupas and Ajanta caves that convey Buddha's teachings and artistic heritage.

2. Buddha Cārikā (Wanderings) and Dissemination of Teachings: Buddha's travels in India to spread his teachings to people from diverse backgrounds.

3. Role of Buddhist Relics in Society: Relics symbolize Buddha's teachings, promote community gatherings, support local economies, and inspire peace and compassion.

4. Buddha Dhamma in Scientific Research and Well-being: It emphasis on mindfulness, compassion, and interconnectedness offers holistic approaches to health and wellness.

5. Buddhist Literature and Philosophy in the 21st Century: Ancient texts and philosophies continue to offer wisdom on human nature, reality, and enlightenment.

India's Initiatives to Preserve Buddhist Heritage

1. Buddhist Tourism Circuit: A government initiative to develop a tourism circuit encompassing key Buddhist sites in India, including Kapilvastu.

2. Global Buddhist Summit 2023: It focused on values and peace, emphasizing Buddha Dhamma's role in global challenges.

3. SCO Conference on Shared Buddhist Heritage (2022-2023): Discussed Buddhist art and archaeological connections among member states.

3. Symposium on Vipassana Meditation (2024): An event in Bangkok discussing meditation's role in well-being and peace.

4. Recognition of Pali Language as Classical: Pali, used in Buddha's sermons, achieved classical status in October 2024, affirming its cultural importance.

5. International Abhidhamma Diwas: It was held on October 17, 2024, in New Delhi, celebrating Abhidhamma's teachings and Pali's role in preserving Buddha Dhamma.

About Buddhism

Figure 2.Source: PIB

1. Origins of Buddha Dhamma: Buddha Dhamma originated in the 6th century BCE when Siddhartha Gautama achieved enlightenment, sharing profound teachings on the nature of existence and the path to liberation.

2. Post-Mahaparinirvana: After the Buddha's passing, his followers preserved and spread his teachings, which eventually evolved into three main Buddhist traditions: Theravada, Mahayana, and Vajrayana.

3. Emperor Ashoka's Contribution: Mauryan Emperor Ashoka (268-232 BCE) played a transformative role in promoting Buddha Dhamma, applying its principles to governance, which fostered societal peace, happiness, and harmony. His rock and pillar edicts remain as lasting testaments to Buddhism's spread across Asia.

4. Early Divisions and Development: By the first century CE, Buddhism saw a significant split, leading to Mahayana and Nikaya Buddhism, with Theravada as the only remaining Nikaya school. This division marked the formation of distinctive interpretations within Buddhism.

5. Expansion and Adaptation: As Buddhism expanded beyond India, it adapted to local cultures. It spread northward through Central Asia into East Asia, forming the Northern branch, and eastward into Southeast Asia, developing the Southern branch.

UPSC Syllabus: Art and culture

Chittaranjan Das

Why in news?

Recently, Lok Sabha Speaker Shri Om Birla paid floral tributes to Deshbandhu Chittaranjan Das at his portrait in the Central Hall of Samvidhan Sadan on his Birth Anniversary.

About Chittaranjan Das

Figure 3.Source:PIB

1. Chittaranjan Das (5 November 1870 – 16 June 1925) was affectionately known as 'Deshbandhu' (Friend of the Nation).He was a prominent Indian freedom fighter, political leader, and lawyer from Bengal.

2. He played a significant role in India's struggle for independence and was a mentor to leaders like Netaji Subhas Chandra Bose.

3. Early Life and Education:

i) He was born into a respected Bengali Baidya family in Calcutta (now Kolkata.

ii) He pursued his education at the London Missionary Society's Institution in Bhawanipur and later graduated from Presidency College, Calcutta, in 1890.

iii) Subsequently, he traveled to England to study law at the Middle Temple and was called to the Bar in 1894.

4. Legal Career: Das gained prominence as a lawyer when he successfully defended Aurobindo Ghosh in the Alipore Bomb Case of 1909, showcasing his legal acumen and commitment to the nationalist cause.

5. Political Involvement

i) A staunch advocate for India's independence, Das was actively involved in the Indian National Congress (INC).

ii) He supported the Non-Cooperation Movement initiated by Mahatma Gandhi and was elected President of the INC during its Gaya session in 1922.

iii) However, due to differences over council entry strategies, he resigned from the presidency and, along with Motilal Nehru, founded the Swaraj Party in 1923 to advocate for greater self-governance.

6. Contributions to Communal Harmony: Das initiated the Bengal Pact in 1923 understanding the economic disparities between Hindu and Muslim communities in Bengal.

This agreement aimed to address communal tensions by ensuring proportional representation in legislative bodies and government jobs, promoting unity and cooperation among different communities.

7. Literary Pursuits: Beyond his political and legal endeavors, Das was also a distinguished Bengali poet. He authored several works, including "Malancha," "Mala," and "Sagar Sangeet," reflecting his literary talent and deep appreciation for Bengali culture.

UPSC Syllabus: Report and index

World Solar Report

Why in the News?

Recently, during the 7th Assembly of the International Solar Alliance (ISA), four key reports were released, focusing on the rapid advancements in solar energy and sustainable practices worldwide.

The four reports include the World Solar Market Report, World Investment Report, World Technology Report, and *Green Hydrogen Readiness Assessment for African Countries.

Key Highlights of Each Report:

Source: PIB

1. World Solar Market Report: Unprecedented Growth in Solar Capacity:

i) Global Solar Capacity Surge: Since 2000, global solar capacity has expanded from 1.22 GW to an impressive 1,418.97 GW in 2023, marking a 40% annual growth rate. In 2023 alone, 345.83 GW was added, making up 75% of new renewable energy capacity worldwide.

ii) Manufacturing Exceeds Demand: By the end of 2024, solar manufacturing capacity is expected to surpass 1,100 GW, doubling anticipated PV panel demand. Prices for solar cells and advanced modules have dropped significantly, promoting affordability.

iii) Employment Growth: Solar industry jobs have reached 7.1 million, with solar contributing a substantial 44% increase from 2022 figures.

Solar capacity could reach between 5,457 and 7,203 GW by 2030, driven by international climate commitments.

2. World Investment Report: Shifts in Global Energy Investments

i) Rising Energy Investments: Total global energy investments have grown from $2.4 trillion in 2018 to an expected $3.1 trillion by 2024. Clean energy investments now outpace fossil fuel investments, reaching $2 trillion.

ii) Dominance of Solar Investments: Solar energy leads in renewable investments, accounting for 59% of total renewable energy investments in 2023, mainly due to reduced panel costs.

Regional Leadership: The APAC region leads global solar investment with $223 billion, followed by EMEA ($91 billion) and AMER ($78 billion).

3. World Technology Report: Advancements in Solar Technology

Record Efficiency in PV Modules: Monocrystalline solar PV modules have reached a new efficiency high of 24.9%. Multijunction perovskite cells promise higher efficiency and lower production costs, challenging traditional silicon panels.

Material Innovation: Solar manufacturing now uses 88% less silicon per watt than in 2004, highlighting strides in efficiency and environmental benefits.

Cost Reduction in Utility-Scale PV: The levelized cost of electricity (LCOE) for utility-scale solar has dropped by 90%, from $0.46/kWh in 2010 to $0.044/kWh in 2023.

4. Green Hydrogen Readiness in African Countries

Potential for Decarbonization: Green hydrogen, produced through renewable-powered electrolysis, offers an alternative to fossil fuels for industries like steel and fertilizer production, especially in Africa.

Country Assessments: Countries like Egypt, Morocco, and Namibia are evaluated for their green hydrogen potential, focusing on economic feasibility, financing, and risk management.

Dedicated Freight Corridors (DFCs)

Why in news?

Recently, a study by Australia's University of New South Wales states that Dedicated Freight Corridors are boosting India's GDP and significantly increasing Indian Railways' revenue.

About Dedicated Freight Corridors (DFCs)

1. DFCs are special railway routes dedicated to freight transportation. They enable faster transit, allow double-stacked containers, and carry heavy haul trains, increasing capacity and efficiency.

2. Purpose of DFCs: The need for DFCs arose due to the overutilization of the Railways' golden quadrilateral (Delhi, Mumbai, Chennai, Howrah), which carried over half of the Railways' freight traffic.

– The Railways sought to increase its share in freight traffic, aiming for 45% by 2030, as outlined in the National Rail Plan.

3. Establishment and Development: It was announced in the Railway Budget for FY 2005-06, with foundation stones laid in 2006 by then Prime Minister Dr. Manmohan Singh.

4. Two main DFCs constructed:

Eastern DFC (EDFC): 1,337 km from Sonnagar (Bihar) to Sahnewal (Punjab).

Western DFC (WDFC): 1,506 km from Jawaharlal Nehru Port (Mumbai) to Dadri (Uttar Pradesh).

5. DFCCIL (Dedicated Freight Corridor Corporation of India Limited) was formed as a special purpose vehicle for the project's construction and maintenance.

6. Operational Impact and Current Performance: On average, 325 DFC trains run daily, a 60% increase from last year. DFCs have carried over 232 billion Gross Tonne Kilometres (GTKMs) and 122 billion Net Ton Kilometers (NTKMs). Over 10% of Indian Railways' freight operations are now managed by DFCs.

7. Economic Contribution: DFCs reduced freight costs and travel times, leading to up to a 0.5% decrease in commodity prices. They contributed to a 2.94% revenue increase in Indian Railways from FY 2018-19 to FY 2022-23. The Western DFC has significantly reduced freight costs, benefiting both industries and consumers in economically weaker states.

8. Future Corridors in Development: Four additional DFCs are proposed:

Corridor	**Distance**
East Coast Corridor	Kharagpur to Vijayawada (1,115 km)
East-West Sub-corridor I	Palghar to Dankuni (2,073 km)
East-West Sub-corridor II	Rajkharsawan to Andal (195 km)
North-South Corridor	Vijayawada to Itarsi (975 km)

9. DFCs are anticipated to have long-term benefits for India's logistics, industry, and social equality across regions with varying GDPs.