UPSC Daily Current Affairs| Prelim Bits 22-02-2025

Einstein Ring

Why in News?

Recently, the Euclid space mission of the European Space Agency (ESA) spotted an Einstein ring in the galaxy NGC 6505, just 590 million light-years from the earth.

> *NGC 6505 is an elliptical galaxy in the Draco constellation, about 608 million light years away from the Milky Way, discovered in 1884 by Lewis A. Swift.*

- Bruno Altieri (Astronomer) 1st noticed the Einstein ring (Nicknamed as Alteri's Ring) in galaxy NGC 6505 in 2023 in a blurry image captured by Euclid mission of European Space Agency.
- **Einstein Ring -** An Einstein ring is a ring-shaped image that occurs when light from a distant galaxy is bent around a massive object in the foreground. This phenomenon is called ***gravitational lensing.***
- Albert Einstein's general ***theory of relativity*** predicted this phenomenon.

> *General relativity predicts that the path of light will follow the curvature of space time as it passes near a massive object.*

- The gravity of the foreground object bends light rays, similar to how a magnifying lens bends light.
- If the background galaxy, the lensing galaxy, and the telescope are perfectly aligned, the image appears as a ring.
- **Significance** - Einstein rings are a valuable tool for scientists to study the expansion of the universe, dark matter, and dark energy.
- They also help scientists learn about the background source of the light that is bent by dark matter.
- An Einstein ring is also known as an ***Einstein–Chwolson ring or Chwolson ring.***
- Astronomers discovered the first Einstein ring in 1998.
- The largest and one of the most complete Einstein rings ever discovered is GAL-CLUS-022058s.

Reference

The Hindu | Einstein ring

Periodic Labour Force Survey (PLFS)

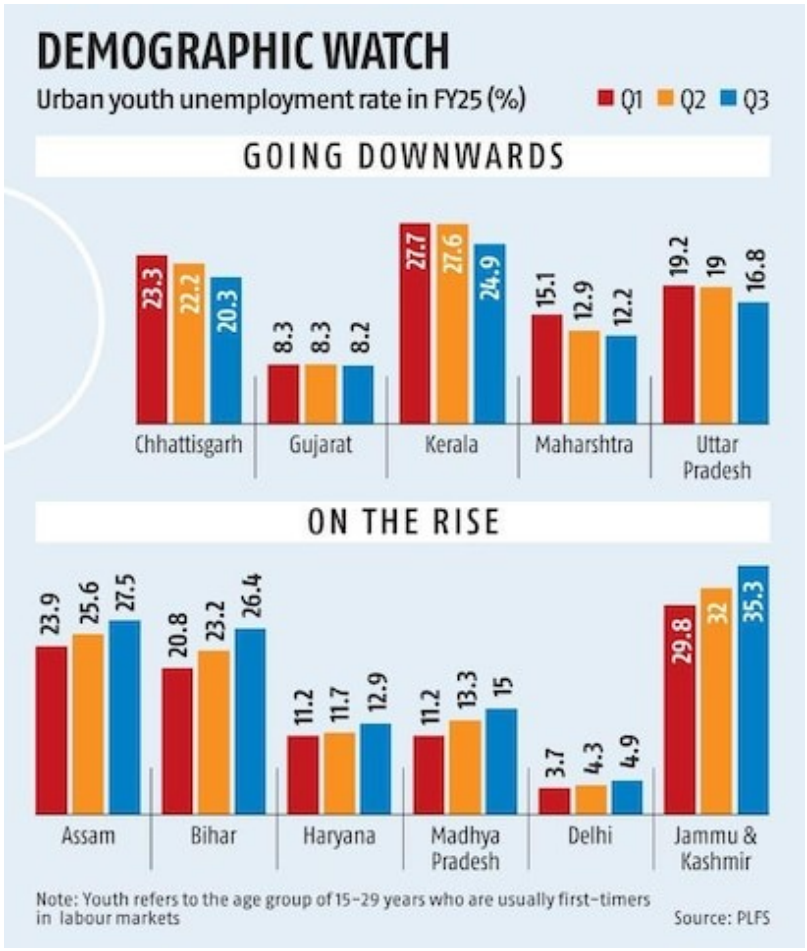
Why in news?

The national unemployment rate among urban youth is decreasing in FY25, but 6 states and UTs have seen an increase in unemployment rates from Q1 to Q3.

- PLFS is the primary source of data on employment and unemployment situation in India.
- The Periodic Labour Force Survey (PLFS) gives Indicators like the Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), Unemployment Rate (UR), etc.
- **Released by** - Ministry of Statistics and Program Implementation.
- **Survey period** - Quarterly Bulletin [October – December 2024].

Key Findings

- **Labour Force Participation Rate (LFPR)** - In urban areas among persons of age 15 years and above has increased from 49.9% to 50.4%.
- LFPR for male of age 15 years and above in urban areas increased from 74.1% to 75.4% reflecting overall increasing trend in male LFPR.
- LFPR among female of age 15 years and above for urban areas increased from 25.0% to 25.2%.
- **Worker Population Ratio (WPR) -** In urban areas among persons of age 15 years and above has increased from 46.6% to 47.2%.
- WPR for male of age 15 years and above for urban areas increased from 69.8% to 70.9% reflecting overall increasing trend in male WPR.
- **Unemployment Rate (UR)** - In urban areas among persons of age 15 years and above decreased from 6.5% to 6.4%.
- UR among males of age 15 years and above remained same as 5.8%.
- UR among female of age 15 years and above decreased from 8.6 % to 8.1%.
- **State wise data – Rising unemployment states** - Assam shows highest urban youth unemployment rate at 27. 5% in Q3, up from 23. 9% in Q1.
- Bihar's rate has increased to 26. 4% from 20. 8%, Madhya Pradesh to 15% from 11. 2%, and Haryana to 12. 9% from 11. 2%.
- In Jammu & Kashmir the rate rose to 35. 3% from 29. 8%,
- Delhi’s rate grew to 4. 9% from 3. 7%.
- **Declined unemployment states –** Kerala is followed by Chhattisgarh, Uttar Pradesh, Maharashtra, and Gujarat with slight decreases.



- **International Labour Organisation (ILO)** – The study states that youth comprise nearly 83% of the unemployed workforce, with educational attainment increasing significantly.

References

1. PIB | Periodic Labour Force Survey (PLFS)
2. Business Standard | Periodic Labour Force Survey (PLFS)

Blue-Cheeked Bee-eater

Why in News?

The first breeding site of the Blue-Cheeked Bee-eater in peninsular India has been discovered in the saltpans of Aandivilai near the Manakudy Mangroves in Kanniyakumari district.

- **Scientific Name -** Merops persicus.
- It is a near ***passerine bird*** in the bee-eater family, Meropidae.
- It is a passage *migrant and winter visitor in India*.
- **Appearance** – It is a richly colored, slender bird.
- It is predominantly green, its face has blue sides with a black eye stripe, and a yellow and brown throat, the beak is black.



- **Habitat -** Found in open areas as well as forests from lowlands up into middle elevations.
- **Distribution –** It breeds across Northern Africa and the Middle East, from eastern Turkey to Kazakhstan and India.
- Occasionally, this bird appears as a rare vagrant north of its usual range, particularly in Italy and Greece.
- **Behaviour –** It may choose to nest solitarily or in small, loose colonies of up to ten individuals. It is also known to share colonies with European bee-eaters.
- **Breeding Regions –** Nesting sites are often located in sandy banks, embankments, or low cliffs, and occasionally on the shores of the Caspian Sea.
- Its breeding was primarily recorded in regions such as Nile Delta, Pakistan, and Iran while its wintering grounds include parts of Africa.
- **Diet –** Feed on insects preferably dragonflies.
- **Threats –** Habitat destruction, from developmental activities, and anthropogenic pressures.
- **Conservation status**
    - **IUCN –** Least Concern.

Reference

BIRDA | Blue-cheeked Bee-eater

One Liners 22-02-2025
History, Art and Culture
Katas Raj Temple • **Located in** – Chakwal in Potohar Plateau, *Pakistan*. • Dates back to Hindu shahis King from 615 to 915 AD. • **Composition** – It comprises of 7 temples (old and new ones) called the ***Satgraha***. • Also known for its Buddhist site. • 300 Indian Hindus travelled to Pakistan to be a part of the celebration.
Polity & Governance

98th Akhil Bharatiya Marathi Sahitya Sammelan (All India Marathi Literature Convention)

• It is an *annual conference* for literary discussions by Marathi writers.
• **1st edition** in 1878 & is a long-standing tradition from the late 19th century for Marathi authors and poets to showcase their work.
• The last Sammelan in Delhi took place in 1954, making this event particularly noteworthy.
• **Objectives** – It celebrate Marathi literature's timeless relevance, and explore its role in contemporary discourse, including
  - Themes of language preservation
  - Translation
  - Impact of digitalization on literary works.

Varanasi-Ranchi-Kolkata Expressway Project

• **Started on** – *2024*.
• **Umbrella scheme –** Bharat Mala Yojana.
• **Nodal Ministry** – Ministry of Road Transport and Highways.
• It is an approved 710 km long, *6 lane, greenfield access*-controlled expressway.
• **Objective** – To boost trade and freight movement, particularly benefiting industries reliant on the *Kolkata and Haldia* ports.
• **Sates covered** – Uttar Pradesh, Bihar, Jharkhand, and West Bengal.
• It is known as Varanasi–Kolkata Expressway (NH-319B).

Bharat Mala Yojana

• **Launched in** – *2015.*
• It is an umbrella program for the *highways sector* in India.
• **Nodal Ministry** – Ministry of Road Transport and Highways.
• **Objective** – Optimize efficiency of freight and passenger movement across the country.
  - Bridge critical infrastructure gaps Enhance
  - Coastal and Port Connectivity is Mandatory to connect areas around shorelines and important ports
  - It special emphasis on providing connectivity to far-flung border and rural areas.

Economy

Periodic Labour Force Survey (PLFS) Terms

• **Labour Force Participation Rate (LFPR)** – It is defined as the *percentage of persons in labour force* (i.e. working or seeking or available for work) in the population.
• **Worker Population Ratio (WPR)** – It is defined as the *percentage of employed persons* in the population.
• **Unemployment Rate (UR)** – It is defined as the *percentage of persons unemployed* among the persons in the labour force.
• **Current Weekly Status (CWS)** – It determined on the basis of a reference period of *last 7 days preceding the date of survey*.

Minor Minerals to Major Minerals

Ministry of Mines moved 4 minerals from minor to major status.

• **Major minerals** – Barytes, Felspar, Mica, and Quartz
• **Quartz** - Common mineral in Earth's crust.
  - Found in all forms of rock
  - Used in clocks and watches
• **Feldspar** – Aluminosilicate minerals containing calcium, sodium, or potassium.
  - Comprises more than half of Earth's crust.
  - Used in glassmaking, ceramics, construction, and manufacturing.
• **Mica** – Group of minerals that are light, soft, and flexible.
  - Used in cosmetics, medicine, and electronics.
• **Barytes** – Naturally occurring mineral made of barium sulfate ($BaSO_4$).
  - Used in paint, rubber, and concrete.
• **Quartz, Felspar & Mica** - Found in pegmatite rocks
  - Important source of many critical minerals.

Baryte

• **Baryte** – It is a mineral consisting of *barium sulfate* and generally white or colorless.
• **Occurrence** – Vein fillings in limestone and dolostone.
• **Iron ore** – Pocket type of deposit which *can't be mined in isolation.*
• **Iron ore of** – Antimony, Cobalt, Copper, Lead, Manganese and Silver.
• **Usage** – Oil and gas drilling, electronics, TV screens, rubber, glass, ceramics, paint, radiation shielding and medical applications.

Science

Euclid Space Mission

• **Launched in** – *2023*.
• **Developed by** – European Space Agency and Euclid Consortium (includes NASA).
• **Part of** – ESA's Cosmic Vision programme.
• **Purpose** – To explore the composition and *evolution of the dark universe*.
• **Euclid Space Telescope** – It creates a 3D-map of the universe by observing billions of galaxies out to *10 billion light-years*.

Research Lab for AI in Eye Care

• **Established by** – Zeiss India (Optics and optoelectronics technology company) and Indian Institute of Science (IISc).
• **Established in –** IISc, Bengaluru.
• **Aim** – To drive *advancements in eyecare solutions* and enable researchers at IISc.
• **Objective** – To explore the technology's potential in facilitating early diagnosis, treatment personalization, and accessibility in *ophthalmology*.

Index

Purchasing Managers' Index (PMI)

• **PMI** – It is an economic indicator, which is derived after monthly surveys of different companies.
• **Released by** – Institute for Supply Management (ISM), a non-profit supply management organization on *monthly basis*.
• **Purpose –** To provide information about current and future business conditions to company decision makers, analysts, and investors.
• **Leading indicator in** – *United States (US)* for determining overall economic activity.



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Information is Empowering