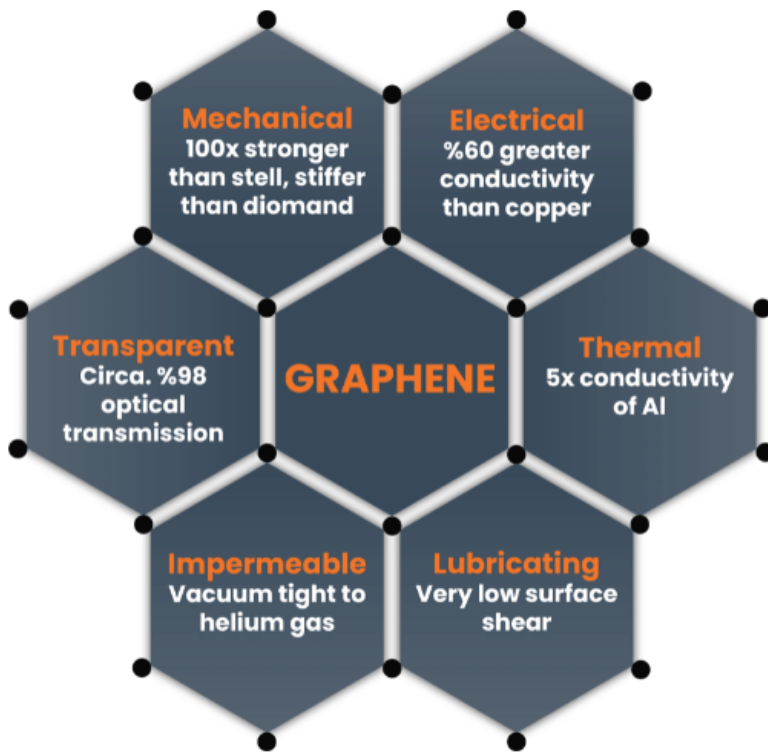


1. Graphene

Topic: Science and Technology



In News: What Artificial Intelligence (AI) is to software and quantum computing is to computers, graphene is to materials. These three emerging technologies will disrupt the existing human-machine interface in the next couple of decades. While India is among the leaders in AI and a potential challenger in quantum computing, it needs to catch up in the area of graphene. India has to invest on Graphene.

More on the Topic:

- Graphene is **the world’s thinnest, strongest, and most conductive material of both electricity and heat.**
- It **conducts electricity better than copper.** It is **200 times stronger than steel but six times lighter.**
- It is almost perfectly transparent as it absorbs only 2% of light.
- It is impermeable to gases, even those as light as hydrogen and helium. It has the potential to revolutionise electricity, conductivity, energy generation, batteries, sensors and more.



- Also, when **added to other materials**, graphene even in small quantities produces **composite materials with dramatically transformed qualities.**

Applications of Graphene:

- Graphene composites are used in **aerospace, automotive, sports equipment and construction.**
- It is used for **high-performance batteries and super-capacitors, touchscreens, and conductive inks.**
- Graphene-based **sensors are used for environmental monitoring, healthcare and wearable devices.**
- Graphene oxide **membranes are used for water purification and desalination.**
- Graphene-based masks were made during COVID.
- **Defence Sector:** Graphene is important for defence and aerospace as well. Its exceptional strength makes it promising material for armour and ballistic protection.
- Graphene has the potential to absorb and dissipate electromagnetic waves, making it valuable for developing stealth coatings and materials that reduce radar signatures and electromagnetic interference.
- Graphene is highly sensitive to environmental changes, which makes it an excellent candidate for sensing chemical and biological agents, explosives, radiation, and other hazardous substances.
- Besides, graphene-based materials can also protect us against chemical and biological attacks.
- Better energy storage and electronics properties make graphene attractive in defence and aerospace as well as in civil and commercial applications.

Leading Producers:

- There are reasons to believe that we are entering the graphene age.
- According to the Grand View Research, the global graphene market size was valued at \$175.9 million in 2022 and is expected to grow at a CAGR of 46.6% between 2023 and 2030.
- **China and Brazil are global leaders in the commercial production of graphene.**
- **India produces about one-twentieth compared to China and one-third compared to Brazil.**
- India needs to be among the leaders in graphene because we may experience the 'winner takes the most' situation here.
- Given the high cost-to-volume ratio for high-grade graphene, its production may get concentrated in a few locations in the world, as in the case of semiconductors.
- India missed the semiconductor bus in the mid-1990s. The time to step on the graphene pedal is now.

Source: Indian Express

1. Sedition Law

WHAT THE APEX COURT SAID

This government has been scrapping many obsolete laws. We don't know why they are not looking into this law? Continuance of this law is a serious threat to liberty

- The enormous power of misuse of this section can be compared with a carpenter with a saw. Instead of cutting a tree, he cuts the entire forest
- There is no dispute that it is a colonial law and was used by the British to suppress freedom and was used against Mahatma Gandhi... Is this law still needed after 75 years of Independence?



WHAT IS SECTION 124(A)?

Under Section 124A of IPC, the offence of sedition is committed when any person brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards, the govt established by law

- The penal provision is punishable with a jail term ranging between three years to life term

LOW CONVICTION RATE

- Between 2016 and 2019, the number of sedition cases rose by 160% to 93
- But in 2019, the conviction rate was 3.3%
- This means just 2 of the 93 accused were convicted

Topic: Polity and Governance

In News: The 22nd Law Commission submitted its report on the sedition law to the law ministry, providing its recommendations on amending section 124A of the IPC.

More on the Topic:

- **Recommendations by the Law Commission:**
- One of the recommendation is that the Sedition provision should be amended to purportedly incorporate **the Supreme Court's 1962 judgment in Kedar Nath Singh vs Bihar**, which held that the provision can only be invoked in cases where alleged seditious acts lead to, or tend to lead to, violence or public disorder.
- **This will bring about more clarity in the interpretation, understanding, and usage of the provision and to align it with the SC's verdict.**
- Replace mere inclination to incite violence or cause public disorder with proof of actual violence or imminent threat to violence.
- To enhance the alternative punishment to "7 years", giving the courts greater room to award punishment in accordance with the gravity of the act.
- Procedural safeguards to minimise the abuse. For example, Section 154 of the CrPC could be amended to hold that a FIR under Section 124A would be registered only after a police officer conducts a preliminary inquiry.



About Sedition Law:

- Section 124A defines sedition as: Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards, the Government established by law shall be punished with imprisonment for life, to which fine may be added.

Need of sedition Law:

- **Section 124A of the IPC** has its utility in combating anti-national, secessionist and terrorist elements.
- The constitution of India prescribes **reasonable restrictions (under Article 19(2)) that can always be imposed on this right (Freedom of Speech and Expression)** in order to ensure its responsible exercise and to ensure that it is equally available to all citizens. Sedition law upholds this principle if implemented judiciously.
- It helps in **protecting the elected government from attempts to overthrow** the government with violence and illegal means.

Criticism Against Sedition Law:

- It is considered as **a relic of colonial legacy**. Colonial administrators used sedition to lock up people who criticised the British policies.
- Stalwarts of the freedom movement such as Lokmanya Tilak, Mahatma Gandhi, Jawaharlal Nehru, Bhagat Singh, etc., were convicted for their “seditious” speeches, writings and activities under British rule.
- The Constituent Assembly did not agree to include sedition in the Constitution. The members felt it would curtail freedom of speech and expression.
- The section is often misused to suppress dissent in the democracy.

SC/HC Rulings on Sedition:

- The Supreme Court in **Romesh Thapar v State of Madras** held that **criticism of the government is not a justifying ground for restricting the freedom of expression and of the press**, unless it undermines the security of or tend to overthrow the state.
- The Punjab and Haryana High Court in *Tara Singh Gopi Chand v. The State* (1951), and the Allahabad High Court in *Ram Nandan v. State of Uttar Pradesh* (1959) declared the provision unconstitutional.
- However, the Supreme Court in **Kedarnath Singh v State of Bihar(1962)** upheld the constitutional validity of IPC Section 124A.
- It also attempted to restrict its scope for misuse.
- So, unless accompanied by an incitement or call for violence, criticism of the government cannot be labelled ‘sedition’.
- The ruling in **Balwant Singh v. State of Punjab (1995)**, reiterated that the real intent of the speech must be taken into account before labelling it seditious.
- **In Vinod Dua v Union of India, the SC quashed FIRs with charges of sedition** against the journalist for criticising Prime Minister’s handling of the Covid-19 crisis and cautioned against unlawful application of the provision.

Source: Hindu

3. Himalayan Brown Bears



Topic:
Environment and Ecology

In News: Encroachment has pushed Himalayan brown bears into Kashmir's villages.

More on the Topic:

- The Himalayan brown bear is the largest mammal found in Kashmir, with adult individuals weighing 250 kilograms or more. They inhabit altitudes ranging from 2,000 to 2,500 metres, predominantly above the tree line.
- Brown bears are distributed worldwide and include the famous Grizzly of North America. The northern mountains of India and Pakistan are home to the species' Himalayan variant.
- The Himalayan brown bears are listed as **"critically endangered"** in the **International Union for the Conservation of Nature Red List**. And the future doesn't offer much hope.
- Himalayan brown bears are found in various parts of the subcontinent, including Pakistan, Pakistan-occupied Kashmir, Uttarakhand, Himachal Pradesh and Jammu and Kashmir.
- **The brown bear goes into hibernation around October and emerges around April and May.** It has been observed to prefer open valleys and pastures and during summer, it moves as high as 5,500 metres and returns to the valleys in the autumn.

- In India, brown bears are present in **23 protected areas (PA) in the Union Territory of Jammu and Kashmir, and the states of Himachal Pradesh and Uttarakhand**. Their global number is estimated to be less than 1,000 and possibly half that in India.

Reduction In the Numbers:

- According to a study carried out in the western Himalayas by scientists of Zoological Survey of India in 2020, there will be a decline of **about 73 per cent of the bear's habitat by 2050**.
- The scientists predicted a **significant reduction in suitable habitat and biological corridors of the species in a climate change scenario**, prompting them to recommend “preemptive spatial planning of PAs in the Himalayan region for the long-term viability of the species”.

Source: Hindu

4. Petroleum Coke (Pet Coke)



Topic: Economy

In News: The government has permitted the import of pet coke for making graphite anode material for lithium-ion batteries as a feedstock.

More on the Topic:

- Import of pet coke for fuel purposes is completely banned due to its higher Sulphur emission.
- Petcoke is a carbon-rich solid material derived from a thermo-based chemical engineering process.
- It is a spongy, solid residue from oil distillation that can be burned for fuel similar to coal.
- It is a by-product created when bitumen found in tar sands, is refined into crude oil.



- Bitumen is a sticky, black, highly viscous liquid or semi-solid form of petroleum.
- **Fuel Grade Petcoke is produced at Panipat, Paradip, Koyali and Haldia refineries of IndianOil.**
- Indian firms are also buying Petcoke from Venezuela because the country is offering the same at a discounted rate of 5-10% lower than the US.
- **The world's biggest consumer of Petcoke, India imports over half of its annual Petcoke from the US which is around 27 million tonnes.**
- It is used as a feed stock or for fuels and is used in making cement, lime kilns, gasification units, and industrial boilers.

Source: HT

5. The ILO Monitor on the World of Work



Topic: Reports and Indices

In News: The International Labour Organization (ILO) has published its the 11th edition of The World Of Work.

More on the Topic:

- The report provides an overview of global and regional unemployment, the impact of rising debt levels on labour markets and analyses social protection policy gaps in developing countries.
- The projected global unemployment rate for 2023 is expected to fall below pre-pandemic levels.



- The ILO has introduced a new indicator called the jobs gap. This encompasses all individuals who desire employment but are currently jobless.

Source: Hindu

6. Lightweight payment system

Topic: Economy



In News: RBI is planning to introduce a lightweight payment and settlement system (LPSS) that can operate from anywhere with minimal staff.

More on the Topic:

- The LPSS, which will operate independently of existing payment systems like RTGS, NEFT, and **UPI**, aims to **provide a portable and resilient solution during natural calamities and wartime situations.**
- This would process transactions that are critical to ensure **the stability of the economy such as government and market-related transactions.**
- Real-time gross settlement (RTGS), National Electronic Fund Transfer (NEFT), and Unified Payments Interface (UPI) are dependent on **complex wired networks backed by advanced IT infrastructure.**
- "However, catastrophic events like natural calamities and war have the potential to render these payment systems temporarily unavailable by disrupting the underlying information and communication infrastructure.
- This system's infrastructure will be **independent of the technology that powers other payment systems including RTGS, NEFT, and UPI.**

Source: Hindu



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7. Purana Qila Excavations

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SHOWCASE OF ERAS

Purana Qila was originally located on the western bank of the Yamuna, which now flows about a kilometre to its east

Popularly called **Pandavon ka Qila**, it stands on a mound believed to mark the site of Indraprastha town

The standing ramparts and other structures were, however, **built by Sher Shah Suri (1538-45 CE)** after demolishing and re-modelling Dinpanah, a city founded here by Humayun in about 1533 CE

Humayun resided here till his death in 1556 CE and is believed to have repaired and constructed some portions of the citadel



Incence burner, possibly from Rajput period



ANTIQUITIES FOUND

Terracotta beads and toys of **Maurya** period; terracotta Yakshi figurine of **Sunga** period; terracotta votive tank and copper coins of **Kushan** period; seals and coins of **Gupta** period; different types of beads of coral, crystal and cornelian, and a small sandstone Vishnu image of **Rajput** period; glazed plates and coins of **Sultanate** period; and Chinese porcelain with Chinese inscription, glass wine bottles and a gold earring of the **Mughal** period

Photos: Sanjeev Rastogi



Kushan period bowl

EXCAVATIONS

1954-55

1969-73

2013-14

2017-18 (in process)



Toy Ram figurine from **Mauryan** period



Topic: Art and Culture

In News: A fresh round of excavations at the site of Delhi's Purana Qila or Old Fort has uncovered evidence of the continuous history of the city since the pre-Mauryan era.

More on the Topic:

- The findings include shards of **Painted Gray Ware pottery** which are usually dated to **around 1200 BC to 600 BC**.
- The Purana Qila, built by **Sher Shah Suri and Mughal emperor Humayun**, is believed by many to be the site of Indraprastha, as mentioned in the Mahabharat.

New Evidences:

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- The new excavations have also found remains of a **900-year-old Vaikuntha Vishnu from the Rajput period**, a **terracotta plaque of Goddess Gaja Lakshmi from the Gupta period**, the **structural remains of a 2,500-year-old terracotta ring well from the Mauryan period**, and a **well-defined four-room complex from the Sunga-Kushan period dating back to 2,300 years ago**, besides beads, seals, copper coins and a bone needle.

Trade centre Related Evidences:

- More than 136 coins and 35 seals and sealings have been discovered from a small excavated area, indicating the site's pivotal role as a centre for trade activities.

Source: Hindu
