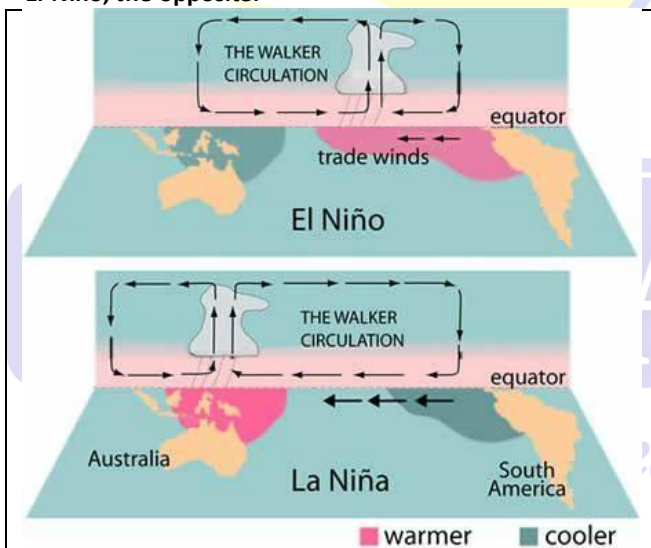


### Genome India project:

- In Feb. 2025, Genome India Project (GIP) has achieved a significant milestone by making genomic data of 10,000 individuals publicly accessible.
- Whole genome sequencing data for 10,000 individuals have been archived at **Indian Biological Data Centre (IBDC)**.
- **IBDC, Faridabad is India's first national life science data repository**, mandated to archive publicly funded research data. It is **supported by Department of Biotechnology**.
- **Project was initiated in 2020 by Department of Biotechnology (DBT)**, Government of India with collaborations of 20 institutions to map India's genetic diversity.
- **Objective:** To build a comprehensive catalogue of genetic variations in the Indian population.

### La Nina:

- **La Nina in this season was weak and brief.** Vital signs of La Nina have started fading now, says Skymet Weather forecast.
- **La Nina refers to excess cold surface water temperatures in eastern equatorial Pacific Ocean (Peru Coast).**
- It intensifies the normal conditions present in Equatorial Pacific Ocean and related Walker Cell Circulation.
- **La Nina is usually linked to increased monsoon rainfall and El Nino, the opposite.**



### Russia sends mission to ISS:

- Soyuz spacecraft (MS-27 craft) carrying an American and two Russians **launched from the Baikonur Cosmodrome in Kazakhstan** to head to International Space Station.
- Russia has been renting the site from Kazakhstan since the fall of the Soviet Union more than 33 years ago.
- Russia pays Kazakhstan \$115 million a year and has a contract until 2050.

### How do fruits ripen?

- **Ripening of fruits is associated with the process of senescence or ageing in plants.**
- It involves changes in colour, texture, flavour, sugar content, and acidity, and is influenced by **ripening hormone ethylene**.

- **As ripening begins, there is a corresponding increase in respiration**, which is followed by increased ethylene production.
- It **triggers series of biochemical changes** like lateral growth and loosening of cell walls, resulting in more intercellular spaces, conversion of starch and organic acids into sugars, hydrolysis of stored materials, decrease in chlorophyll content, with corresponding increase in colouring pigments & emission of characteristic volatile oils.
- **Acidity of fruits is due to the presence of malic acid** (in apples, apricots, bananas, cherries, and plums), **citric acid** (in gooseberry, tomatoes, and peaches), and **malic acid and tartaric acid** (in grapes).
- **Ripening is a prerequisite for development of embryos after fertilisation** and for better dispersal of seeds for survival.

### De-Extinction Dire Wolf:

- **United States-based bioscience company** claimed that it had revived an extinct species of animal, the dire wolf.
- In March 2025, this **same company**, which was valued at \$10 billion in January, had announced birth of “woolly mice” to bring back woolly mammoth, which lived from the Middle Pleistocene to the Holocene epochs.

#### The dire wolf:

- Dire wolves (*Aenocyon dirus*) were large canines that dominated **southern Canada and US before they went extinct about 13,000 years ago**.
- They **resembled the grey/ gray wolves** (*Canis lupus*) of today, but were larger, with **white coats**.
- A dire wolf could be 3.5 feet tall, more than 6 feet in length, and weigh up to 68 kg.
- **Dire wolves hunted horses, bison, and possibly mammoths.** When many of those prey species became extinct - probably partly due to human hunters - dire wolf may have also gone extinct.
- Scientists at Colossal contacted museums and laboratories for dire wolf specimens and got access to a tooth thought to be about 13,000 years old, and a 72,000-year-old skull.
- **Inside the skull is petrous, or inner ear bone, which is a good source of well-preserved DNA.**
- From these two specimens, scientists were able to recover enough DNA to create two dire wolf genomes — an organism's complete set of genetic information.
- They then compared these genomes to those of other canid species, including coyotes, jackals, dholes, and other wolves.
- Using genetic data, researchers could confirm **grey wolf as the closest living relative of the dire wolf — they share 99.5% of their DNA code.**
- **Scientists then used gene editing to make 20 unique edits to 14 genes in the grey wolf genome.** Of those, 15 were meant to reproduce extinct dire wolf gene variants such as a light-coloured coat, hair length, coat patterning, body size and musculature.

- Subsequently, fertilised “dire wolf” eggs were implanted into surrogate dog mothers.

#### Roma people:

- Since 1990, International Roma Day has been observed on April 8 to commemorate First Romani Congress on this day in 1971. The day aims to spread awareness about Romani people (or the Roma) and their culture.
- Roma refers to a wide grouping of ethnic communities such as Sinti, Manouche, Romiche and Kale.
- About 6 million were located in the European Union, forming 9.9% of the population in Bulgaria, 9% in Slovakia, 8.6% in Romania, 0.2% in Italy and 0.1% in Germany.
- Romani have been historically persecuted. They were erroneously called ‘gypsy’ in English as they were deemed to have Egyptian descent.
- Under Nazi rule, thousands of Roma were sent to concentration camps and murdered. They were ranked at bottom of Nazi racial hierarchy, along with Jews and black people.

#### Hatsushima - World's first 3D-printed train station:

- West Japan Railway Company — a major railway operator in Japan — late last month unveiled a 3D-printed train station, which it claimed was a world first.
- Located in the city of Arida, the new station's components were 3D-printed elsewhere and assembled on-site in less than six hours.

#### ESA's Biomass mission:

- European Space Agency's (ESA's) new mission, which will map the world's forests, will launch in April 2025.
- Known as Biomass mission, it will provide information about state of planet's forests and how they are changing, which will help expand knowledge about role forests play in carbon cycle.
- Mission will lift off aboard Vega C rocket from Europe's spaceport in French Guiana.
- It will be placed in a sun-synchronous orbit (SSO) - a type of orbit in which satellites are in sync with the Sun - at an altitude of around 666 km.
- Notably, Biomass is first satellite in world to host a P-band synthetic aperture radar (SAR).
- SAR sensor will operate in the long-wave P-band frequency range, with a wavelength of 70 cm. Therefore, unlike other shorter-wave SAR sensors, the P-band SAR will be able to peer down through forest canopies to assess how much carbon is stored on the floor and branches of trees in world's forests and to assess how levels are changing. Sensor will also estimate the amount of forest biomass.

#### Earth Explore programme:

- Satellites launched under this programme are meant to provide essential information about Earth's interior, cryosphere (frozen parts), hydrosphere, atmosphere,

ionosphere (home to all the charged particles in the atmosphere) and land surface.

- First spacecraft — the gravity field and steady-state Ocean Circulation Explorer (GOCE) mission — took off in 2009 and worked till 2013. The mission helped further research in areas of ocean circulation, physics of Earth's interior, etc.
- Most recent one was Earth Cloud Aerosol and Radiation Explorer (EarthCARE) mission, which was launched in May 2024. It contributes to a better understanding of Earth's radiative balance in climate, among other things.

#### Hands-off protests:

- Thousands of people protested the Donald Trump administration's policies at more than 1,200 locations in the United States.
- Photos showed people holding signs with slogans such as “Hands-off our government!”, “Make America think again”, and “Hate won't make us great”.

#### Jaya Sri Maha Bodhi:

- Prime Minister visited Jaya Sri Maha Bodhi temple at historic city of Anuradhapura.
- It is considered the oldest living cultivated plant in the world and is believed to have grown from a branch that an Indian princess carried to Sri Lanka.
- This Bo (Ficus religiosa, Pipal in Hindi) tree is believed to have grown from a branch of the tree in Bodhgaya (Bihar) under which Gautam Buddha attained enlightenment.
- Branch was carried to Sri Lanka by Sanghamitta (or Sanghamitra), Mauryan king Ashoka's daughter and Buddhist nun.
- Her arrival in Sri Lanka with the tree is still celebrated as Uduvapa Poya, an annual festival observed on a full moon night in December.
- Anuradhapura is now a UNESCO World Heritage Site.
- During the reign of Ashoka, the Third Buddhist Council is believed to have met, where it was decided to send missionaries to different regions to propagate Buddhism. Missions left for Gandhara, Kashmir, south India, some Greek kingdoms, and Sri Lanka.
- Very successful mission to Sri Lanka was led by prince Mahendra, or Mahinda, Ashoka's son.
- Mahinda met King Devanampiya Tissa, whose capital was Anuradhapura, and converted him to Buddhism.
- After a number of royal ladies also wished to join the Buddhist monastic order, Mahinda sent for his sister, Sanghamitta, to come and initiate them.
- Both Mahinda and Sanghamitta lived in Anuradhapura for rest of their lives.

#### Stagflation:

- US Fed Chair Jerome Powell raised concern that President Donald Trump's “Liberation Day” tariffs could lead to stagflation.
- Stagflation is described as an economic situation characterised by economic stagnation, meaning slow

**economic growth typically accompanied by an increase in unemployment, and inflation,** meaning a persistent rise in general price level.

- Typically, inflation occurs during periods of rapid economic growth, with the demand for goods outpacing their availability, increasing their prices. Similarly, during a period of economic decline, inflation falls as there is less money chasing the same goods.
- Stagflation presents a precarious situation for policymakers as policies that address either of these issues can end up worsening the other.
- An increase in **unemployment amid a decline in economic growth is accompanied by a sluggish rise in incomes**, while making sense of **rising inflation**. This puts dual pressures on people, even as their **purchasing power is reduced**.

#### What is active mobility?

- Active mobility refers to **modes of transportation that use human power instead of a motorised form of mobility**.
- Active modes of transport include **walking, cycling, skateboarding, and other non-motorised modes that are used for travel and not recreational activities**.

#### City Key of Honour:

- President of India received the **'City Key of Honour' of Lisbon City from Mayor of Lisbon**.

#### Pradhan Mantri Mudra Yojana (PMMY) completes 10 years:

- Launched on **8th April 2015**.
- It provides easy **collateral-free loans up to ₹10 lakh for non-corporate and non-farm income-generating activities**.

○To strengthen support for aspiring entrepreneurs, **finance minister announced an increase in loan limit to ₹20 lakh during the Union Budget 2024-25** on July 23, 2024. This new limit **took effect on October 24, 2024**.

- These loans are **extended through Banks, NBFCs, MFIs, and other financial institutions**.
- Newly announced loan category, Tarun Plus, is designed specifically for those who have previously availed and successfully repaid loans under the Tarun category**, allowing them to access funding between ₹10 lakh and ₹20 lakh.
- Additionally, Credit Guarantee Fund for Micro Units (CGFMU) will now provide guarantee coverage for these enhanced loans.

#### Key Features of PMMY:

- Four categories of loans as –**
  - Shishu:** covering loans upto Rs. 50,000/-
  - Kishor:** covering loans above Rs. 50,000/- and up to Rs. 5 lakhs
  - Tarun:** covering loans above Rs. 5 lakh and up to Rs. 10 lakhs
  - Tarun Plus: Rs. 10 lakh and up to Rs. 20 lakhs**
- Loans cover term financing and working capital needs across **manufacturing, trading and service sectors, including activities allied to agriculture** like poultry, dairy, and beekeeping, etc.
- Interest rate is governed by RBI guidelines, with flexible repayment terms for working capital facilities.
- Credit Guarantee Fund for Micro Units (CGFMU) was established in 2016 to secure loans under PMMY.**

#### PRACTICE MCQs

Q1. Consider the following statements about Pradhan Mantri Mudra Yojana:

- 'Tarun plus' category is designed specifically for those who have previously availed and successfully repaid loans under the Tarun category.
- Under this category, funding between ₹10 lakh and ₹15 lakh will be given.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Answer: A**

Q2. Which of the following correctly describes the term 'stagflation'?

- Economic situation that is characterized by economic stagnation and accompanied by an increase in unemployment, and inflation.
- When economy faces reduced economic growth and general decline in prices of goods and services.
- When economy experiences weak economic growth due to reduced exports.
- Economic situation that is characterized by economic stagnation and accompanied by the appreciation of currency.

**Answer: A**

Q3. Consider the following statements with reference to the Biomass mission:

- It is being launched by NASA.
- It will provide information about the state of the earth's forests and how they are changing.
- It is the first satellite in the world to host a P-band synthetic aperture radar (SAR).

Which of the statements given above is/are correct?

- 1 and 2 only
- 2 and 3 only
- 2 only
- 1, 2 and 3

**Answer: B**

Q4. Consider the following statements with respect to 'Jaya Sri Maha Bodhi':

1. It is situated in the historic city of Anuradhapura in Sri Lanka.
2. It is considered the oldest living cultivated plant in the world.
3. This Bo tree is believed to have grown from a branch of the tree in Bodhgaya, Bihar.

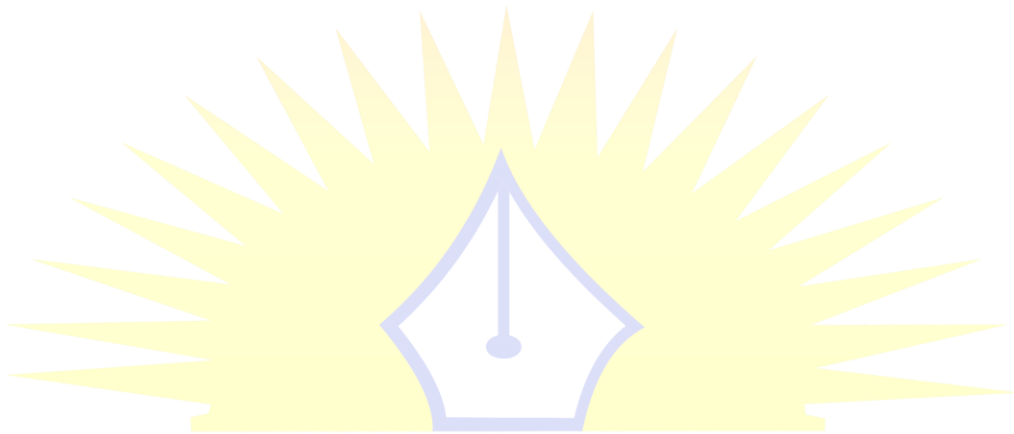
Which of the statements given above are correct?

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

**Answer: D**

Q5. Which of the following chemical compounds is responsible for ripening of fruits?

- a) Ethylene
- b) Methylene
- c) Butane
- d) Methane

**Answer: A**

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