The AXIOM-4 mission to International Space Station (ISS) launched

The mission is organized by Texas-based startup **Axiom Space** in partnership with SpaceX.

- It is NASA's **fourth all private astronaut mission** to the International Space Station.
- The crew includes members from the USA, India, Poland, and Hungary.
  - Shubhanshu Shukla will be **India's second national astronaut to go to space since 1984.**
  - **Rakesh Sharma was the first Indian** to go to space when he travelled to space in 1984 onboard the erstwhile Soviet Union's **Soyuz spacecraft.**

About Axiom 4

- The mission is a collaboration involving **Axiom Space (private company), the National Aeronautics and Space Administration (NASA), Indian Space Research Organization (ISRO), and European Space Agency (ESA).**
- The crew members will spend 14 days onboard the ISS **conducting microgravity research, technology demonstrations, and outreach engagements.**

Significance for India

- Enhance understanding of **biological processes in microgravity** and develop strategies for **long-duration space missions.**
- The scientific experiments will drive **significant advancements in space science and technology,** inspiring the next generation of Indian scientists and engineers.
- **Strengthens India's presence in space** and promotes the country's dedication to contributing to **global scientific progress.**

About the International Space Station (ISS)

- It is a **habitable artificial satellite,** in low Earth orbit (at an altitude of between 370–460 km).
- **Key partners for ISS:** European countries (represented by European Space Agency), United States (National Aeronautics and Space Administration), Japan (Japan Aerospace Exploration Agency), Canada (Canadian Space Agency) and Russia (Roscosmos)
- **Its first component was launched into orbit in 1998.**
  - It will continue to be a working laboratory and **outpost in orbit until at least 2030.**

Salkhan Fossil Park Added to UNESCO Tentative List for World Heritage Sites

It is officially known as **Sonbhadra Fossils Park** and is located in the Sonbhadra District of Uttar Pradesh.

- It qualifies as a geo-heritage site under **IUCN's 2020 guidelines for "Evolution of Life"** and matches **UNESCO's 2021 framework on Earth's history and life evolution.**

About Salkhan Fossil Park

- It is located in **Kaimur Range (part of the Vindhya range),** adjacent to **Kaimur Wildlife Sanctuary.**
- One of the **oldest and most well preserved sites** in the world (fossils dating approx 1.4 billion years).
  - **The site's fossil assemblage features Stromatolites** which are created by communities of Cyanobacteria or blue green algae
    - These fossilized microbial structures record the **Great Oxidation Event,** when oxygen first accumulated in the atmosphere.
- **Significance of Salkhan Fossil Park**
  - **Understanding early environment:** The park features varied stromatolite forms—domal, columnar, and stratiform—indicating changes in ancient water depth, sedimentation and wave activity.
  - **Filling the Precambrian Gap:** Addresses a significant gap in the World Heritage fossil record by showcasing the Precambrian era.
    - It covers 85% of Earth's history that remains largely underrepresented worldwide.

UNESCO World Heritage Sites

- A World Heritage Site is a location recognised by UNESCO for its **"outstanding universal value".**
- It is guided by the **Convention Concerning Protection of World Cultural and Natural Heritage (called World Heritage Convention).**
- **Three categories:** Cultural heritage, Natural heritage, and Mixed heritage (cultural as well as natural).

Union Cabinet passes resolution on the observance of 50 years since the Proclamation of Emergency

National emergency was declared on June 25, 1975 under **Article 352 of the constitution citing threats from internal disturbance.**

- Earlier, two instances of proclamation of National Emergency were made during **wars with China (1962) and Pakistan (1971).**

About National Emergency

- **Types:** The Indian Constitution provides for **three types of emergencies** – National Emergency under Article 352, President's Rule under Article 356 and Financial Emergency under Article 360.
- **Proclamation: Proclaimed by the President if** he/she believes that security of India or any part is **threatened by war, external aggression, or armed rebellion.**
  - The phrase **'Armed Rebellion'** was added by the **44th Constitutional Amendment Act (CAA), 1978** replacing the earlier ground of 'Internal Disturbance'.
- **Parliamentary Approval:** Proclamation must be approved by both houses of **Parliament within one month of issuance** and if approved, emergency continues subject to parliamentary approval every six months**.**
  - Resolutions approving emergency continuation require special majority in **both the Houses (safeguard added under 44th CAA).**

Impact on Fundamental Rights

  - **Under Article 358,** state can **suspend protections under Article 19.**
  - **Article 359 allows the state to suspend enforcement** of fundamental rights conferred by Part III (except article 20 and 21 – a safeguard added by 44th CAA)**.**

Constitutional Amendments During 1975 Emergency

- **38th CAA** barred the courts from questioning the President's decision to declare Emergency.
- **39th CAA** excluded the election of the Prime Minister and Speaker of the Lok Sabha from judicial scrutiny.
- **42nd CAA** increased central government powers, increased term of Lok Sabha and State Legislative Assemblies, and barred judicial review of constitutional amendments.

Most of the constitutional amendments were **reversed through 44th CAA** enacted after the end of emergency.

Cloudburst triggers flash floods in Kullu district of Himachal Pradesh

As the monsoon set in over the region, torrential rain due to cloudburst led to swollen mountain streams and rivers leading to destruction of human life and infrastructure.

About Cloudburst

- It refers to **particularly heavy precipitation in a short period of time over a limited geographical area.**
- **India Meteorological Department (IMD)** defines it as a **precipitation exceeding 100mm per hour** over a geographical region **of approximately 20 to 30 square km.**
- They occur only via **orographic lift or occasionally when a warm air parcel mixes with cooler air,** resulting in sudden condensation.
  - Orographic lifting is a weather process where **moist air is forced to rise over a physical barrier like a mountain. In this phenomenon**
    - Warm air ascends the mountain slope and expands due to **lower atmospheric pressure at higher altitudes.**
    - As it expands and cools, the **air releases its moisture** in the form of precipitation.
    - When large volumes of warm, moist air keep rising and accumulating moisture **without releasing it, it can lead to a sudden, violent downpour can leading to cloudburst.**

Cloudbursts Disaster Risk Reduction (DRR) (National Disaster Management Plan, 2019)

- **Understanding risk:** Compile and maintain data on cloudburst events, Landslide Hazard Zonation, etc.
- **Invest in DRR:** Repair and maintain natural drainage systems, rivulets, etc., to ensure unhindered flow of storm water, etc.
- **Capacity building:** Enhance capabilities of local bodies to prepare and cope with cloudburst events, promote use of insurance, risk transfer, etc.

Parliamentary Committees are not adversarial to the government but serve as a guide: Lok Sabha Speaker

He emphasized that Parliamentary Committees act as supportive and corrective instruments, offering constructive guidance.

Parliamentary Committees

- **Parliamentary Committees** are panels of Members of Parliament formed to scrutinise the functioning of the government and to uphold executive accountability.
- **Two types:**
  - ⊙ **Standing Committees** (Permanent and Regular): Includes Financial Committees and 24 Departmentally Related Standing Committees.
  - ⊙ **Ad hoc Committees** (Constituted for specific purpose and cease to exist on finishing their task): Includes Select and Joint Committees on Bills.

Significance of Parliamentary Committees

- **Accountability:** Need for vigilance on the part of the Legislature over the Executive actions. E.g. Public Accounts Committee in financial matters.
- **Transparent and Effective Governance:** By offering well-researched recommendations and acting as a bridge between the executive and the legislature.
- **Improves Legislative Efficiency:** Since Committees meet throughout the year, they help make up for lack of time available on the floor of the House.
- **Building consensus:** Provide a forum for building consensus across political parties.

Issues with parliamentary committees

- **Short tenure and delays** in constituting committees and **closed-door meetings.**
- **Low Attendance of MPs in committee meetings.** In 17th Lok Sabha, till July 2023, average attendance for subject committee meetings was 47%.
- **Declining number of bills being referred** to the committees. Only 16% of the Bills in the 17th Lok Sabha (60% in 14th Lok Sabha).
- **The Venkatachaliah Commission (2000)** found issues like lack of resources, inadequate staff strength, and absence of expert advisers.

Also In News

North Atlantic Treaty Organization (NATO)

The NATO members agreed to increase defense spending from **2% to 5% of gross domestic product, by 2035.**

- The members also reaffirmed its **commitment to collective defence.**

About NATO

- **Origin:** In 1949 through the North Atlantic Treaty (also known as the Washington Treaty).
- **Objective:** To deter Soviet expansion in Europe after World War II.
- **Headquarters:** Brussels, Belgium
- **Nature:**
  - ⊙ It is a **political and military alliance** of 32 countries from Europe and North America (Sweden is the latest member).
  - ⊙ It operates on the principle of **collective defense (Article 5),** meaning an attack on one member is considered an attack on all.

Paris Agreement

Developing countries **led by India forced reopening of discussions on developed nations'** obligations to **provide climate finance under Article 9.1 of Paris Agreement.**

- Article 9.1 states that **Developed countries** shall provide financial resources to assist **developing countries** with respect to both **climate mitigation and adaptation in continuation.**
- During UNFCCC **COP29 meeting in Baku, Azerbaijan,** developed nations had agreed to mobilise a sum of **at least USD 300 billion per year** from 2035.
  - ⊙ This is **well short of the USD 1.3 trillion a year** that is the assessed minimum requirement of the developing countries.

International Potato Centre (CIP)

Cabinet approves establishment of International Potato Centre (CIP)'s South Asia Regional Centre at **Agra, Uttar Pradesh.**

About CIP

- **Genesis:** Founded in 1971 and focuses on potato, sweetpotato and Andean roots and tubers.
  - It has a research presence in more than 20 countries in Africa, Asia and Latin America.
- **Objective:** To improve root and tuber crop systems through partnerships and innovations to tackle climate, nutrition, and poverty challenges.
- **Headquartered:** Lima, Peru.

Business Responsibility & Sustainability Reporting

To tackle the vulnerabilities from climate change, **environmental disclosure frameworks like Business Responsibility and Sustainability Reporting (BRSR)** play a significant role for India.

About BRSR

- It is a mandatory **reporting requirement for top 1,000 listed entities in India.**
- Introduced by **Securities and Exchange Board of India (SEBI)** in 2012 as Business Responsibility Reporting (BRR)**.**
- **Aim** is to encourage listed companies to **adopt sustainable business practices and disclose information related to their Environmental, Social, and Governance (ESG) performance.**

Weight Loss Drug

Danish pharma company Novo Nordisk **launched its weight loss drug Wegovy in India.**

- The drug **semaglutide,** marketed under the brand name Wegovy, will be available in the form of injections to be administered once a week.
  - Semaglutide, works as an appetite suppressant by imitating a hormone called **glucagon-like peptide-1 (GLP-1).**
    - GLP-1 is an intestinal hormone released after eating, and usually makes people feel fuller.
- Other weight loss drugs include **Mounjaro,** which is made up of **tirzepatide** (mimics function of GLP-1 and glucose-dependent insulinotropic polypeptide (GIP).

e-Passport

Ministry of External Affairs rolled out e-Passport and Passport Seva Programme 2.0.

About e-Passport

- An ePassport is a **combined paper and electronic passport** with a **Radio Frequency Identification (RFID) Chip and an antenna embedded as an inlay of passport** that contains the personal particulars and biometric information of the passport holder.
  - The underlying technology supporting the security of the ePassport is the **Public Key Infrastructure (PKI)** solution.
- ePassport **safeguards the passport from forgery and potential fraudulent activities** like fake passports while confirming the genuineness at border controls.

Enhanced Rock Weathering (ERW)

Crushed rock is now being spread over farmland in a new effort to fight climate change by removing carbon from the air.

- The technique is called **Enhanced Rock Weathering (ERW).**

About ERW

- It is a climate solution designed to remove **carbon dioxide (CO_2) from the atmosphere** by speeding up a natural process where rocks absorb carbon.
- **Methods of Enhanced Weathering**
  - **Crushing Rocks:** Grinding rocks into fine dust increases their surface area, helping them react faster with CO_2 in the air or water.
- **Common Rocks Used:**
  - **Olivine:** Weathers quickly. Spreading its dust on beaches or in oceans may lock carbon and reduce ocean acidity.
  - **Basalt:** When applied to farmland, it not only captures CO_2 but also enriches the soil and boosts crop yields.

Brent Crude

Recently, Brent crude prices fell due to reduced tensions in the Middle East and fewer concerns about global oil supply disruptions.

About Brent Crude

- It is a light sweet oil from the **North Sea (since the 1960s),** is the world's most widely used benchmark for oil pricing.
  - The term "light" refers to its low density and "sweet" indicates its low sulfur content in context of Crude oil.
  - It is used as benchmark for the light oil market in **Europe, Africa, and the Middle East**
- **Other oil benchmark:** West Texas Intermediate is the benchmark for the U.S. light oil market.

AI-Powered Advanced Traffic Management System

Dwarka Expressway has become the **first in India** to get an AI-powered Advanced Traffic Management System (ATMS).

- It is being implemented by IHMCL (Indian Highways Management Company Ltd.).

About ATMS

- **Advanced Traffic Management Systems (ATMS)** are a set of technologies and techniques that are used to improve the efficiency, safety, and reliability of traffic on roads and highways.
- **Key components of ATMS include** Traffic Monitoring Cameras, Video Incident Detection and Enforcement System (VIDES), Vehicle Actuated Speed Display System (VASD), Communication Network with Optical Fiber Backbone, ATMS Command and Control Center.