

CLASS NOTES OF 6TH MAY

VOCABULARY

1. **Detrimental** – Causing harm or damage.
2. **Perturbing** – Causing anxiety or concern.
3. **Baulk** – To hesitate or refuse to proceed.
4. **Impasse** – A situation with no possible progress.
5. **Meliorate** – To improve or make better.
6. **Credence** – Belief in something as true.
7. **Diffidence** – Shyness due to lack of confidence.
8. **Fiasco** – A complete and humiliating failure.
9. **Prowess** – Exceptional skill or bravery.
10. **Startling** – Extremely surprising or shocking.

ARTICLE FOR READING

Maritime hub: on the Vizhinjam port

The commissioning of the Vizhinjam International Transshipment Deepwater Multipurpose Seaport, developed by Adani Ports and Special Economic Zone Ltd (APSEZ) under a public-private partnership model with the Kerala government, marks a milestone in India's maritime history. For a country such as India, which relies heavily on foreign ports for handling around 75% of its inbound and outbound transshipment cargo, resulting in an annual revenue loss of approximately \$200 million-\$220 m, the port presents enormous economic opportunities. Its natural draft of about 20 metres, requiring minimal capital dredging, and its proximity to international shipping routes linking Europe, West Asia and the Far East — the east-west shipping axis — position it as a strong contender to become a transshipment hub. This could potentially bring home a significant portion of Indian cargo transshipment handled by the Singapore, Colombo, Salalah and Dubai ports. Ultra-large container vessels can berth without deviating from their route, thereby saving costs. As India's first semi-automated port equipped with remote-controlled quay cranes and an AI-powered vessel traffic management system, Vizhinjam will significantly reduce vessel turnaround times. India's container throughput capacity last year was approximately 20 million TEUs (twenty-foot equivalent units), contrasting with China's 330 million TEUs. This highlights the need for modern ports such as Vizhinjam along India's coastline. Following the project's agreement in 2015, the Kerala government faced challenges, including protests from fisherfolk supported by the Latin Church, natural calamities and the COVID-19 pandemic. Commercial operations commenced in July

2024, with 265 ships, including large mother ships, having berthed so far. In the first phase, the Kerala government invested ₹5,595 crore, Adani Ports spent ₹2,454 crore, and the Union government provided a viability gap fund loan of ₹818 crore — a funding structure that sparked political debate. For Vizhinjam, an all-weather port, to become a game-changer in South Asia's maritime trade, the Centre and the State must ensure the timely completion of rail and road connectivity, which is crucial for leveraging the port's full potential. This will facilitate efficient cargo delivery to the entire hinterland of South India. The subsequent development phases, for which APSEZ and the Kerala government have signed an agreement involving an investment of around ₹9,500 crore by 2028, must also be implemented promptly. Warehousing, logistics, and industrial facilities are essential for the port to evolve into a thriving commercial maritime hub.

ARTICLE FOR SKIMMING

Redrawing the not-so-pretty energy footprint of AI

Generative Artificial Intelligence (AI) has undoubtedly eased access to art and reduced the time and the effort required to complete certain tasks. For example, ChatGPT-4o can generate a Studio Ghibli-inspired portrait in seconds with just a prompt. But this ease comes at a significant energy cost that is often overlooked — one that has even led to Graphic Processing Units (GPUs) melting. As AI tools advance, this environmental impact will continue to become more detrimental, making this an unsustainable technology. How can AI be developed sustainably? And can leveraging nuclear energy, specifically Small Modular Reactors (SMR), be a possible alternative? AI is not free. Every time one uses ChatGPT or any other AI tool, somewhere in the world, there is a data centre chugging electricity, much of which is generated from fossil fuels. “It’s super fun seeing people love images in ChatGPT, but our GPUs are melting,” tweeted Sam Altman, CEO of OpenAI. Projections indicate that these data centres could account for 10% of the world’s total electricity usage by 2030. Though these estimates mirror worldwide energy trends, it is necessary to highlight that India currently has sufficient capacity to generate electricity for its own domestic AI needs. Yet, with increasing adoption and ambitions, proactive planning is imperative. Training an AI model, whether it is a conversational tool such as ChatGPT or an image-generator tool such as Midjourney, can generate the same amount of CO₂ as five cars running continuously across their life. Once deployed, AI tools continue to draw immense power from data centres as they serve countless users around the globe. This resource consumption is staggering, and it is becoming more

unsustainable as AI adoption grows. To start with, AI companies need to be transparent about their energy consumption. Just as some regulations mandate the disclosure of privacy practices surrounding data usage, companies must also be mandated to disclose their environmental impact — first, how much energy is being consumed? Second, where is it coming from? Third, what steps are being taken to minimise energy consumption? Such data would provide further insights on where energy is being used the most and encourage research and development to create a more sustainable model of AI development. Another, perhaps controversial, solution would be to address the energy source behind all of this technological growth. It is time nuclear energy, particularly SMRs, is discussed seriously. While this is often a subject of heated debate, it is also a powerful potential solution to the energy demands created by AI and other emerging technologies. The AI boom is happening fast, and the current energy infrastructure will just not be able to keep up. SMRs present a transformative opportunity for the global energy landscape to support booming AI and data infrastructure. Unlike traditional large-scale nuclear power plants that demand extensive land, water, and infrastructure, SMRs are designed to be compact and scalable. This flexibility allows them to be deployed closer to high-energy-demand facilities, such as data centres, which require consistent and reliable power to manage vast amounts of computational workloads.

DESCRIPTIVE WRITING

The E-Rupee (Digital Rupee) is India's Central Bank Digital Currency (CBDC), launched by the Reserve Bank of India (RBI) to modernize the financial system and promote a cashless economy. Unlike cryptocurrencies, the Digital Rupee is a sovereign-backed, legal tender issued and regulated by the central bank. It aims to provide a secure, efficient, and digital alternative to physical cash. The Digital Rupee is available in two forms: Wholesale (CBDC-W) – Used for interbank transactions and financial settlements. Retail (CBDC-R) – Designed for the public to make everyday transactions, just like cash or digital payments. E-Rupee transactions are conducted via digital wallets or apps, eliminating the need for intermediaries and reducing transaction costs. It ensures faster payments, financial inclusion, and enhanced transparency while combating issues like counterfeiting and tax evasion. Despite its benefits, challenges exist, such as cybersecurity risks, user adoption, and integration with existing financial systems. The RBI is carefully implementing the Digital Rupee in phases to address these concerns and ensure a stable transition to digital currency. With increasing digital adoption, the E-Rupee has the potential to transform India's economy, providing a secure, cashless, and efficient payment system while reinforcing the country's leadership in fintech innovation.

Precis Writing:

The E-Rupee (Digital Rupee) is India's CBDC, introduced by the RBI to promote a cashless economy. Available in wholesale (CBDC-W) and retail (CBDC-R) forms, it ensures faster transactions, financial inclusion, and transparency. While challenges like cybersecurity and user adoption persist, the RBI is implementing it cautiously. If successfully integrated, the Digital Rupee could revolutionize India's financial system, making transactions efficient, secure, and cost-effective.

- **You are organizing a college seminar and need sponsorship from a reputed company. Write an email requesting financial support.**

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I hope this email finds you well. I am writing on behalf of [College Name], where we are organizing a seminar on [Seminar Topic] scheduled for [Date]. This event aims to [briefly explain the purpose and significance of the seminar]. We believe that [Company Name] would be an ideal partner for this initiative, given your esteemed reputation and commitment to [relevant industry or cause]. By sponsoring our seminar, you will gain visibility among a diverse audience of students, faculty, and industry professionals, as well as an opportunity to showcase your brand and expertise. We are seeking financial support to cover expenses such as venue arrangements, speaker sessions, and promotional activities. In return, we offer various promotional benefits, including logo placement on event materials, acknowledgment in all communications, and an opportunity for a representative from your company to address the audience. Please let us know a convenient time to discuss this collaboration further. We would be delighted to tailor sponsorship benefits to align with your marketing goals.

Looking forward to your positive response. Best regards,

[Your Name]

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PERFECTION VOCAB

- **Elements** – Basic substances from which all matter is made; e.g., hydrogen, helium.
- **Big Bang** – The scientific theory describing the origin of the universe from a single point 13.8 billion years ago.
- **Astrophysicists** – Scientists who study the physical properties and behavior of celestial bodies and the universe.
- **Kilonova** – A powerful astronomical event caused by the collision of neutron stars, producing heavy elements.
- **Gravitational waves** – Ripples in the fabric of space-time caused by accelerating massive objects.
- **Gamma-ray burst** – A high-energy explosion observed in distant galaxies, typically associated with neutron star collisions or supernovae.
- **Neutron star** – A highly dense remnant of a supernova explosion, composed mostly of neutrons.
- **Platinum, Lead, Gold** – Heavy elements formed in extreme cosmic events like neutron star mergers.

- **Iron** – A heavy element formed in supernovae and common in planets and stars.
- **Cosmic origins** – The beginning or source of elements and matter in the universe.
- **AI companion apps** – Applications powered by artificial intelligence that simulate conversation or emotional support.
- **Nonprofit watchdog** – An independent organization that monitors and reports on industries or issues, often for public interest.
- **Suicide** – The act of intentionally taking one's own life.
- **Youth safety measures** – Policies or actions designed to protect children and teenagers from harm.
- **Inappropriate content** – Material that is unsuitable for certain audiences, especially minors.
- **Conversational apps** – Software designed for back-and-forth dialogue with users, often using AI.
- **Transparency** – Openness and clarity in how systems, especially digital or AI-based, operate and affect users.
- **User-friendly** – Easy to use and navigate, especially for non-expert users.

- **Implementation** – The act of putting a plan or system into effect.
- **Risks to children and teens** – Potential dangers or harms these groups may face, especially online or with digital technology.
- **Molecular cloud** – A type of interstellar cloud consisting mainly of hydrogen molecules, where stars are often born.
- **Gas and dust** – Fundamental materials in space from which stars and planets form.
- **Ultraviolet light** – A type of electromagnetic radiation with wavelengths shorter than visible light, often used in astronomical detection.
- **Carbon monoxide** – A molecule commonly found in space; its presence is used to detect molecular clouds.
- **Infrared signals** – Heat-based radiation that can be used to observe space objects.
- **Mass** – The amount of matter in an object; here used to describe the size of the Eos cloud.
- **Eos** – Name given to the molecular cloud; also the Greek goddess of the dawn.

- **Nature Astronomy** – A respected scientific journal that publishes astronomy-related studies.
- **Detect** – To discover or identify the presence of something, especially when it is not visible.
- **Emission** – The act of giving off energy, such as light or heat, which can be used for observation.