

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)

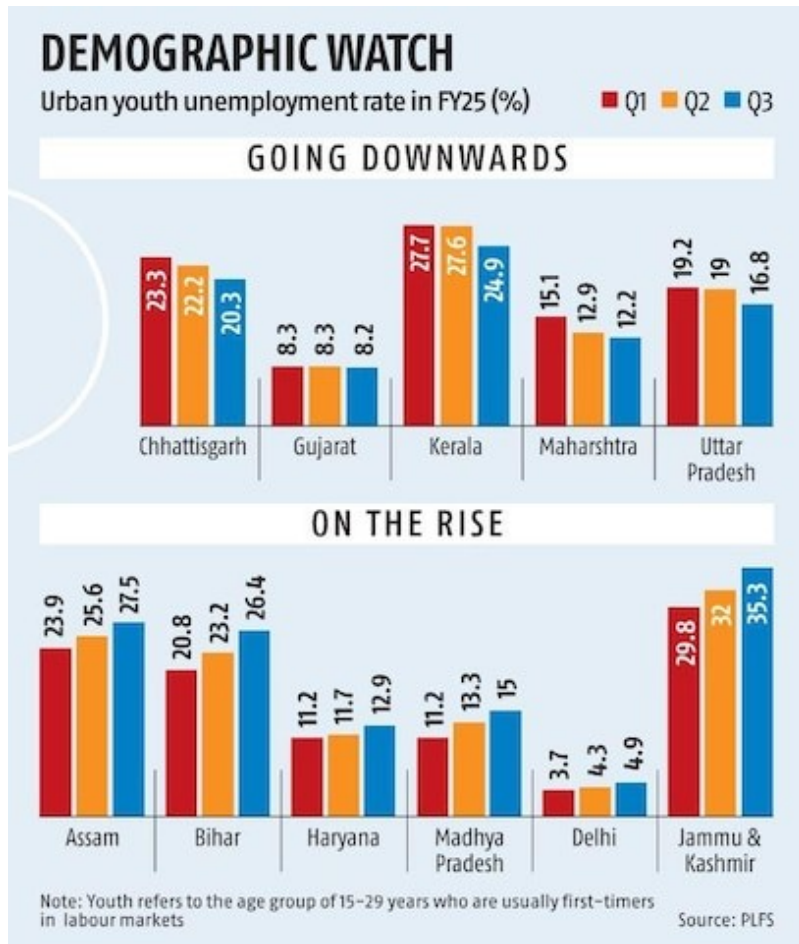
Why in news?

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 (BaSO₄).
 - 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.



SHANKAR
IAS PARLIAMENT
Information is Empowering