

DAILY CURRENT AFFAIRS (DCA)

Time: 45 Min

Date: 08-04-2024

Table of Content

SC Expanded Scope of Articles 14 and 21

Expansion of AUKUS

India Tops List of Doping Offenders in 2022

13th Finance Commission Chairman called for GST Reform

Technology Behind Manufacturing a Semiconductor Chip

Will new solar power rules boost production?

NEWS IN SHORTS

Satpula Dam

Biology of Skin Pigmentation

Underpriced onion export to UAE

Phanigiri

Gape Limitation

Port of Baltimore

Total Solar Eclipse

Exercise Gagan Shakti

SC EXPANDED SCOPE OF ARTICLES 14 AND 21

In News

- The Supreme Court has expanded the scope of **Articles 14 and 21** to include the “**right against the adverse effects of climate change**”.

Key Highlights

The Supreme Court was hearing a plea to protect the **Great Indian Bustard (GIB)** from losing its habitat due to power transmission lines.

The court also highlighted the **interconnection** between **climate change** and **various human rights**, including the right to health, indigenous rights, gender equality, and the right to development.

The SC has expanded the fundamental rights chapter from time to time to include various facets of a dignified existence.

- However, this is the **first time** that it has included the “**right against the adverse effects of climate change**”.
- The court highlighted that “**States** owe a duty of care to citizens to prevent harm and to ensure overall well-being”:
 - “The right to a healthy and clean environment is undoubtedly a part of this **duty of care**.”

Rationale

- Despite a plethora of decisions on the right to a clean environment, some decisions which recognise climate change as a serious threat, and national policies which seek to combat climate change, it is yet to be articulated that the people have a right against the adverse effects of climate change.
- As the havoc caused by climate change increases year by year, it becomes necessary to articulate this as a distinct right.
 - It is **recognised by Articles 14 and 21** which are important sources of the right to a clean environment and the right against the adverse effects of climate change.

About the Articles 14 and 21

- Article 14 of the Constitution of India** reads as under: The State shall not deny to any person **equality before the law** or **the equal protection of the laws** within the territory of India.”
 - Equality before law** prohibits **discrimination**. It is a **negative concept**.

- The concept of ‘**equal protection of the laws**’ **requires** the State to give special treatment to persons in different situations in order to establish equality amongst all.
 - It is positive in character.
- Therefore, the necessary corollary to this would be that equals would be treated equally, whilst un-equals would have to be treated unequally
- Article 21** recognises the right to life and personal liberty : It lays down that, no person shall be deprived of his life or personal liberty except according to procedure established by law.
 - It guarantees that life or personal liberty shall not be taken away without the sanction of law. It ensures that no person can be punished or imprisoned merely at the whims of some authority. He/she may be punished only for the violation of the law.
 - By the **86th Amendment Act** of the Constitution a new article 21-A has been added after Article 21.
 - By this Amendment Act, Right to Education has been made a Fundamental Right

Essence

- Fundamental Rights are enumerated in **Part III from Article 14 to 32** in the Constitution of India .
- They** provide standards of conduct, citizenship, justice and fair play. They serve as a check on the government.
- Various social, religious, economic and political problems in India make Fundamental Rights important.
- These rights are justiciable which means that if these rights are violated by the government or anyone else, the individual has the right to approach the Supreme Court or High Courts for the protection of his/her Fundamental Rights.

Do you know ?

- Article 48A of the Constitution** provides that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
- Clause (g) of Article 51A stipulates** that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.

- ◆ These are not justiciable provisions of the Constitution but **the importance of the environment, as indicated by these provisions, becomes a right in other parts of the Constitution.**

Source: IE

EXPANSION OF AUKUS

Context

- The **AUKUS security Pact** is set to begin talks on bringing new members and plans to include **Japan** into the group.

What is AUKUS?

- AUKUS is a **trilateral defence and security partnership** between **Australia, the United Kingdom and the United States.**
- It was established in **2021** to bolster their allied deterrence and defense capabilities in the **Indo-Pacific.**
- The trilateral partnership has two pillars.
 - ◆ **Pillar 1** revolves around the acquisition and development of conventionally armed nuclear-powered submarines for the Royal Australian Navy;
 - ◆ and **Pillar 2** focuses on cooperation in eight advanced military capability areas: artificial intelligence (AI), quantum technologies, innovation, information sharing, and cyber, undersea, hypersonic and counter-hypersonic and electronic warfare domains.

Why was AUKUS formed?

- **Increasing Presence of China:** The Indo-Pacific region has witnessed increasing geopolitical tensions, including territorial disputes, military build-up, and assertive behavior by China.
 - ◆ The participating countries share concerns about maintaining peace, stability, and freedom of navigation in the region.
- **Technological Cooperation:** AUKUS aims to enhance technological cooperation, particularly in the field of defense and security.
- **Alliance Strengthening:** AUKUS represents a deepening of security ties between Australia, the United Kingdom, and the United States.
- **Response to Regional Dynamics:** The formation of AUKUS is seen as a response to shifting regional dynamics and evolving security challenges in the Indo-Pacific.

- ◆ It reflects a broader trend of countries in the region seeking to forge closer security partnerships and alliances to address common concerns and counterbalance China's influence.

Way Ahead

- Lasting success for AUKUS in deterring regional threats and reinforcing regional stability hinges on participating states overcoming barriers to **progress in technology and information sharing**, and meeting benchmarks for both Pillars.
- Achieving the core objectives will take years, with Pillar I likely requiring decades, even with all states moving forward at full speed.
- Regardless, AUKUS still holds immediate promise for participating countries.
- Critically, it will help catalyze technological innovation and enhance research and development for emerging capabilities necessary to maintain a competitive edge, strengthen defense ties, and deepen the three countries' presence in the Indo-Pacific.

Source: TH

INDIA TOPS LIST OF DOPING OFFENDERS IN 2022

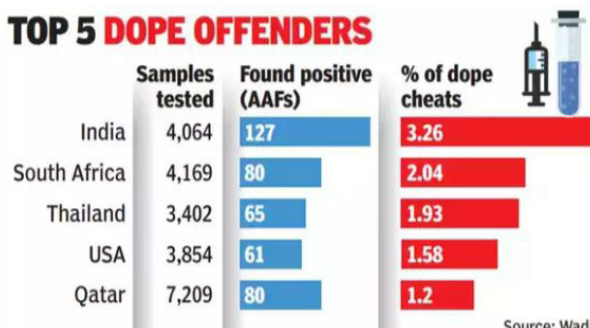
Context

- India has emerged as the country with the **highest percentage of doping offenders**, according to the **2022 testing figures** released by the **World Anti-Doping Agency (WADA).**

About

- **127 Indian Athletes** tested **positive** for banned substances, constituting **3.26 percent** of the sample size.
- Following India, South Africa ranked second, followed by Bangkok's testing laboratory in third place. The United States and Qatar secured the fourth and fifth positions, respectively.

TOP 5 DOPE OFFENDERS



- India's doping violations outnumber those of major sporting nations such as Russia, the United States, Italy, and France.

Doping and its Concerns

- Doping refers to the practice of using banned chemical substances, known as **performance enhancing drugs (PEDs)**, by athletes.

Concerns of Doping

- **Health Risks:** Many performance-enhancing drugs and methods have serious health consequences such as cardiovascular issues, liver damage, hormonal imbalances, psychiatric disorders, and increased risk of cancer.
- **Ethical Concerns:** Doping violates the principles of fair play in sports. It challenges the notion of fair competition and the idea that success should be achieved through hard work, dedication, and talent rather than through artificial enhancements.
- **Negative Impact on Athlete Development:** Doping creates unrealistic expectations for athletes and discourages them from focusing on training, skill development, and proper nutrition.
 - ♦ Instead, they prioritize seeking shortcuts through doping to achieve success.
- **Erosion of Trust and Integrity:** Doping scandals damage the reputation and credibility of sports organizations, athletes, and the sporting events themselves.

Why is Doping on Rise in India?

- **Pressure to Succeed:** Athletes face immense pressure from coaches, sponsors and fans, to achieve success.
 - ♦ This pressure creates a strong incentive to use doping substances or methods as a shortcut to achieving their goals.
- **Winning brings with it several opportunities in India:** from financial rewards to a government job.
 - ♦ It sends a message to the younger generation that one must win at all costs, even if it means having to dope.
 - ♦ Doping is quite rampant among junior athletes, a lot of whom are after money or government jobs.
- **Role of Coaches:** Often the coaches see the athletes as a way to gain more success, even if it's done through unethical means.
 - ♦ The guru-shishya culture in India too contributes to the athlete putting his faith in their coach.

- **Fear of Failure:** Athletes fear the consequences of failure, including loss of status, funding, or opportunities for future competitions.

Anti Doping Agency in India

- The primary organization responsible for anti-doping efforts in India is the **National Anti-Doping Agency (NADA)**.
 - ♦ NADA was established in **2005** under the Societies Registration Act to promote, coordinate, and monitor the doping control program in sports in India.
 - ♦ NADA operates under the **Ministry of Youth Affairs and Sports**, Government of India.
- **Indian Olympic Association (IOA) Medical Commission:** The IOA Medical Commission is an advisory body whose purpose is to provide advice to the IOA Executive and office on matters related to the health and wellbeing of athletes, and the medical services to be provided to the national team participating in the Olympic Games, Youth Olympic Games, Asian Games and Commonwealth Games.

Way Ahead

- The findings highlight the **widespread issue of doping in the Indian sporting landscape** and the urgent need to find ways of combating the issue.
 - ♦ It also calls for a robust scientific and research infrastructure in the country.
 - ♦ Additionally, the figures shed light on the lack of basic knowledge about banned supplements and medicines among Indian coaches, doctors, and physiotherapists associated with teams across various disciplines.
- The decision to dope is influenced by a complex interplay of individual, social, economic, and environmental factors.
- Addressing doping requires a multifaceted approach that includes education, prevention, enforcement of anti-doping regulations, and support for clean athletes.

Source: TH

13TH FINANCE COMMISSION CHAIRMAN CALLED FOR GST REFORM

Context

- Recently, Vijay Kelkar, Chairman of the Thirteenth Finance Commission and a key architect of India's tax reforms, has called for urgent reforms in the GST regime.

About

- The Goods and Services Tax (GST), introduced in India in 2017, is characterised by multiple tax rates and a compensation cess on certain goods.
- The structure, which was largely designed to maintain revenue neutrality, has been deemed counter-productive.
 - ♦ High GST rates have led to an increase in tax evasion and fraud.

Key Issues involved in GST Regime

- **Multiplicity of Tax Slabs:** One of the persistent challenges with the GST regime is the multiplicity of tax slabs.
 - ♦ The GST regime in India is characterised by multiple tax rates and a compensation cess on certain goods.
 - ♦ It, largely designed to maintain revenue neutrality, has been deemed counter-productive.
- **Compliance Burden:** While GST intended to simplify tax procedures, the compliance burden on businesses has increased significantly.
 - ♦ Frequent changes in tax returns and reporting requirements have turned out to be a compliance nightmare.
- **Delayed ITC Refunds & Penalties for Belated Filings:** Delayed Input Tax Credit (ITC) refunds and penalties for belated filings are other significant issues faced by taxpayers.
- **Ambiguity in Anti-Profitteering:** There is ambiguity in the anti-profitteering rules under the GST regime.
 - ♦ These rules are intended to ensure that businesses pass on the benefit of reduced tax incidence to consumers.
 - ♦ However, the lack of clear guidelines has led to confusion.
- **Technical Glitches in GST Portal:** The GST portal has been a puzzle and cause of concern for many taxpayers since its inception.
 - ♦ Harmony between the provisions of the law and the functionality offered on the GST portal remains elusive.

Single Tax Rate suggested by Vijay Kelkar

- Vijay Kelkar suggested **switching to a single tax rate of 12%** and sharing revenues with local governments and municipal corporations.

- He argued that the genesis of the current GST frauds lies in the very structure of the GST rates.
 - ♦ High rates of GST make it lucrative for fraudsters to evade taxes.
- A single GST rate of 12%, with revenues shared equally with all tiers of the government and Union Territories, should be introduced at the earliest.

Benefits of a Single GST Rate

- Most developed and emerging market economies have a policy of a single GST or Value Added Tax (VAT) rate on goods and services.
- Countries with a single rate and simple GST or VAT laws have been successful in optimising tax revenue and minimising tax disputes.
- Of countries with GST or VAT systems, 80% have opted for a single tax rate, including Singapore, New Zealand, the United Arab Emirates, and Japan.

Conclusion

- The GST regime in India is in urgent need of reform. Simplifying the structure and switching to a single tax rate would not only make the system more efficient but also curb tax evasion and fraud.
- It's time for the government to take decisive action and make the necessary changes to the GST regime.

Source: TH

TECHNOLOGY BEHIND MANUFACTURING A SEMICONDUCTOR CHIP

Context

- With supply chain disruptions during the **pandemic and recent geopolitical tensions**, many countries, **including India**, have realised the importance of **investing in chip manufacturing infrastructure**.

About the Semiconductor Chip

- A semiconductor has properties between a conductor, which conducts electricity, and an insulator, which does not.
- In its purest form, **a semiconductor is a very weak conductor of electricity**.
 - ♦ However, its **electrical properties can be changed** by adding small amounts of certain substances called **'dopants'**.

- By taking a pure semiconductor and carefully injecting certain parts with specific dopants, complex circuits can be 'printed' on the semiconductor.

The Role of Transistors:

- The **transistor**, one of the earliest electronic components to be built using a semiconductor, is an extremely versatile device.
 - ♦ In its most popular form, it can **function as an electronic switch**.
- A typical semiconductor chip can have millions/billions of these interconnected switches that work together to perform various logical and computational operations.
- A transistor can also **function as an amplifier** (to amplify the weak signal received by your cell phone) and is **an integral part of circuits** that generate and process high-frequency signals (such as those required in wireless communication technologies).

The Manufacturing Process:

- It involves several critical steps like **deposition, photoresist, lithography, etch, ionisation, and packaging**.
- **Deposition:** It begins with a **silicon wafer**. Wafers are sliced from a salami-shaped bar of **99.99% pure silicon (known as an 'ingot')** and polished to extreme smoothness.
 - ♦ Thin films of conducting, isolating, or semiconducting materials are deposited on the wafer to enable the first layer to be printed on it.
- **Photoresist Coating:** The wafer is then covered with a light-sensitive coating called '**photoresist**', or '**resist**' for short.
 - ♦ **Positive Resist:** The areas exposed to ultraviolet light change their structure and are made more soluble – ready for etching and deposition.
- **Lithography:** It is a crucial step in the chipmaking process, because it determines just how small the transistors on a chip can be.
 - ♦ During this stage, the chip wafer is inserted into a lithography machine where it's exposed to **deep ultraviolet (DUV) or extreme ultraviolet (EUV) light**.
- **Etching:** It refers to any technology that will selectively remove material from a thin film on a substrate (with or without prior structures on its

surface) and by this removal create a pattern of that material on the substrate.

Global Semiconductor Consumption

- China is the largest downstream user of semiconductors, as Chinese manufacturers incorporate semiconductors into a range of electronic products that are consumed domestically or exported globally.
- The United States and China were the top final consumers of semiconductors contained in electronic goods, with a share of 25% and 24%, respectively, followed by the European Union (EU) at 20%.
- Global semiconductor sales reached an all-time high at \$574 billion in 2022.
 - ♦ It is projected to surpass \$1 trillion by 2030, driven by demands from computing and data storage, wireless communication, and automotive electronics.

India and Semiconductor

- India has established the **India Semiconductor Mission (ISM)** to address the global semiconductor shortage and encourage manufacturers to set up their semiconductor facility.
- India has realised the importance of investing in chip manufacturing infrastructure.
 - ♦ The TATA group has partnered with **Taiwan's Powerchip Semiconductor Manufacturing Corporation (PSMC)** to set up a **300mm wafer fabrication plant in Gujarat**.
 - It will roll out its first **28nm chip in 2026**.
 - ♦ Two assembly and test plants in **Gujarat and Assam** have also been recently approved by the Government of India.

Government Initiatives

- In a bid to make **India's \$10 billion chip-making initiative** more attractive to investors, the Centre approved changes to the **scheme for the development of a semiconductor and display manufacturing ecosystem** in the country.
- It aims to provide up to **50% of Project cost** for two semiconductor and two display fabs in the country.

Source: TH

WILL NEW SOLAR POWER RULES BOOST PRODUCTION?

Context

- The Ministry of New and Renewable Energy (MNRE) has brought into effect the Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019.

Background

- The order was first issued by the MNRE in **2019** and requires makers of solar modules to voluntarily submit to an inspection of their manufacturing facilities by the **National Institute of Solar Energy**.
- Being on the list as an 'approved' manufacturing facility certifies a company as a legitimate manufacturer of solar panels and not a mere importer or assembler.

What are solar modules?

- Solar Modules are multiple solar panels joined together and **Solar panels** are an assembly of solar cells.
- The solar cells absorb sunlight as a source of energy to generate electricity. An array of modules are used to supply power to buildings.
- They are manufactured from semiconductor materials like **crystalline silicon**.

Significance of being in the list

- The major advantage of being on the list is eligibility to compete for tenders issued by the government for its flagship solar energy programmes.
- The manufacturers, certified as part of the Approved Models and Manufacturers (AMM) list, would be eligible for various government schemes like,
 - ♦ **PM Surya Ghar Muft Bijli Yojana**, subsidizing rooftop solar installations for nearly one crore households in the country involving an estimated subsidy of ₹75,000 crore.
 - ♦ **PM KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan)**, that aims to provide solar pumpsets and rural electrification.
 - ♦ **Production Linked Incentive Scheme**, targeted at incentivising domestic manufacture of solar panels and their components.

Solar module production in India

- The **installed capacity of solar PV module** manufacturing capacity in the country is around **50 GW**.
- The **installed capacity of solar cell** manufacturing in the country is around **6 GW**.
- Import:** Around 11,171 Million USD of solar cells and modules have been imported into the country in the last five years, which is around 0.4% of total India's merchandise imports during the same period.
- Export:** Solar panels worth 1.03 billion USD exported from India in 2022-23.

Why is India reliant on imports?

- India has **limited capacity** to make the raw material of a cell — ingots, wafers — and is dependent on imported cells.
- Lack of Skilled labor** which is essential for manufacturing high-quality solar components.
- Lack of an integrated set-up and the economies of scale** (despite 100 per cent FDI in the renewable energy sector) translates into higher cost of domestic production.

Targets set by India

- India has ambitious plans of sourcing about 500 GW, nearly half its requirement of electricity, from non-fossil fuel sources by 2030.
- This would mean at least 280 GW from solar power by that year or at least 40 GW of solar capacity being annually added until 2030.
- The difficulty is that meeting the targets requires many more solar panels and component cells than India's domestic industry can supply.

Approved list of Models and Manufacturers (ALMM)

- The ALMM Order states that ALMM shall consist of;
 - ♦ **LIST-I**, specifying models and manufacturers of Solar PV Modules and
 - ♦ **LIST-II**, specifying models and manufacturers of Solar PV Cells.
- Only the models and manufacturers included in **ALMM List-I (of solar PV modules) are eligible for use in Government Projects/ Government assisted Projects/ Open Access / Net-Metering Projects**, installed in the country.

- The word “**Government**” includes Central Government, State Governments, Central Public Sector Enterprises, State Public Sector Enterprises, and Central and State Organizations / Autonomous bodies.

Way Ahead

- The country has achieved self-sufficiency in the production of solar modules / panels but the country is yet to achieve substantial capacity in production of solar cells.
- The creation of such a list will help to restrict imports from China, which controls nearly 80% of the global supply.

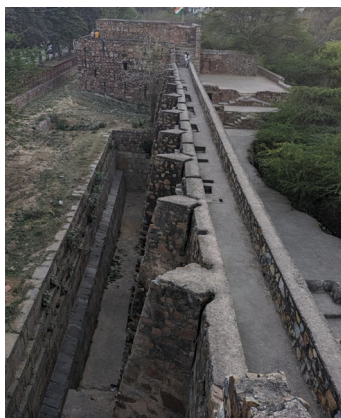
Source: TH

NEWS IN SHORT

SATPULA DAM

Context:

- Recently, the Satpula dam was in news due to its unique character of reliable source of water and acting as a defence against possible intruders in mediaeval times.



About the Satpula:

- Satpula, a magnificent **Tughlaq-era dam**, is a historical marvel nestled in the heart of Delhi.
- It was built **in 1340 by Mohammad Bin Tughlaq**, served **two purposes**:
 - ♦ Providing a reliable source of water for irrigation, and;
 - ♦ Acting as a defence against possible intruders.
- The dam finds mention in **Sir Sayyid Ahmad Khan’s Asar-us-Sanadid** (The Remnant Signs of Ancient Heroes) — considered among the first

books describing Delhi’s numerous monuments in vivid detail.

- The Satpula dam was built using **Delhi quartz**, a stone found in the Aravallis, and is a testament to the superior masonry and architectural skills that marked the Tughlaq era.

Current State

- Centuries later, the stream over which the dam was built was diverted by the British, reducing the water body to a mere drain flowing on one side.
- However, the Satpula structure remains formidable as ever, reminding one of the type of masonry the empire was capable of.

Source: IE

BIOLOGY OF SKIN PIGMENTATION

Context

- A recent study expanded the **range of genes** to be involved in the processes **driving pigmentation diversity**.

About

- **The skin** is the **largest organ** in the human body.
- The **pigment melanin** determines the colour of skin and it is produced by cells called **melanocytes**.
- Scientists widely believe **exposure to ultraviolet light from the Sun** has been the dominant driver of skin colour throughout history.
- The **diversity of skin colour** across human populations is a product of human genetics, the migration of peoples, and the complex interplay between genes and the environment

Source: TH

UNDERPRICED ONION EXPORT TO UAE

Context

- Underpriced onion export to UAE, yielding windfall profits for selected importers, has aggrieved Indian farmers and traders.

Onion Production in India

- ♦ India is the **second largest onion-growing country in the world**. Indian onions have two crop cycles, first harvesting which starts from November to January and the second harvesting from January to May.

- **Major varieties found in India:** Agrifound Dark Red, Agrifound Light Red, NHRDF Red, Agrifound White, Agrifound Rose and Agrifound Red, Pusa Ratnar, Pusa Red, and Pusa White Round.
- **Major Onion producing states:** Maharashtra, Karnataka, Madhya Pradesh, Gujarat.
- **Major Export Destinations (2022-23):** Bangladesh, Malaysia, United Arab Emirates, Sri Lanka, Nepal and Indonesia.

What is Windfall Profit?

- Windfall profit is an unexpected gain in income which could be due to winning a lottery, unforeseen inheritance or shortage of supply.
- Windfall gains are transitory in nature.

Source: TH

PHANIGIRI

Context

- Telangana's Department of Heritage has recently unearthed a coin hoard belonging to the Ikshvaku period at Phanigiri.

About Phanigiri

- The Phanigiri is an important **Buddhist site** in **Telangana**.
- It is located on the hilltop, on the ancient trade route (Dakshinapatha) connecting the west and the east coast of the Deccan.
- **Excavations at Phanigiri** brought to light a Mahastupa, apsidal Chaitya Grihas, votive Stupas, Congregation hall viharas, platforms with staircases at various levels.

Ikshvaku dynasty

- The Ikshvaku dynasty ruled in the eastern Krishna River valley of India, from their capital at **Vijayapuri** for over a century during the **3rd and 4th centuries CE**.
- The Ikshvaku kings were **Shaivite**, but **Buddhism also flourished** during their reign.

Source: TH

GAPE LIMITATION

Context

- In ecology, '**gape limitation**' stands for the idea that a predator can only eat things that fit in its mouth.

About

- Researchers pay attention to the concept because it **specifies which animals can eat which other animals**.
 - ♦ For example, small predators can only eat small prey, while bigger predators can eat bigger prey.
- Gape limitations also influence **how animals evolve over time**.
 - ♦ Prey animals might get faster or grow bigger to avoid being eaten by predators with smaller mouths.
 - ♦ On the other hand, predators may evolve larger mouths to eat larger prey.
- **Significance:** Understanding gape limitations is essential to predicting how changes in predator or prey populations, changes in habitats, and/or environmental disturbances could affect the structure and function of ecosystems.

Source: TH

PORT OF BALTIMORE

In News

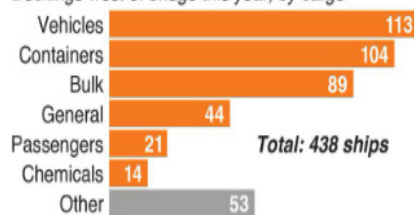
- A cargo ship leaving the Port of Baltimore in Baltimore struck the (I-695) Francis Scott Key Bridge which caused a collapse of the bridge.

About Port of Baltimore

- It is strategically located in the **Mid-Atlantic region of the U.S. east coast**.

BALTIMORE PORT TRAFFIC, 2024

Dockings west of bridge this year, by cargo*



- It is one of the busiest harbours in the U.S
- It is the **ninth largest U.S. port** by overall trade volume.
 - ♦ In 2023 alone, it moved around 50 million tonnes of goods between the U.S. and other countries.
- It is smaller than other ports on the East Coast and in the Gulf of Mexico, it still plays a critical role in processing U.S. international trade traffic.

- ♦ That's especially true for some products, such as automobiles, heavy machinery and coal.
- ♦ It also handles a large share of U.S. sugar imports.

Source:TH

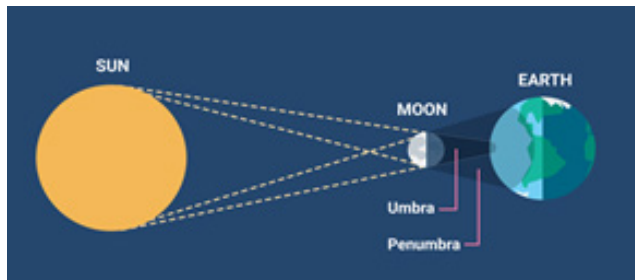
TOTAL SOLAR ECLIPSE

Context:

- Recently, the total solar eclipse was observed covering over 30 million people in the US, Canada, and Mexico.

About the Total Solar Eclipse:

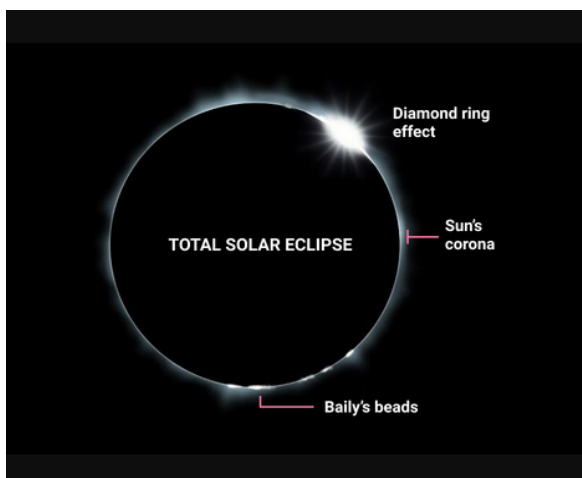
- A total solar eclipse is a rare and awe-inspiring event that has fascinated humans for centuries.



- It occurs when the Moon passes directly between the Earth and the Sun, completely blocking the Sun's light and casting a shadow on certain parts of the Earth.

Frequency and Visibility:

- While there can be between two and five solar eclipses every year, **total eclipses only happen about once every 18 months.**



- A particular spot on Earth witnesses a total solar eclipse only once in 400 years.
- The path of totality, where the **Sun will be fully blocked by the Moon.**

Types of Solar Eclipses

- **Total:** It occurs when the Moon completely blocks the Sun, allowing observers in the path of totality to see the Sun's corona.
- **Annular:** It happens when the Moon is at its farthest point from Earth and does not completely cover the Sun, leaving a ring of sunlight visible.
- **Partial:** It takes place when the Moon only partially obscures the Sun.
- **Hybrid (the rarest type):** It occurs when an eclipse transitions between annular and total as the Moon's shadow moves across the Earth.

Source: IE

EXERCISE GAGAN SHAKTI

In News

- Indian Air Force's (IAF) MiG-21 fighter planes are taking part in the ongoing pan-India exercise, Gagan Shakti-2024.

About Gagan Shakti-

- It was last held in 2018, during which the IAF completed over 11,000 sorties during the two-phase air manoeuvres.
- It seeks to showcase IAF's capability to carry out high-tempo operations and involves all air bases and assets scattered across the country,
- Gagan Shakti-2024 is being conducted at various locations across the country, including the Pokhran Field Firing Range in Jaisalmer.
 - ♦ The **Indian Army** provides **logistics support** for the mega exercise, facilitating a comprehensive **pan-India movement of IAF personnel** and **ammunition** in order to validate the **Operational Rail Mobilisation Plan (ORMP)** aspects of the IAF.

Source:HT

