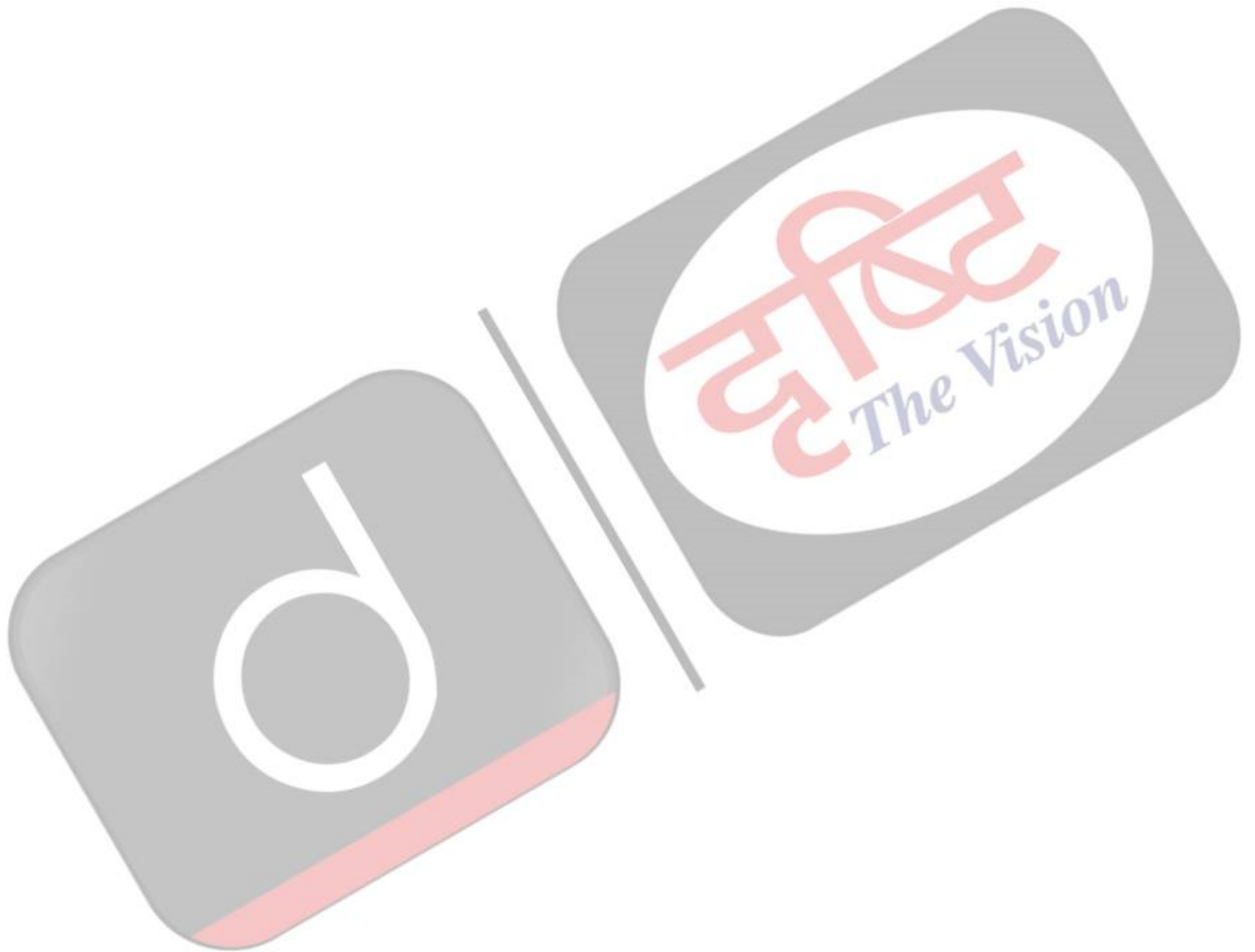# Dark Patterns

[//](//)

DARK PATTERNS

"Dark Pattern" refers to a wide variety of practices commonly found in online user interfaces that lead consumers to make choices that often are not in their best interests.

TERM COINED BY
- Harry Brignul, a user experience (UX) designer, in 2010

OBJECTIVE - GETTING CONSUMERS TO
- Purchase more and more
- Spend more money on a purchase or time on a service than desired
- Give up more personal data than desired

Dark Pattern (Category)	Meaning
Forced Action	Disclosure of more personal data than desired
Interface Interference	Visual prominence of options favorable to business
Nagging	Repeated requests to change a setting to benefit business
Obstruction	Making it hard to cancel a service
Sneaking	Adding non-optional charges to transactions at final stage
Social Proof	Notification of other consumers' purchasing activities
Urgency	Countdown timer indicating the expiry of deal

EFFECTS ON CONSUMER
- Harms to consumer autonomy and privacy
- Time and Financial loss
- Psychological detriment
- Less consumer trust and engagement
- Weaker or distorted competition

TOOLS TO DETECT/MITIGATE/REMOVE DARK PATTERNS
- Cookie glasses
- Consent-O-Matic extension
- Global Privacy Control
- Truebill

REGULATIONS
- **International:**
  - ◆ Consumer Financial Protection Act, 2010 (USA)
  - ◆ Consumer Contracts (Information Cancellation and Additional Charges) Regulations, 2013 (EU and UK)
- **India:**
  - ◆ Rules: Draft Guidelines for Prevention and Regulation of Dark Patterns, 2023

In India, businesses implementing "dark patterns" in their user interfaces to influence consumer choices counts as infringement on "consumer rights" (Consumer Protection Act, 2019).

STEPS NEEDED
- Addressing consumer vulnerability to dark patterns
- Fostering consumer-friendly digital choice architecture
- Issuing regulatory guidance
- Empowering regulatory authorities to take action on dark patterns

Drishti IAS

[Read more...](#)

Coastal Adaptation

Source: DTE

Why in News?

A recent study published in the **journal Nature Climate Change**, has emphasised the coastal adaptation **initiatives** in several regions, encompassing Indian coastal areas such as M**umbai, Ghoramara in** Sundarbans**, Puri in Odisha, and the Konkan regions**, categorizing their efforts as 'moderate-to-high' in terms of adaptation measures.

What are the Key Findings of the Study?

- **Impact on Low-Lying Coastal Regions:**
    - **Low-lying coastal areas**, at risk of flooding, comprise approximately 11% of global population densities and contribute around **14% to the global** Gross Domestic Product **(GDP).**
- **Regional Adaptation Disparities Worldwide:**
    - Close to **50% of surveyed regions** displayed considerable gaps in adaptation, focusing on individual risks while overlooking the root causes of vulnerability.
    - Around **13% of case studies revealed high-to-very-high adaptation**, predominantly witnessed in Europe and North America.
    - The **rest fell into the moderate category**, including Australia and New Zealand.
- **Varying Adaptation Measures in Specific Indian Coastal Regions:**
    - Mumbai, Puri, Konkan, and Ghoramara region in Sunderbans, from India exhibited varying adaptation measures.
        - **Ghoramara** displayed generic adaptation plans, **lacking local state-agency-specific strategies.**
        - The **Konkan region** also lacked adaptation plans, neglecting multiple coastal hazards in the state's action plan.
        - While **Mumbai possesses a climate action plan,** its adaptation strategies failed to accurately evaluate risks and address the specific needs of vulnerable residents.
        - Puri, despite having action plans, **lacked sector-specific adaptation strategies** and identification of high-risk communities.

What is Coastal Adaptation?

- **About:**
    - **Coastal adaptation** involves strategies and actions taken to **deal with and reduce the impact of natural hazards and** climate change **on coastal areas,** aiming to protect communities and infrastructure from **rising sea levels**, erosion, and **extreme weather events.**
        - Additionally, coastal adaptation measures have the potential to create a range of opportunities.
- **Advantages Resulting from Coastal Adaptation:**
    - **Economic Diversification:** Implementation of coastal adaptation initiatives can spur economic growth through the **creation of new industries related to climate-resilient infrastructure,** renewable energy**, and** eco-tourism, potentially generating employment and business opportunities.
    - **Biodiversity Enhancement:** Effective coastal adaptation can **inadvertently lead to the restoration and preservation of natural ecosystems.**

- This restoration aids in **preserving** indigenous species and fostering the development of habitats for endangered or vulnerable species.
  - **Disaster Risk Reduction and Resilience Building:** Coastal adaptation plays a crucial role in reducing the vulnerability of coastal communities to disasters.
    - By implementing measures such as **building resilient infrastructure, early warning systems, and natural barriers,** it helps in minimising the impact of natural disasters like storms, **tsunamis**, and sea-level rise.
    - Strengthening coastal resilience reduces the risks associated with such calamities, **safeguarding lives, property, and livelihoods.**
  - **Sustainable Food Sources and Livelihoods:** Effective coastal adaptation, especially practices like aquaculture**,** sustainable fishing, **and integrated farming** in coastal areas, can ensure a steady supply of seafood and agricultural produce.
    - This secures livelihoods for coastal communities and contributes to global **food security.**
- **Related Challenges:**
  - **Complex Stakeholder Coordination:** Coastal adaptation involves multiple stakeholders, including **government bodies, local communities, businesses, and environmental groups.**
    - Coordinating these diverse interests and ensuring effective collaboration among them is **often difficult due to differing priorities**, leading to delays and conflicts.
  - **Uncertainty in Future Climate Projections:** Predicting **future climate scenarios**, including sea-level rise and extreme weather events, poses a challenge.
    - Adapting to uncertain climate projections while **planning for long-term strategies can be a complex task**, leading to uncertainties in infrastructure and development planning.
  - **Community Fragmentation and Social Cohesion:** In some cases, relocation or changes in land use due to coastal adaptation initiatives can lead to the **fragmentation of communities.**
    - Dispersing or **relocating populations might disrupt social structures** and community cohesion, impacting their resilience and cultural practices.

What are the Indian Government Initiatives Related to Coastal Management?

- The **Ministry of Environment, Forest & Climate Change (MoEFCC)** set the **hazard line for India's coast** to manage shoreline changes due to climate change.
- The **Coastal Regulation Zone Notification, 2019** aims to conserve coastal areas and livelihoods, allowing erosion control measures while defining **No Development Zones.**
- The **Coastal Management Information System (CMIS)** collects near-shore coastal data for designing and maintaining protection structures at vulnerable stretches.
- Successful coastal erosion mitigation measures were demonstrated in **Puducherry and Kerala,** aiding restoration and protection of coastal areas.

Way Forward

- **Nature-Based Solutions (NBS):** Emphasise **nature-based solutions** that work with natural processes rather than against them.
  - Implementing strategies like the **restoration of** mangroves**, salt marshes, and dunes** can provide cost-effective and environmentally friendly coastal protection.
- **Community-Centric Approaches:** Engage local communities in the design and implementation of coastal adaptation measures.
  - Complement them with the **scientific knowledge and resources to contribute to decision-making,** as they already possess valuable traditional knowledge of the area.
- **Use of Advanced Technology:** Utilise innovative technologies such as remote sensing**,** artificial intelligence**, and predictive modeling** for better understanding and predicting coastal changes.
  - These tools can provide real-time data for more accurate planning and response.

- **Hybrid Engineering Solutions**: Combine traditional hard infrastructure with innovative hybrid engineering solutions.
  - For example, **integrating natural features like** artificial reefs within traditional structures can enhance coastal protection **while supporting biodiversity.**

Self-Reliance in Cybersecurity

For Prelims: Self-Reliance in Cybersecurity, India Mobile Congress, India's digital infrastructure, National Security, Electronic Equipments, National Cyber Security Strategy 2020.

For Mains: Self-Reliance in Cybersecurity, Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology.

Source: IE

Why in News?

Recently, the Prime Minister of India has emphasised the importance of Self-Reliance in Cybersecurity during the 7th edition of the **India Mobile Congress.**

- PM's emphasis on self-reliance in the entire cybersecurity value chain, including hardware, software, and connectivity, reflects the **growing concern about the security of** India's digital infrastructure.

What is Cybersecurity?

- Cybersecurity is the **practice of protecting computer systems**, networks, devices, and data from theft, damage, unauthorised access, or any form of malicious intent.
- It encompasses a wide range of technologies, processes, and practices designed to safeguard

digital information and the infrastructure that stores, processes, and transmits it.

What is Self Reliance in Cybersecurity?

- **About:**
  - Self-reliance in cybersecurity refers to a nation's ability to develop and maintain its own capabilities, technologies, and **expertise to protect its digital infrastructure, data,** and information systems without relying heavily on foreign technology or external assistance.
  - It emphasizes the development and deployment of indigenous cybersecurity solutions and practices, reducing dependence on external sources for cybersecurity tools and expertise.
- **Need for Self Reliance in Cyber Security:**
  - National Security: Many of a nation's critical infrastructure systems, such as energy grids, transportation networks, and communication systems, rely on digital technology.
    - Modern military operations are **heavily dependent on digital technology.**
    - Any compromise in cybersecurity can **result in significant disruptions**, posing a direct threat to national security.
  - **Geopolitical Considerations**: Over-reliance on foreign technology, particularly from countries with which India may have strained relations such as China, can pose a security risk.
    - Since India imports the majority of electronic raw materials from China, which is a cause for concern for India.
    - Achieving self-reliance reduces the **vulnerabilities associated with depending on technology** from external sources.
- **Technological Independence**: Self-reliance necessitates the creation of secure and reliable hardware, software, and networking components.
  - This encourages innovation and research in the field of cybersecurity.
  - Relying on foreign technology may expose the supply chain to vulnerabilities. Self-reliance allows India to have greater control over the entire technology supply chain, reducing potential risks.

What are the Challenges Related to Cybersecurity in India?

- **Profit-Friendly Infrastructure Mindset:**
  - Post liberalisation, the Information Technology (IT), electricity **and** telecom sector has witnessed large investments by the private sector. However, their inadequate focus on cyber attack preparedness and recovery in regulatory frameworks is a cause of concern.
  - All operators are focused on profits, and do not want to invest in infrastructure that will not generate profits.
- **Absence of Separate Procedural Code:**
  - There is no separate procedural code for the investigation of cyber or computer-related offences.
- **Trans-National Nature of Cyber Attacks:**
  - Most cyber crimes are trans-national in nature. The collection of evidence from foreign territories is not only a difficult but also a tardy process.
- **Expanding Digital Ecosystem**:
  - In the last couple of years, India has traversed on the path of digitalising its various economic factors and has carved a niche for itself successfully.
  - Latest technologies **like** 5G **and the** Internet of Things (IoT) will increase the coverage of the internet-connected ecosystem.
  - With the advent of digitalisation, paramount consumer and citizen data will be stored in digital format and transactions are likely to be carried out online which makes India a breeding ground for potential hackers and cyber-criminals.
- **Limited Expertise and Authority:**
  - Offenses related to crypto-currency **remain under-reported** as the capacity to solve such crimes remains limited.

- Although most State cyber labs are capable of analysing hard disks and mobile phones, they are yet to be recognized as **'Examiners of Electronic Evidence'** (by the Central Government). Until then, they cannot provide expert opinions on electronic data.

How is India Making Strides in Technology Development?

- **Domestic Supply Chain Partners:**
    - India is actively working to **diversify its supply chain partners**, especially in the technology sector. This diversification is essential, given the dominance of Chinese players in the manufacturing ecosystem.
    - The government seeks to establish more trusted and secure supply chains to prevent malware and cyber threats.
- **5G and Mobile Broadband:**
    - The government awarded **100 5G Use Case labs to educational institutions across the country**, indicating its commitment to advancing 5G infrastructure.
    - India has transitioned from the **5G rollout stage to the 5G reach-out stage**. The median mobile broadband speed has increased threefold in just one year.
    - India's emphasis on **becoming a leader in 6G technology underscores the country's ambition to stay at the forefront of technological advancements.**
- **Broadband Speed:**
    - India's position in terms of broadband speed has significantly improved, moving from **118th to 43rd globally** which **indicates the growth of high-speed internet access in the country.**
- **Electronics and Smartphone Manufacturing:**
    - There has been significant progress in electronics and smartphone manufacturing.
    - Semiconductor manufacturing is a critical component of the technology supply chain and plays a pivotal role in hardware production.
- **Startup Ecosystem:**
    - India's startup ecosystem has been flourishing, with a rapid increase in the number of startups.
    - The **transformation from having 100 startups before 2014 to approximately 100,000 startups today.**

What are the Initiatives Related to Cybersecurity?

- **Global Initiatives:**
    - Budapest Convention on Cybercrime:
    - Internet Governance Forum **(IGF)**
    - UNGA Resolutions
- **Indian**
    - National Cyber Security Strategy 2020
    - National Critical Information Infrastructure Protection Centre (NCIIPC)
    - Indian Cyber Crime Coordination Centre (I4C).
    - National Cyber Crime Reporting Portal
    - Computer Emergency Response Team - India (CERT-In)
    - India's draft Digital Personal Data Protection Bill 2022

Way Forward

- **Encourage research and development** in the field of cybersecurity. Establish partnerships between government agencies, academic institutions, and private sector companies **to promote innovation and the development of indigenous cybersecurity technologies.**
- Provide support, funding, and incentives to cybersecurity startups and small and medium-sized enterprises (SMEs) working on innovative cybersecurity solutions. **These startups can play a significant role in creating homegrown technologies.**

Complex Landscape of E-Commerce

For Prelims: World Trade Organization**,** e-Commerce**,** Cryptocurrencies**,** Unified Payment Interface**,** Government e-Marketplace**,** BharatNet project**,** Open Network for Digital Commerce**,** National E-Commerce Policy**,** Consumer Protection (E-Commerce) Rules, 2020

For Mains: Benefits Provided by E-commerce and Related Issues

Source: ET

Why in News?

In a recent meeting at the **World Trade Organization (WTO)** in Geneva, **India raised concerns about the lack of a clear definition for** e-commerce trade in goods and services.

- The absence of a **precise delineation has led to contrasting views between developed and developing member countries,** particularly regarding the imposition of customs duties.

What are the Primary Points of Dispute Concerning E-commerce?

- **Interpretational Divergence in E-commerce: Goods vs. Services**
  - Developed **and developing nations** differ in their interpretation of e-commerce, particularly in the context of goods and services.
    - This challenge is exemplified in the case of streaming services like **Netflix, where content (a product) is delivered via a service membership.**
  - This variance complicates the establishment of clear policies within the WTO framework.
- **Uncertainties Surrounding Customs Duties:**
  - **WTO members** have **been extending the Moratorium regarding imposition of customs duties on** electronic transmissions since 1998. And, the last extension came during the **12th ministerial conference.**
  - But the **absence of a defined framework for e-commerce trade in services creates uncertainties**, raising concerns about maintaining a level playing field.
  - India emphasizes the necessity of a **clear definition, particularly highlighting the need for differentiation between digital goods and services** due to **existing customs duties on goods** but not on services.

Note:

Developed nations advocate for a **duty-free environment,** whereas developing countries seek policy space to impose duties, aiming to safeguard domestic industries and **support** MSME (Micro, Small, and Medium Enterprises) growth.

- **Cryptocurrencies: E-commerce Disruption:**
  - The **Global Trade Research Initiative (GTRI)** highlighted that the **growth of** cryptocurrencies poses a challenge to the current WTO e-commerce framework, prompting an immediate need for discussions on classifying them as electronic transmissions.

What is E-Commerce?

- **About:**
  - The **World Trade Organization** defines e-commerce as the **electronic production, distribution, sale, or delivery of goods and services.**
  - This includes products **like books, music, and videos transmitted digitally.**
- **Benefits Provided by E-commerce:**
  - **Convenience and Accessibility:** Customers can shop anytime, anywhere, providing unparalleled convenience and accessibility to products and services.
  - **Data-driven Insights:** Access to consumer data provides valuable insights for businesses to **understand customer behavior, preferences, and trends,** allowing for targeted marketing and improved customer experiences.
  - **Diverse Product Offerings:** E-commerce platforms offer a wide array of products and services in one place, allowing customers to easily compare and choose from a diverse range of options.
  - **Convenient Payment Options:** Multiple payment gateways and options available, providing ease and security in transactions for both businesses and customers.
  - **24/7 Accessibility:** Unlike physical stores, **e-commerce platforms are operational 24/7**, providing constant access to products and services for customers worldwide.
  - **Global Reach:** Allows businesses to reach a global market without the **constraints of physical locations**, enabling access to a broader customer base.

What are the Indian Government Initiatives Related to E-Commerce?

- **Unified Payment Interface (UPI)**
- **Government e-Marketplace**
- **BharatNet project**
- **Open Network for Digital Commerce (ONDC)1**
- **National E-Commerce Policy**
- **Consumer Protection (E-Commerce) Rules, 2020**

Israel-Hamas Conflict and its Global Impact

For Prelims: Israel-Hamas conflict, **Gaza Strip**, **Strait of Hormuz**

For Mains: Impact of **Israel-Palestine Conflict** on India and International geopolitical scenario, Global Trade War, Oil Prices Manipulation.

Source: IE

Why in News?

The ongoing **Israel-Hamas conflict** has escalated due to Israel's **ground offensive in the Gaza Strip**, to eliminate **Hamas.** This has raised concerns about the post-conflict phase and its potential **impact on the global economy.**

- Bloomberg, a global media company has outlined three scenarios for the conflict and how each could affect countries around the world.

What are the Three Possible Scenarios for the Conflict and their Potential Effects?

- **Limited Conflict in Gaza:**
  - In this scenario, the conflict remains primarily **localized in the** Gaza Strip**,** with limited expansion into other regions.
  - **Potential Effects:**
    - Limited direct impact on the global economy. Nevertheless, this is unwelcome news for a world economy recovering from various setbacks, as central banks struggle between **addressing** inflation **and preventing economic slowdowns.**
    - The conflict can result in an increasing humanitarian crisis in Gaza, marked by significant casualties, with the death toll already surpassing 8,000.
- **Regional Conflict with Iran-backed Militants:**
  - This scenario involves a broader regional conflict, with the potential involvement of **Iran-backed militant groups in Lebanon and Syria**, as well as the **Houthis** in Yemen.
  - **Potential Effects:**
    - This could lead to escalation of violence in multiple regional locations, leading to increased instability and conflict..
    - Oil prices could rise to around the mid-USD 90s, higher than the current USD 90 per barrel,
    - Higher inflation rates globally, potentially denting global economic growth by 0.3% points.
- **Full-scale War Involving Israel, Iran, and Major Powers:**
  - The most extreme scenario envisions a full-scale war between regional powers Israel and Iran, with the possible involvement of major world powers such as the United States, China, and Russia.
  - **Potential Effects:**
    - The conflict could disrupt **trade and global crude oil supply** in the Middle East, affecting countries in the region and their trading partners.
      - Over 20% of the world's crude supply comes from West Asia, conflict in the region may drastically push up the **Crude oil prices up to USD 150 per barrel.**
      - Even with potential capacity from Saudi Arabia and the UAE, if they do not align with Iran, oil shipments may still face challenges in passing through the **Strait of Hormuz,** a 48-kilometer shipping chokepoint through which nearly **one-fifth of the world's total oil production transits.**
    - **Global inflation could rise to about 6.7%** in 2024, potentially causing **global economic growth to slow by almost 2% points** and leading to a possible worldwide recession with significant implications for countries like India and the US.

Hamas

- **About:**
  - Hamas is a **Palestinian political armed group that was founded in 1987.** It's a militant group that emerged as a resistance movement against Israeli occupation.
- **History:**
  - Hamas was created in 1987 as an offshoot of Egypt's Muslim Brotherhood seeking to fulfill its agenda through **violent jihad.**
    - It gained popularity as a resistance movement against Israeli occupation and Fatah.
  - The United States has designated **Hamas a terror organization** since 1997. Many other countries, including Israel and most of Europe, see it the same way.
- **Ideology:**
  - Hamas believes that no part of the land of Palestine shall be compromised or conceded.
  - Hamas rejects any alternative to the complete liberation of Palestine.

ISRAEL-PALESTINE CONFLICT

The Israel-Palestine conflict is a long-standing geopolitical dispute over territory and self-determination in the Middle East.

BEGINNING

- UN adopted **Resolution 181** – the Partition Plan in 1947
- State of Israel created in 1948, sparking the **first Arab-Israeli War** (Israel won)
  - Palestinians displaced
  - Division of territory into - State of Israel, West Bank and Gaza Strip

INITIAL TENSIONS AND CONFLICTS (1956-1979)

- **Suez Crisis** and Israeli **invasion of Sinai Peninsula** in 1956
- **Six-Day War (1967) –** Israel gained control over Sinai Peninsula, Gaza Strip, West Bank, East Jerusalem and Golan Heights

  ### Controversy over Jerusalem as Capital
  - **Israel view:** Complete and united Jerusalem
  - **Palestinians view:** East Jerusalem future capital

- **Yom Kippur War (1973) –** Surprise attack by Egypt and Syria
- **Camp David Accords (1979)** b/w Egypt and Israel

  ### Intifada (Arabic for 'shake off')
  - **First Intifada –** 1987 to 1993
    - Led to the foundation of Hamas (1987) – a Palestinian political party designated as a foreign terrorist org by US
    - Response – **Madrid Conference 1991** (chaired by the US and Russia)
  - **Second Intifada –** 2000-2005
  - The latest escalation (2023) is being called the beginning of "Third Intifada"

OSLO ACCORDS (MEDIATED BY US)

- **First (1993)**
  - Estd framework for **Palestinian self-governance** in West Bank and Gaza
  - Enabled mutual recognition between Israel and Palestine

- **Second (1995)**
  - Expanded on Oslo I Accords
  - Mandated **complete Israeli withdrawal** from several cities and towns **in West Bank**

POST 2000 CONFLICT AND RESPONSES

- **2013 –** US-led peace process began
- **2014-18 –** Gaza Conflict (2014)
  - Palestine announced break from territorial divisions under Oslo Accords (2015)
- **2018-20 –** US Cancelled funding for Palestinian refugees under UN Relief and Works Agency (UNRWA)
  - US proposed **"Peace to Prosperity"** plan
- **2020 - Abraham Accords**
- **2022-2023:**
  - Israel raids on **Jenin refugee camp**
  - Hamas launched **"Operation Al-Aqsa Flood"** and Israel launched "Operation Iron Swords" (both in 2023)
    - Israel declared a **State of War**
  - India's Stand:
    - Supports a **Two State solution** for Israel and Palestine
    - **Condemned the recent attack** by Hamas on Israel

Considered occupied territory by most of the international community

GOLAN HEIGHTS

LEBANON — Damascus
SYRIA
Haifa — Sea of Galilee
Mediterranean Sea
Tel Aviv — Nablus
WEST BANK — Ramallah — Amman
Gaza City — Jerusalem — Dead Sea
GAZA STRIP
ISRAEL — JORDAN
EGYPT
SAUDI ARABIA
30 miles

Drishti IAS

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q1. Mediterranean Sea is a border of which of the following countries? (2017)

1. Jordan
2. Iraq
3. Lebanon
4. Syria

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 2 and 3 only
(c) 3 and 4 only
(d) 1, 3 and 4 only

Ans: (c)

Q2. Which one of the following countries of South-West Asia does not open out to the Mediterranean Sea? (2015)

(a) Syria
(b) Jordan
(c) Lebanon
(d) Israel

Ans: (b)

Q3. The term "two-state solution" is sometimes mentioned in the news in the context of the affairs of (2018)

(a) China
(b) Israel
(c) Iraq
(d) Yemen

Ans: (b)

Mains

Q. "India's relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back." Discuss. **(2018)**

Venus' Tectonic History

For Prelims: Venus**,** Plate tectonics**,** Earth**,** National Aeronautics and Space Administration (NASA)**,** DAVINCI**,** Mariner 10 Spacecraft.

For Mains: Relevance of different geophysical events not only on Earth but also other planets such as Venus etc.

Source: DTE

Why in News?

According to a new study, **Venus**, often referred to as **Earth's** sister planet, may have experienced tectonic activity about **4.5 billion to 3.5 billion years ago.**

What is Venus' Tectonic History?

- **About Plate Tectonics:**
  - **Plate tectonics,** a fundamental scientific theory, **explains how Earth's thin outer shell is divided into tectonic plates that float on the planet's mantle.** This process has contributed to the formation of oceans, continents, mountains, and the sustenance of life on Earth.

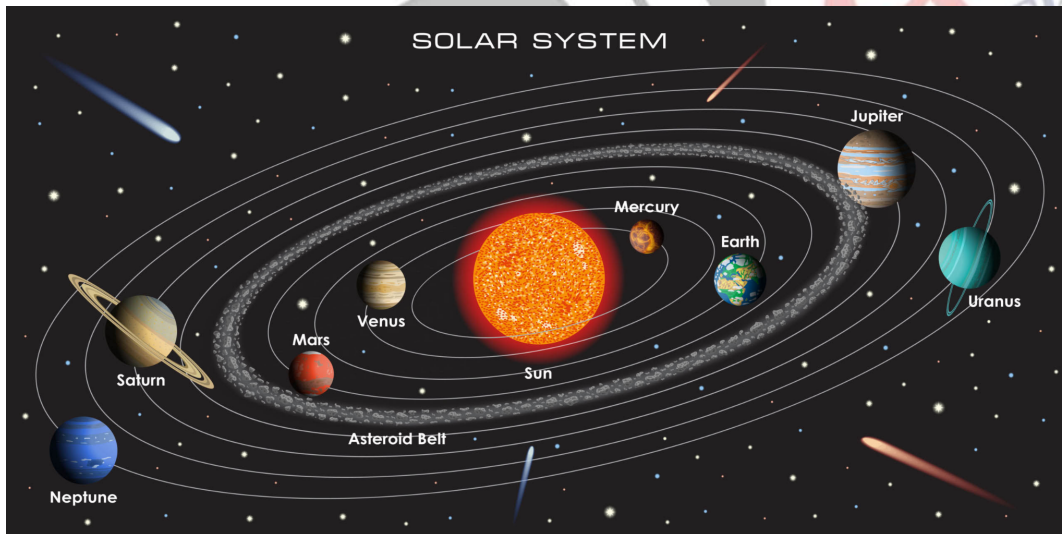- **Venus, Earth's "Sister" Planet:**
    - While Venus and Earth **share similarities in size, mass, density, and volume,** Venus remains the least understood among terrestrial planets.
    - The study suggests that Venus and its tectonic history**, has intriguing implications for the planet's atmospheric composition and potential for ancient microbial life.**
- **Implications:**
    - The study posits that plate tectonics, akin to Earth's, may have **played a crucial role in shaping Venus's carbon dioxide- and nitrogen-rich atmosphere.**
    - With approximately **96.5% carbon dioxide and less than 3.5% nitrogen,** understanding Venus's atmospheric composition is crucial.
    - Also, Venus may have been home to microbial life billions of years ago due to tectonic activities.

How Plate Tectonics has brought Changes on Venus?

- Plate tectonics on Venus **would likely have ceased due to loss of water and an increasingly hot and thick atmosphere**, possibly depleting the necessary ingredients for tectonic movement.
- The researchers propose that planets can transition in and out of different tectonic states, **suggesting the potential for planets to shift in and out of habitability rather than maintaining a constant state.**
    - This realization **challenges the binary perspective of tectonics being either true or false** throughout a planet's history.
- To confirm their findings and delve deeper into Venus's tectonic history, the researchers are hopeful for insights from the **NASA** upcoming mission to Venus, called **DAVINCI.**
    - This mission **could provide vital clues and enhance our understanding of Venus's geological past.**
    - Additionally, the researchers aim to uncover the **reasons behind Venus losing its plate tectonics over time.**

What is Venus?

- **About:**
    - It is named after the Roman goddess of love and beauty. It is the **second planet from the Sun and sixth in the solar system in size and mass.**
        - It is the **second brightest** natural object in the night sky after the Moon, probably that is the reason why it was the first planet to have its **motions plotted across the sky,** as early as the second millennium BC.
- **Characteristics:**
    - Unlike the other planets in our solar system, **Venus and Uranus spin clockwise on their axis.**
    - It is the hottest planet in the solar system because of the **high concentration of carbon dioxide** which works to produce an intense **greenhouse effect.**

- A day on Venus is longer than a year. It takes Venus longer to rotate once on its axis than to complete one orbit of the Sun.
    - That's **243 Earth days to rotate once** - the longest rotation of any planet in the Solar System - and only **224.7 Earth days to complete one orbit of the Sun.**
  - **Comparison With Earth:**
    - Venus has been called **Earth's twin** because of the **similarities in their masses, sizes, and densities and their similar relative locations** in the solar system.
    - No planet approaches closer to Earth than Venus; at its nearest **it is the closest large body to Earth other than the Moon.**
    - Venus has **90 times the atmospheric pressure of Earth.**

What are the Different Missions to Mars?

- **DaVinci Plus**
- **Veritas**
- **Shukrayaan I**
- **Venus Mission 2024**
- **Akatsuki in 2015**
- **Venus Express in 2005**

UPSC Civil Services Examination Previous Year Questions (PYQs)

Q. What is the difference between asteroids and comets? (2011)

1. Asteroids are small rocky planetoids, while comets are formed of frozen gases held together by rocky and metallic material.
2. Asteroids are found mostly between the orbits of Jupiter and Mars, while comets are found mostly between Venus and Mercury.
3. Comets show a perceptible glowing tail, while asteroids do not.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2 and 3

Ans: (b)

Q. Which of the following pairs is/are correctly matched? (2014)

Spacecraft : Purpose

1. Cassini-Huygens: Orbiting the Venus and transmitting data to the Earth
2. Messenger: Mapping and investigating the Mercury
3. Voyager 1 and 2: Exploring the outer solar system

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (b)

G7 Trade Ministers Meeting

Source: PIB

Why in News ?

Recently, the Union Minister of Commerce and Industry participated in the G7 (Group of Seven) Trade Ministers Meeting in Osaka, Japan.

What are the Key Highlights of the Meeting?

- **Supply Chain Resilience:**

    - India made an important intervention on the topic of **Enhancing** Supply Chain Resilience and gave several suggestions on the issue.
    - India also mentioned that the Covid 19 pandemic and the geo-political events highlighted the vulnerabilities of the existing supply chains leading to increase in **commodity prices and global** Inflation.
    - India urged the governments to collaborate on a regulatory framework to ease the movement of supply chains and facilitate cross border trade.
- **Generic Framework for Mapping of Global Value Chains:**

    - India also referenced the **Generic Framework for Mapping of Global Value Chains mentioned in the** New Delhi Declaration of the G20 to help member countries identify risks and enhance resilience in trade.
- **Encouragement of Public Private Partnership:**

    - India encouraged Public-Private partnership, investment in critical infrastructure and the need for innovation and digitalisation of the supply chains.
- **Free Trade Agreement (FTA):**

    - On the sideline of the Meeting, India and the UK reviewed the progress of negotiations of the proposed Free Trade Agreement (FTA), talks for which have reached the final stage.
    - These negotiations aim to address differences on issues such as Rules of Origin and the services sector.

        - Rules of Origin determine the national source of a product. Their importance is derived from the fact that duties and restrictions in several cases **depend upon the source of imports.**
        - The UK is looking for a significant reduction in import duties on goods like scotch whiskey, automobiles, lamb meat, chocolates, and certain confectionery items. They also seek more opportunities for UK services in Indian markets, particularly in telecommunications, legal, and financial services.

- **Trade and Economic Partnership Agreement:**

  - India also discussed with ministers from the European Free Trade Association (EFTA) member countries – Switzerland, Norway, Iceland, and Liechtenstein – to discuss the progress of the Trade and Economic Partnership Agreement (TEPA).

What is Group of Seven (G7)?

- **About:**
  - It is an intergovernmental **organization that was formed in 1975.**
  - The bloc meets annually to discuss issues of common interest like global economic governance, international security and energy policy.
- **Member Countries:**

  - The G7 countries are the **UK, Canada, France, Germany, Italy, Japan and the US.**

    - All the G7 countries and India are a part of G20.
- **Formal Charter/ Secretariat:**

  - The G7 **does not have a formal charter or a secretariat.** The presidency, which rotates among member countries each year, is in charge of setting the agenda.

    - Sherpas, ministers and envoys hammer out policy initiatives before the summit.
- **Global Economic Trend:**

  - The G7 countries are important players in global trade. The **US and Germany in particular are major export nations**. Both sold goods worth well over a trillion US dollars abroad in 2021.
  - In 2022, the G7 countries held 30 % of the global Gross Domestic Product (GDP). In 2027, that figure is projected to drop to 28 %.

    - Considering the G20 countries, excluding the G7 countries, **the GDP is expected to account for around 44.5% of the global GDP in 2027** which is around two percentage points increase from 2022.

What is a Free Trade Agreement?

- It is a pact between **two or more nations** to reduce **barriers to imports** and exports among them.
- Under a **free trade policy**, goods and services can be **bought and sold across international borders** with little or **no government tariffs, quotas, subsidies, or prohibitions to inhibit their exchange.**
- The concept of free trade is the opposite of trade protectionism or economic isolationism.
- FTAs can be categorised as **Preferential Trade Agreement, Comprehensive** [Economic Cooperation Agreement](#)**,** [Comprehensive Economic Partnership Agreement (CEPA).](#)

Moon May Be 40 Million Years Older Than Previously Thought

Why in News?

A new study appears to show that the moon is about **40 million years older than previously thought.** This finding, based on lunar dust collected in 1972 as part of the Apollo 17 mission, has implications for our understanding of the solar system's history.

- Apollo 17, for now, is the **last human expedition to the moon** making astronauts **Eugene Cernan and Harrison Schmitt** the last men to walk on the moon.

What are the Key Highlights of the Study?

- **Lunar Age Reevaluation:**
  - The study reveals that the Moon is around 40 million years older than the **previous estimate of 4.425 billion years.**
    - Its formation is now believed to date back around **4.46 billion years,** aligning it closely with the early history of our solar system.
- **Atom Probe Tomography (APT):**
  - The researchers employed a cutting-edge technique called APT to analyze lunar samples at a nanoscale level.
    - APT allowed for a more precise examination of lead clustering in **zircon crystals**, which in turn aided in dating the Moon's age.
- **Role of Zircon Crystals:**
  - The scientists reanalyzed crystals from lunar sample 72255, which was known to contain 4.2 billion-year-old zircon.
    - **Zircon is the oldest mineral known to exist on Earth** and, as such, geologists say, it holds vital information about planetary formation, including the Moon's creation.
- **Giant Impact Hypothesis:**
  - The findings support the giant impact hypothesis, suggesting that a huge object called Theia, possibly the size of Mars, collided with Earth during its formation, leading to the Moon's creation.
    - The study aligns with the theory of a Lunar Magma Ocean, explaining the Moon's

internal composition.
- **Earth-Moon Age Comparison:**
  - The Earth is estimated to be between **4.5 and 4.6 billion years old.** That makes the moon only a **fraction younger, at 4.46 billion years old.**
  - This comparison contributes to a deeper understanding of the early history of our solar system and the Earth-moon relationship.

Zircon Dating:

- Zircon incorporates **uranium at the time it crystallizes,** which over time decays to **lead.** By using a very sensitive measuring device the amounts of **uranium and lead in zircon can be determined.**
  - It is then a simple calculation to determine how much time has passed as the lead formed from the uranium decay.

Rapid Fire Current Affairs

Cyclone Hamoon

[Cyclone](#) Hamoon, a very severe [Bay of Bengal](#) **cyclone**, which made landfall as a cyclonic storm near midnight on October 24-25, 2023 south of Chattogram, Bangladesh, exhibited highly unusual behavior, changing categories four times within 24 hours before landfall.

- The shifts ranged from a **cyclonic storm** to a **severe cyclonic storm** to **very severe** and eventually to a **cyclonic storm.**
- Upper-level **westerly winds** played a significant role in Hamoon's acceleration, pushing it towards land earlier than predicted.
  - Westerlies are prevailing winds blowing from west to east **between 30 and 60 degrees latitude in both hemispheres.**

- **Cooler sea temperatures** in the northern Bay of Bengal likely contributed to Hamoon's rapid weakening as it moved away from the coast.
  - Hamoon took an unusual path by recurving towards Bangladesh instead of the expected Tamil Nadu, Andhra Pradesh, or Odisha coast.
- The weakening of cyclone Tej **in the** Arabian Sea may have contributed to Hamoon's strengthening in the Bay of Bengal, as twin cyclonic systems often **exhibit one growing stronger.**

Read more: India's Cyclone Preparedness

16th Urban Mobility India (UMI) Conference & Exhibition 2023

The **16th Urban Mobility India (UMI) Conference & Exhibition 2023** concluded. The event was organized by the **Ministry of Housing and Urban Affairs** through the Institute of Urban Transport (India) and with the support of **Delhi Metro Rail Corporation Ltd** from 27th – 29th October, 2023 in New Delhi.

- The importance of the **National Common Mobility Card (NCMC)** as a convenient and efficient payment method for commuters was emphasized.
- The conference explored innovative funding mechanisms and public-private partnerships to meet urban transportation infrastructure demands.
  - UMI Conference & Exhibition 2023 underscored the importance of **transitioning to** electric vehicles (EVs) to reduce emissions and urged **investment in EV infrastructure.**
- Awards were presented in various categories for excellence and best practices in urban transport projects.
  - Categories included the Best Public Transport System, Most Innovative Financing Mechanism, and Best Green Transport Initiative.

Read more: National Common Mobility Card

Vigilance Week 2023

The **Central Vigilance Commission (CVC)** is observing the **Vigilance Awareness Week 2023 from 30th October to 5th November, 2023,** centered around the theme **"Say no to corruption; commit to the Nation."**

- This comprehensive initiative demonstrates a concerted effort towards promoting vigilance and combating corruption within government departments and organizations.
- CVC is an **apex governmental body in India** that is responsible for promoting integrity, transparency, and accountability in the country's public administration.
  - It was established in **1964** based on recommendations of the **Santhanam Committee on Prevention of** Corruption.

Read more: Central Vigilance Commission

Candolleomyces Albosquamosus: A New Species of Mushroom

Recently, the **Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI)** revealed a newly identified species of **mushroom**, *Candolleomyces albosquamosus*, found on their campus within the Western Ghats in Kerala.

- This delicate mushroom showcases a charming **honey-yellow 'cap'** with distinctive **white woolly scale-like structures.**
- It **thrives on dead logs and bamboo culms** within the natural forest habitat.

PDF Refernece URL: https://www.drishtiias.com/current-affairs-news-analysis-editorials/news-analysis/31-10-2023/print