

**GEOGRAPHY**

❖ **Solar eclipse**

❖ **Context: People in India were able to see a partial solar eclipse recently.**

❖ What is a solar eclipse?

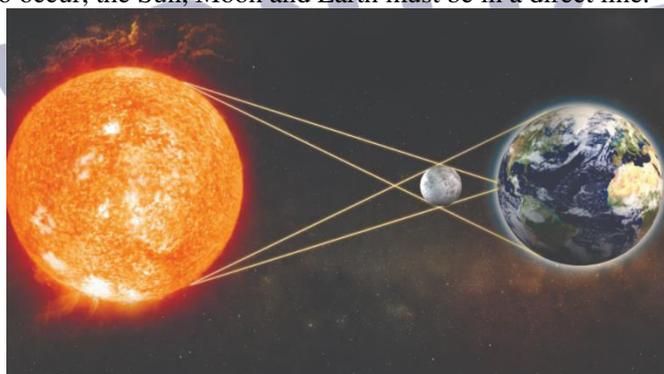
- A solar eclipse occurs when the Moon is positioned in between the Sun and the Earth for a few minutes.
- Under certain-alignment, the Moon partially or fully blocks the Sun's light and instead casts its shadow on Earth.
- That is why, there can be a partial or a total solar eclipse, depending on how much portion of the Sun's disc gets hidden by the Moon.
- In a partial solar eclipse, only the edge of the Moon's shadow falls on the northern hemisphere.

❖ **Types of Solar Eclipses**

• There are four types of solar eclipses: total, annular, partial and hybrid.

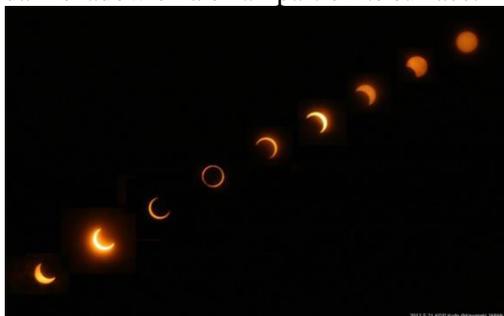
➤ **Total solar eclipses**

- On average, a total eclipse occurs somewhere on Earth about every 18 months.
- There are two types of shadows:
  - The umbra is that part of the shadow where all sunlight is blocked out. The umbra takes the shape of a dark, slender cone.
  - It is surrounded by the penumbra, a lighter, funnel-shaped shadow from which sunlight is partially obscured.
- During a total solar eclipse, the moon casts its umbra upon Earth's surface.
- During the brief period of totality, when the sun is completely covered, the beautiful corona — the tenuous outer atmosphere of the sun is revealed.
- Totality may last as long as 7 minutes 31 seconds, though most total eclipses are usually much shorter.
- For a total eclipse to occur, the Sun, Moon and Earth must be in a direct line.



➤ **Partial solar eclipses**

- A partial solar eclipse occurs when only the penumbra (the partial shadow) passes over earth.
- In these cases, a part of the sun always remains in view during the eclipse.
- This happens when the Sun, Moon and Earth are not exactly aligned.
- The Sun appears to have a dark shadow on a small part of its surface.



➤ **Annular solar eclipses**

- An annular eclipse is far different from a total one.
- An annular eclipse happens when the Moon is farthest from Earth.
- Because the Moon is farther away, it seems smaller.

- It does not block the entire view of the Sun.
- The Moon in front of the Sun looks like a dark disk on top of a larger Sun-colored disk.
- This creates what looks like a ring around the Moon.
- The annular eclipse is a subspecies of a partial eclipse, not total.
- **Hybrid solar eclipses**
- These are also called annular-total ("A-T") eclipses.
- This special type of eclipse occurs when the moon's distance is near its limit for the umbra to reach Earth.
- In most cases, an A-T eclipse starts as an annular eclipse because the tip of the umbra falls just short of making contact with Earth; then it becomes total because the roundness of the planet reaches up and intercepts the shadow tip near the middle of the path, then finally it returns to annular toward the end of the path.
- Because the moon appears to pass directly in front of the sun, total, annular and hybrid eclipses are also called "central" eclipses to distinguish them from eclipses that are merely partial.
- Of all solar eclipses, about 28% are total; 35% are partial; 32% annular; and just 5% are hybrids.
- ❖ **Lunar Eclipse**
- The Moon moves in an orbit around Earth.
- At the same time, Earth orbits the Sun.
- Sometimes Earth moves between the Sun and the Moon.
- When this happens, Earth blocks the sunlight that normally is reflected by the Moon.
  - This sunlight is what causes the Moon to shine.
- Instead of light hitting the Moon's surface, Earth's shadow falls on the Moon.
- This is an eclipse of the Moon, or a lunar eclipse.
- A lunar eclipse can occur only when the Moon is full.
- A lunar eclipse can be seen from Earth at night.
- There are two types of lunar eclipses:
  - **Total lunar eclipse**
  - ✓ A total lunar eclipse occurs when the Moon and the Sun are on exact opposite sides of Earth.
  - ✓ Although the Moon is in Earth's shadow, some sunlight reaches the Moon.
  - ✓ The sunlight passes through Earth's atmosphere, which filters out most of the blue light.
  - ✓ This makes the Moon appear red to people on Earth.
  - **Partial lunar eclipse**
  - ✓ A partial lunar eclipse happens when part of the Moon enters Earth's shadow.
  - ✓ In a partial eclipse, Earth's shadow appears very dark on the side of the Moon facing Earth.
  - ✓ What people see from Earth during a partial lunar eclipse depends on how the Sun, Earth and Moon align.
- A lunar eclipse usually lasts for a few hours.
- At least two partial lunar eclipses happen every year, but total lunar eclipses are rare.
- It is safe to look at a lunar eclipse.
- ❖ **Is there any harm in the solar eclipse?**
- There is no direct hazard or any harm from the solar eclipse.
- It is perfectly harmless to step outdoors, consume food and water during the eclipse.
- Use of certified solar filters or eclipse goggles are recommended while viewing the Sun during the eclipse.
- Experts warn against looking at the Sun with naked eyes, or through binoculars or telescopes without filters, as this can prove harmful to one's vision.
- The safest way to view the eclipse is by indirect projection method, which can be easily done by projecting the Sun's disc onto a white paper, either using a telescope or a pin-hole camera.

**PRELIMS**

**1. Allmania multiflora**

- ❖ **Context: A frail-looking plant spotted on the granite hillocks of Palakkad has been identified as a new species of the genus Allmania.**
- It is an annual herb that grows to a height of about 60 cm.
- Allmania multiflora is only the second species of this genus identified so far anywhere.
- The discovery has come 188 years after the genus and the first species were described by botanists.

- It is distinct from *Allmania nodiflora*, which so far had been accepted as the lone *Allmania* species.
- The first species, *Allmania nodiflora*, was originally published under the genus *Celosia* as *Celosia nodiflora* in 1753.
- Specimens found in Ceylon (Sri Lanka) were first described as *Allmania nodiflora* in 1834.
- *Allmania multiflora*, is currently known only from a few locations.
- Given its small population, the researchers have assessed it as critically endangered, by IUCN Red List.
- The stem is red to violet at the base and green above.
- It is found at heights ranging between 1,000 to 1,250 metres.

## **2. Electronic Gold Receipt**

❖ **Context: The Bombay Stock Exchange (BSE) has received approval from the Securities and Exchange Board of India (Sebi) for its Electronic Gold Receipt (EGR), India's first spot physical gold exchange product.**

- In India, electronic gold trading happens through gold derivatives or gold exchange-traded funds (ETFs) on stock exchanges.
- EGR is the first spot physical gold exchange trading product.
- In the Union Budget 2021-22, the government announced the setting up of a SEBI-regulated gold spot exchange.
- Then, on September 28, 2021, Sebi introduced two new investment instruments, namely EGR, silver ETFs
- EGRs are depository gold receipts traded on the stock exchanges. They are held in Demat accounts, just like shares.
- For EGRs, the physical gold is sourced through imports, accredited domestic refineries, or designated delivery centers.
- The buyer could convert the physical gold into an EGR by depositing the yellow metal at the designated delivery center. After the gold is sourced, a depository receipt is created for trading on BSE. For example, a buyer can sell the EGR or convert it to physical gold.

## **3. When does RBI step in to monitor a bank?**

❖ **Context: The Reserve Bank of India (RBI) has placed Dhanlaxmi Bank under tight monitoring with the Thrissur-based private bank's financial position coming under greater public scrutiny.**

- Dhanlaxmi Bank's capital to risk weighted assets ratio (CRAR) dropped to around 13% prompting the RBI to take stock of the financial health of the bank.
- Under Basel-III norms banks are supposed to maintain their CRAR at 9% or above.
- The RBI's move to increase its oversight on Dhanlaxmi Bank is seen as a response to the deterioration in the bank's capital adequacy.
- The bank has even been placed under the prompt corrective action framework (PCA) by the RBI to deal with serious deteriorations in its financial position. Under the PCA, the RBI places restrictions on lending by troubled banks and keeps a close eye on them until their financial position improves sufficiently.

❖ **Why is capital adequacy important for a bank?**

- Capital adequacy ratio is an indicator of the ability of a bank to survive as a going business entity in case it suffers significant losses on its loan book.
- A bank cannot continue to operate if the total value of its assets drops below the total value of its liabilities as it would wipe out its capital (or net worth) and render the bank insolvent.
- So, banking regulations such as the Basel-III norms try to closely monitor changes in the capital adequacy of banks in order to prevent major bank failures which could have a severe impact on the wider economy.
- The capital position of a bank should not be confused with cash held by a bank in its vaults to make good on its commitment to depositors.
- The CRAR, which is a ratio that compares the value of a bank's capital (or net worth) against the value of its various assets weighted according to how risky each asset is, is used to gauge the risk of insolvency faced by a bank.
- The riskier a type of asset held in a bank's balance sheet, the higher the weightage given to the value of the asset while calculating the bank's capital adequacy ratio.

- This causes the capital adequacy ratio of the bank to drop, thus signalling a higher risk of insolvency during crises.
- In other words, the CRAR tries to gauge the risk posed to the solvency of the bank by the quality or riskiness of the assets on the bank's balance sheet.

#### **4. Foreign Contribution Regulation Act licence**

❖ **Context:** The Ministry of Home Affairs (MHA) has cancelled the Foreign Contribution Regulation Act (FCRA) licence of the Rajiv Gandhi Foundation (RGF) and Rajiv Gandhi Charitable Trust (RGCT), organisations associated with the Gandhi family, for alleged violations of the law.

❖ **How does FCRA work?**

- The FCRA was enacted during the Emergency, with the aim of curbing foreign entities from pumping money into organisations in India for achieving their own aims.
- The law has been amended over the years, such as in 2020, and the government is now able to extend tighter control and scrutiny over the receipt and utilisation of foreign funds by NGOs.
- Broadly, the FCRA requires every person or NGO seeking to receive foreign donations to be registered under the Act, to open a bank account for the receipt of the foreign funds in State Bank of India, Delhi, and to utilise those funds only for the purpose for which they have been received and as stipulated in the Act.
- They are also required to file annual returns, and they must not transfer the funds to another NGO.
- The Act prohibits the receipt of foreign funds by candidates except under some particular circumstances with requisite declarations. The prohibitions are for: elections, journalists or newspaper and media broadcast companies, judges and government servants, members of the legislature and political parties or their office-bearers, and organizations of a political nature.
- Cancellation of the FCRA license can be over multiple grounds, such as if in the opinion of the Central Government, it is necessary in the public interest to cancel the certificate, or if an inquiry finds a false statement in its application.
- The ministry also has the power to suspend an NGO's registration for 180 days pending inquiry and can freeze its funds.

#### • **Registration under FCRA**

- NGOs that want to receive foreign funds must apply online in a prescribed format with the required documentation.
- FCRA registrations are granted to individuals or associations that have definite cultural, economic, educational, religious, and social programmes.
- Following the application, the MHA makes inquiries through the Intelligence Bureau into the antecedents of the applicant, and accordingly processes the application.
- The MHA is required to approve or reject the application within 90 days — failing which it is expected to inform the NGO of the reasons for the same.
- Once granted, FCRA registration is valid for five years.
- NGOs are expected to apply for renewal within six months of the date of expiry of registration.
- In case of failure to apply for renewal, the registration is deemed to have expired.

#### • **Cancellation of approval**

- The government reserves the right to cancel the FCRA registration of any NGO if it finds it to be in violation of the Act.
- Once the registration of an NGO is cancelled, it is not eligible for re-registration for three years.
- All orders of the government can be challenged in the High Court

### **ANSWER WRITING**

**Q. Why is Public Private Partnership (PPP) required in infrastructural projects? Examine the role of PPP model in the redevelopment of Railway Stations in India.**

- Public-Private Partnerships (PPPs) are a mechanism for government to procure and implement public infrastructure and services using the resources and expertise of the private sector.

#### **PPP in Infrastructure Projects**

- Governments in developing countries face the challenge to meet the growing demand for better infrastructure services. Introduction of PPP will help in providing better infrastructure services through improved operational efficiency.

- The funding available and capacity of public sector to implement project on time remains limited, partnership with the private sector is an attractive alternative to increase and improve the supply of infrastructure services.
- PPPs are beneficial in supplementing limited public sector capacities to meet the growing demand for infrastructure development.
- It will develop local private sector through joint ventures with large firms in areas such as: civil works, electrical works, facilities management, security services, cleaning services, maintenance services.
- The long-term value-for-money is extracted through appropriate risk transfer to the private sector over the life of the project – from construction to operations.

**Role of PPP model in the redevelopment of Railway Stations in India**

- The station redevelopment comprises two components:
  - **Mandatory station redevelopment:** It will make smooth and hassle-free travel.
  - **Station Estate (Commercial) development:** It will enable to tap several revenue streams to ensure the viability of entire project.
- The Government of India pushing for reforms in railway infrastructure with the help of PPP. The first station redeveloped through PPP process is Gandhinagar in Gujarat.
- Other stations will be redeveloped such as New Delhi, Chhatrapati Shivaji Maharaj Terminus and many more including in tier 2 and tier 3 cities.
- The responsibility of train operations and safety certification rests with Indian Railways.

PPPs offer the public sector potential cost, quality, and scale advantages in achieving infrastructure service targets. NITI Aayog strategy for new India @ 75 envisages many targets in railway infrastructure like increasing the speed of infrastructure from the present 7 km/day to 19 km/day, 100% electrification of broad-gauge track by 2022-23.

**MCQs**

1. Consider the following statements about Solar Eclipse
  1. It is a natural event that takes place on Earth when the Earth moves in its orbit between Moon and the Sun
  2. It happens at New Moon, when the Sun and Moon are in conjunction with each other.

Which of the above statements is/are correct?

  - a) 1 only
  - b) 2 only**
  - c) Both 1 and 2
  - d) Neither 1 nor 2

2. Consider the following statements:
  1. Capital Adequacy Ratio (CAR) is the amount that banks have to maintain in the form of their own funds to offset any loss that banks incur if the account-holders fail to repay dues.
  2. CAR is decided by each individual bank;

Which of the statements given above is/are correct?

  - a) 1 only**
  - b) 2 only
  - c) Both 1 and 2
  - d) Neither 1 nor 2

3. With reference to Foreign Contribution (Regulation) Act (FCRA), consider the following statements:
  1. Foreign funding of persons in India is regulated under FCRA act and is implemented by the Ministry of Home Affairs.
  2. Under the Act, organisations taking foreign contribution are required to register themselves every five years.

Which of the statements given above is/are correct?

  - a) 1 only
  - b) 2 only
  - c) Both 1 and 2**
  - d) Neither 1 nor 2

4. Consider the following statements about Prompt Corrective Action, or PCA:
  1. It is meant to assess, monitor, control and take corrective actions on banks which are weak and troubled.

2. A company put under PCA is barred from trading on exchanges  
Which of the following statements are correct?
- 1 only
  - 2 only
  - Both 1 and 2**
  - Neither 1 nor 2
5. Consider the following sentences:
- A lunar eclipse can only happen at the phase of the new moon.
  - A solar eclipse can only happen at the phase of the full moon.
  - During solar and lunar eclipses sun, earth and moon are in syzygy position.
- Which of the statements above is/are correct?
- 1 and 2 only
  - 2 and 3 only
  - 3 only**
  - 1, 2 and 3
6. With reference to the recently discovered species 'Allmania' consider the following statements and choose the correct one
- Critically endangered amphibian from Western Ghats
  - Vulnerable mammal from Eastern Ghats
  - Annual herb that is Critically Endangered**
  - An alien invasive species in India that originates from Africa
7. Terms like Nine dash line, eleven dash line often mentioned in news recently are related to which of the following pair
- USA, Gulf of Mexico
  - Russia, Sea of Azove
  - China, south China sea**
  - Italy, Mediterranean sea
8. Kittur Utsav recently seen in news is celebrated in which of the following state?
- Kerala
  - Karnataka**
  - Tamil Nadu
  - Andhra Pradesh
9. With reference to Gold Exchanges in India consider the following
- India is the world's second-largest gold importer
  - A gold spot exchange can address the dependent on physical gold and minimize market inefficiencies
- Choose the correct statement/s using the codes given below
- 1 only
  - 2 only
  - Both 1 and 2**
  - Neither 1 nor 2
10. The term 'Pillars of Creation' recently seen in news refers to which of the following?
- A UNESCO-recognised World Heritage Site
  - A famous painting by Pablo Picasso that has recently been turned into an NFT
  - A newly minted blockchain-based cryptocurrency
  - Spectacular trunks of interstellar gas and dust**