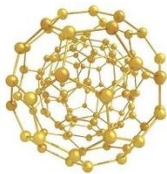


GOLD NANOPARTICLES

Experts recently said that Gold nanoparticles used in medicines and beauty products may not only protect the skin from external infestations but can also help arrest the effects of ageing.



About Gold Nanoparticles:

- Gold nanoparticles (AuNPs) are small gold particles with a **diameter of 1 to 100 nm**.
- Once dispersed in water, AuNPs are also known as **colloidal gold**.
- These are also called as '**gold bhasma**,'
- **Properties**
 - Spherical AuNPs possess useful attributes such as size- and shape-related optoelectronic properties, **large surface-to-volume ratio**, **excellent biocompatibility**, and **low toxicity**.
 - Important physical properties of AuNPs include **surface plasmon resonance (SPR)** and the ability to quench fluorescence.
 - Spherical AuNPs exhibit a range of colors (e.g., brown, orange, red and purple) in aqueous solution as the core size increases from 1 to 100 nm.
 - These are not – toxic, not phototoxic, not genotoxic, non-irritant and non-sensitizing
- **Applications**
 - **Electronics:** Gold nanoparticles are designed for **use as conductors** from printable inks to electronic chips. Nanoscale gold nanoparticles are being used to connect resistors, conductors, and other elements of an electronic chip.
 - **Photodynamic Therapy:** Near-IR absorbing gold nanoparticles produce heat when excited by light at wavelengths from 700 to 800 nm. This enables these nanoparticles to eradicate targeted tumors.

- **Therapeutic Agent Delivery:** Therapeutic agents can also be coated onto the surface of gold nanoparticles. The large surface area-to-volume ratio of gold nanoparticles enables their surface to be coated with hundreds of molecules
- **Sensors**– These are used in a variety of sensors. For example, a colorimetric sensor based on gold nanoparticles can identify if foods are suitable for consumption.
- **Diagnostics:** These are also used to detect biomarkers in the diagnosis of heart diseases, cancers, and infectious agents.

ADVANCED MEDIUM COMBAT AIRCRAFT

Recently, the Cabinet Committee on Security (CCS) cleared a Rs 15,000 crore project to design and develop the Advanced Medium Combat Aircraft (AMCA).



About Advanced Medium Combat Aircraft:

- It is India's **fifth-generation** fighter multirole **fighter jet**.
- **Features**
 - It will have advanced stealth features to avoid detection by enemy radar.
 - **Fuel and Weapon:** The aircraft will have a large, concealed internal fuel tank of 6.5-tonne capacity, and an internal weapons bay for a range of weapons, including indigenous weapons.
 - **Engine:** The AMCA Mk1 variant will have the US-built GE414 engine which will be developed indigenously by DRDO's Gas Turbine Research Establishment (GTRE) in collaboration with a foreign defence major.
 - The aircraft will have a low electro-magnetic signature, which will make it difficult for enemy radar to detected it.
 - At the same time, it will have powerful sensors and new weapons, so it is able to register the signature of enemy aircraft and take them out.

- The Aeronautical Development Agency (ADA) under the Defence Research and Development Organisation (DRDO) will be the nodal agency for executing the programme and designing the aircraft.
 - It will be manufactured by state-owned **Hindustan Aeronautics Limited (HAL)**.
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WHAT IS INFLECTION 2.5?

Recently, Inflection AI company launched its latest LLM, Inflection 2.5, an upgrade to its model that powers its friendly chatbot Pi personal assistant.



About Inflection 2.5:

- It is an “**upgraded in-house model** that is competitive with all the world’s leading LLMs.
- The newly **upgraded Large Language Model** comes with its signature personality and uniquely empathetic fine-tuning.
- With the new upgrade, Pi has now been endowed with world-class real-time web search capabilities to ensure that users get access to high-quality and up-to-date information in real time.
- The new LLM, users are talking to the Pi chatbot about a wider range of topics including discussing current events, getting local restaurant recommendations, studying for a biology exam, drafting business plans, coding, and even fun discussions on hobbies.

What is PI chatbot?

- Pi is an **AI chatbot** with which one can have deep and meaningful conversations.
- To access the chatbot, one needs to log on to Inflection.AI, click on Meet Pi, and simply start talking to the chatbot right away.
- It is more humane and has been promoted as a chatbot that has a personality.
- It is more like a companion to humans and is free to use.

- The chatbot comes with a **voice, in six distinct voices**, to choose from adding life to conversations.
 - The chatbot has been shown billions of lines of text on the open web.
 - This allows Pi to have conversations with users and answer a wide variety of questions, according to the company.
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SHANKARACHARYA TEMPLE

Devotees recently thronged Shankaracharya Temple in Srinagar to celebrate Maha Shivratri.



- The Shankaracharya Temple in **Srinagar**, located on **top of the Shankaracharya Hill**, is a **Hindu temple** dedicated to **Lord Shiva** and is one of the **oldest shrines in Kashmir**.
- The temple **dates back to 200 BC**, however **present structure** was probably **constructed in 9th Century AD**.
- It is said that the temple was **originally built by Jaluka**, the son of **Emperor Ashoka**, a follower of **Buddhist religion**; and hence, the temple is also **regarded as scared by the Buddhist people**, and they **called this temple as Pas-Pahar**.
- Also **known as Jyesteshwara Temple**, the temple is named after the great philosopher **Shankaracharya** who is believed to have visited **Srinagar** about ten centuries ago.
- It is believed that **Adi Shankaracharya attained spiritual enlightenment at this place**, and it was after this enlightenment that he went out and formed the four Hindu schools of **Advaita**, or the philosophy of **non-dualism**.
- **Features:**
 - The temple's architecture reflects a **blend of Hindu and Buddhist styles** and boasts intricate carvings that depict various mythological stories.
 - The early **Shihara style** is prominently evident in the building design and is indicative of a horseshoe arch type of pattern.

- The temple sits on a solid rock and is constructed on a high octagonal platform. The main sanctum sanctorum houses a black stone idol of Lord Shiva along with other deities.
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ADVISORY TO THE ARTIFICIAL INTELLIGENCE INDUSTRY

Why in News?

- The Ministry of Electronics and Information Technology (MeitY) issued an advisory to the Artificial Intelligence (AI) industry.
- It stated that all generative AI products would have to be made public with the explicit approval of the Government of India if they are “**under-testing/ unreliable**”.

Government’s Approach and the Need for the Advisory to the AI Industry:

- Until recently, **the government shared confidence in AI**, with Big Tech firms frequently **striking a balance** between seeking regulation and attempting to influence the path these rules take.
- The MeitY categorically said that **the government is not considering bringing a law** or regulating the growth of AI in the country.
- However, in recent months, MeitY has expressed concern with AI models that generate uncomfortable answers.
 - **For example**, it reacted sharply to Google’s Gemini chatbot, whose response to a query, “Is the current Indian PM a fascist?” went viral.
 - According to the MeitY, the ambivalent response by the chatbot violated India’s IT law.
 - “You can’t ‘trial’ a car on the road and when there is an accident say, whoops, it is just on trial.”
- Hence, the recent advisory on all generative AI products (**such as LLMs similar to ChatGPT and Google's Gemini**) represents a starkly different approach to AI research and policy that the government had previously signalled.

Key Highlights of the Advisory to the AI Industry:

- The rules were intended for large tech firms and wouldn't apply to startups.
- Under the Rule 3(1)(b) of the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021**, the platforms will have clear legal obligations.
 - The Rule 3(1)(b) prohibits unlawful content like defamation, pornography, disinformation and anything that “threatens the unity and sovereignty of India.”
- This means, **there were legal consequences** under existing laws (both criminal and tech laws) for platforms **that enable or directly output unlawful content**.
- The advisory also contained a **requirement for AI-generated imagery to be labelled as such**, something the industry has hesitated from making genuine efforts to achieve.

What Response has the AI Industry Advisory Received?

- The advisory has **divided industry and observers** on a key question: was this an ‘advisory’ or a ‘mandate’?
 - The document instructed recipients to submit an action taken-cum-status Report to the Ministry within 15 days.
- The government **hasn't elaborated in detail** on how IT laws can apply to automated AI systems.
- According to a technology lawyer, the advisory was “**legally unsound**” and compared it to the **Draft National Encryption Rules 2015**, a quickly withdrawn proposal to outlaw strong encryption of data in India.
- Amazon Web Services has tried implementing an ‘**invisible**’ **watermark** on the AI-generated imagery, but has expressed concern that such a move would be of little use as **watermarks can be removed easily**.

WHAT IS RIGHT TO REPAIR PORTAL?

The stakeholders meeting on Right to Repair Portal India was held recently.



- The **Ministry of Consumer Affairs (MCA)** has launched the Right to Repair Portal India to **provide consumers with access to repair**

information for their products and **reduce e-waste**.

- The launch was made on the occasion of National Consumer Rights Day 2022.
- **Features:**
 - It provides **information about the circular economy**, which is the new economic model that focuses on repairing and reusing products, as opposed to throwing them away.
 - The portal **brings together information from different sectors**, including automobiles, consumer durables, mobile and electronics, and farming equipment.
 - **All public information related to products, services, warranties, terms, and conditions, etc.** will also be easily **accessible through this portal**.
 - It gives consumers **access to affordable repair** mobile phones, appliances, and other **electronic devices by original equipment manufacturers (OEMs) or third-party repairers**.
 - The aim is to **offer a cheaper alternative to expensive replacements** to customers, instead of buying new products altogether.
 - The portal will **carry information for enabling consumers to self-repair**, knowing about authorized repairers, and promoting third party repairers.
 - It will also benefit small repair shops, as a list of authorised third-party repairs will be provided.
 - It also allows consumers to **submit feedback and suggestions** on products and services.

ARUN GOEL QUILS AS ELECTION COMMISSIONER AHEAD OF POLLS

Why in news?

- Days ahead of the announcement of the schedule for the upcoming Lok Sabha election, Election Commissioner Arun Goel resigned.
- With Goel's resignation, the EC, which is a three-member body, is left with only Chief Election Commissioner Rajiv Kumar.

- There was already a vacancy in the EC after Election Commissioner Anup Chandra Pandey retired last month.
- The Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023 will be used to fill the current vacancies in the Election Commission according to its provisions.
 - The government had introduced a new law in December 2023.

Controversy surrounding the appointment of Arun Goel as Election Commissioner

- After 37 years in the IAS, Goel took voluntary retirement on November 18, 2022, a month before he was set to retire.
- The very next day, November 19, the President appointed him as Election Commissioner, filling the post that had been vacant since May 15, 2022.
- Goel's appointment came at a time when the SC was hearing petitions on the procedure for appointing Chief Election Commissioner and Election Commissioners.
- The Association for Democratic Reforms (ADR) moved the court in April 2023 against Goel's appointment.
- It said that the appointment was arbitrary and he seemed to have remarkable foresight to seek voluntary retirement ahead of his appointment as EC.

Election Commissioner

- **About**
 - Election Commission is a permanent and independent body.
 - By Article 324 of the Constitution of India, it is vested with the power of conducting elections to – Parliament; State Legislatures; Office of President and Vice-President of India.
- **Appointment and Tenure of Commissioners**
 - The Constitution does not lay down a specific legislative process for the appointment of the Chief Election Commissioner and Election Commissioners.

- Article 324(2) says appointment of CEC and other ECs shall be subject to provisions of any law made by the Parliament.
 - Until recently, there was no such law.
 - The President used to make the appointment on the advice of the Union Council of Ministers headed by the Prime Minister.
 - Now, the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023 guides the appointment of election commissioners.
 - **Tenure**
 - They have tenure of six years, or up to the age of 65 years, whichever is earlier.
 - The CEC can be removed from office except in same manner and on the same grounds as a judge of the Supreme Court.
 - The Constitution has not debarred the retiring Election Commissioners from any further appointment by the Government.
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