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Daily MCQs: 28/01/2023

1. Consider the following statements about Nipah virus.

1. It is a zoonotic virus which can also be transmitted through contaminated food.
2. The first confirmed case of Nipah virus infection in India was reported in 2022.

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

2. Consider the following statements.

1. Biofortification is the process by which the nutrient density of food crops is increased through selective breeding, improved agronomic practices or modern biotechnology.
2. Biofortification in India is prohibited under the Environment Protection Act, 1986.

Which of the statements given above is/are correct?

- E. 1 only
- F. 2 only
- G. Both 1 and 2
- H. Neither 1 nor 2

3. Consider the following statements about Gross Environment Product (GEP).

1. GEP is a measure that allows monitoring of ecological growth parallel to economic growth which is measured using the gross domestic product.
2. GEP helps to understand if development is happening at the cost of ecology.

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 Heat Waves in India.

1. A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs primarily in the North-Eastern parts of India.
2. Heat Waves typically occur between March and June.
3. According to the Indian Meteorological Department, Heat wave is considered if the maximum temperature of a station reaches at least 40°C or more for Plains and at least 30°C or more for Hilly regions.

Which of the statements given above is/are correct?

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- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 2 only

5. Consider the following statements.

1. A defining feature of cryptocurrencies is that they are generally not issued by any central authority.
2. Cryptomining is a process in which transactions for various forms of cryptocurrency are verified and added to the blockchain digital ledger.

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

Solutions:

1. Answer: A

Explanation:

- Nipah is a **viral infection** caused by the Nipah virus (NiV).
- **Fruit bats of the Pteropodidae family** are the natural host of Nipah virus.
- The disease was first identified in **1998** during an outbreak in **Malaysia** and it was named after a village in Malaysia, Sungai Nipah. Later, Nipah outbreaks have been reported in **Singapore, Bangladesh and India**.
- **Statement 2 is incorrect:** Till date, **India has experienced four episodes of NiV outbreaks** with Case Fatality Rate (CFR) ranging from 65% to 100%. The first evidence of NiV infection was reported in Siliguri district, West Bengal in **2001**. The last outbreak was reported in Kerala state in 2019.
- A study in 2018 has identified many **South East Asian countries including Indian states as potential hotspots** for the NiV disease.
- NiV is on the **top-10 priority list pathogens** identified by the World Health Organization.

Transmission

- **Statement 1 is correct:** It is a **zoonotic virus** (transmitted from animals to humans) which can also be transmitted through **contaminated food or directly between people**.
- **Consumption of fruits or fruit products (such as raw date palm juice) contaminated with urine or saliva from infected fruit bats** is the most likely source of infection.
- In infected people, it causes a range of illnesses from asymptomatic (subclinical) infection to acute respiratory illness and fatal encephalitis.
- The virus can also cause severe disease in animals such as pigs, resulting in significant economic losses for farmers.

Treatment

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- There are currently **no drugs or vaccines** specific for Nipah virus infection.
- The primary treatment for humans is supportive care.

2. Answer: A

Explanation:

- **Statement 1 is correct:** Biofortification is the process by which the **nutrient density of food crops is increased** through **selective breeding, improved agronomic practices or modern biotechnology**.
- It's **not the same as 'fortified' foods** that have **micronutrients added to them during processing**.

Focus Areas

- The **most common micronutrient deficiencies are iron and zinc**, with 2 billion people affected worldwide with **anaemia** (30% of the world's population), says the World Health Organization.
- **Vitamin A** deficiency is not far behind. **This triad**, vital to our health, especially for the development of children, women, and other vulnerable sections (seniors or those who have low immunity), is the **focus of biofortification research**.
- **Children** are especially vulnerable to micronutrient deficiencies. Lack of zinc in childhood leads to poor growth and stunting, vitamin A deficiency can cause night blindness and poor immunity, while iron deficiency leads to poor mental and physical development.
- In India, the **focus is on six staples**. These are pearl millet (iron), wheat (zinc), sorghum (iron), rice (zinc), cowpeas (iron) and lentils (iron and zinc). Currently, **biofortified pearl millet, rice, and wheat** are available to farmers in India.

Measure by Government

- **Statement 2 is incorrect:** The Government of India has given a strong endorsement to staple crop biofortification as a **sustainable and cost-effective solution to alleviate malnutrition**.
- To encourage biofortification amongst farming communities, **Indian Council for Agricultural Research (ICAR)** has started the **Nutri-Sensitive Agricultural Resources and Innovations (NARI) programme** for promoting family farming linking agriculture to nutrition, nutri-smart villages for enhancing nutritional security.
- Under NARI, location-specific nutrition garden models are being developed and promoted by **Krishi Vigyan Kendras** (agricultural extension centers in India) to ensure access to locally available, healthy and diversified diets with adequate macro and micronutrients.

3. Answer: C

Explanation:

- **Statement 1 is correct:** Gross Environment Product (GEP) is a measure that allows **monitoring of ecological growth parallel to economic growth** which is measured using the gross domestic product or GDP.

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GEP and GDP

- GDP is the sum of whatever we produce every year within a boundary of a state or a nation.
- Gross Ecosystem Product is the **total value of products and services that are produced within a functional living ecosystem** and are essential for human welfare and sustainable development.
 - For example, a tree is a source of oxygen, timber, shade, fodder, shelter, it regulates water, fixes nitrogen, controls flood, improves soil quality, and so on. All these are invisible services offered by the living ecosystems throughout the year and can be captured using specific indicators.

Why is GDP not sufficient?

- **GDP is not adjusted for pollution costs.** If two economies have the same GDP per capita, but one has polluted air and water, it will have a disparate impact on people's well-being. Yet GDP won't capture it.

How will GEP help?

- It will update us about the growth of forest, soil and water, and quality of air, in any given year, parallel to GDP.
- **Statement 2 is correct:** Therefore, it will **help understand if development is happening at the cost of ecology.**
- This will help maintain a **balance between economy and ecology.** Currently, we are unaware how long natural resources will support us.

4. Answer: B

Explanation:

- **Statement 1 is incorrect:** A Heat Wave is a **period of abnormally high temperatures**, more than the normal maximum temperature that occurs during the summer season in the **North-Western parts of India.**
- **Statement 2 is correct:** Heat Waves typically occur between **March and June**, and in some rare cases even extend **till July.**

Criteria for heat waves

- **Statement 3 is correct:** The **Indian Meteorological Department (IMD)** has given the following criteria for Heat Waves :
 - Heat wave is considered if the maximum temperature of a station reaches **at least 40°C or more for Plains and at least 30°C or more for Hilly regions;**
 - **Based on Departure from Normal**
 - Heat Wave: Departure from normal is 4.5°C to 6.4°C
 - Severe Heat Wave: Departure from normal is >6.4°C
 - **Based on Actual Maximum Temperature**
 - Heat Wave: When actual maximum temperature $\geq 45^\circ\text{C}$
 - Severe Heat Wave: When actual maximum temperature $\geq 47^\circ\text{C}$
 - **For coastal regions**, when maximum temperature departure is 4.5°C or more from normal, Heat Wave may be described provided the actual maximum temperature is 37°C or more.

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- Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change. India too is feeling the **impact of climate change** in terms of **increased instances of heat waves which are more intense in nature with each passing year**, and have a devastating impact on human health thereby increasing the number of heat wave casualties.
- The health impacts of Heat Waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke. The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause physiological stress, sometimes resulting in death.

Duration of a heatwave spell

- A heatwave spell generally lasts for a minimum of four days and on some occasions, it can extend up to seven or ten days.
- The longest recorded heat wave spell, in recent years, was between 18 – 31 May 2015. This spell had severely affected parts of West Bengal along with Odisha, Andhra Pradesh, and Telangana.

Does all of India experience heatwave conditions?

- **No.** Heat waves are common over the **Core Heatwave Zone (CHZ)** — Rajasthan, Punjab, Haryana, Chandigarh, Delhi, West Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Orissa, Vidarbha in Maharashtra, parts of Gangetic West Bengal, Coastal Andhra Pradesh and **Telangana, as categorised by India Meteorological Department.**
- Several recent studies indicate that the CHZ experiences more than **six heatwave days per year** during these four months.
- Many places in the northwest and cities along the southeastern coast report **eight heatwave days per season.**
- However, the regions in the **extreme north, northeast and southwestern India are less prone to heatwaves.**

5. Answer: C

Explanation:

- Bitcoin was the first decentralized cryptocurrency introduced in 2009. **Etherium, Tether, and Binance Coin** are some of the many others cryptocurrencies that have emerged after Bitcoin.
- Cryptocurrencies are built on the back of **blockchain technology** which is a system of distributed, cryptographically-secured account keeping.
- **Statement 1 is correct:** A defining feature of cryptocurrencies is that they are generally **not issued by any central authority**, rendering them theoretically immune to government interference or manipulation.
- In this system, the users keep a tab on every digital 'coin' and transaction rather than a banking system with a governing body at its centre.
- Blockchain technology makes it **difficult or impossible to change, hack, or cheat the system** as it is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain.

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Cryptomining

- **Statement 2 is correct:** Cryptocurrency mining, or cryptomining, is a process in which **transactions for various forms of cryptocurrency are verified and added to the blockchain digital ledger.**
- During the cryptocurrency mining process, volunteer coders called cryptominers compete with each other to solve complicated mathematical problems using high-performance computers.
- The first miner to crack each code is **rewarded** by being able to authorize the transaction, and in return for the service provided, **cryptominers earn small amounts of cryptocurrency of their own.** Once the cryptominer successfully completes the mathematical problem and verifies the transaction information, they add the data to the public blockchain ledger.

Concerns

- Due to their core nature that **shuns centralised control**, governments globally have been wary of cryptocurrencies.
- China, a hub of cryptocurrency activity, has issued a **digital Yuan on blockchain** while it cracks down on other cryptocurrencies. The Bank of England has also proposed a **digital Sterling.**
- Cryptocurrencies as commodities are **highly volatile** with massive swings in their values.
- Another problem is the **increasing energy use associated with cryptocurrencies.** The 'mining' of Bitcoin, where individuals or companies set up powerful systems to support the blockchain network, for which they are rewarded in the currency, is estimated to generate between 22 and 22.9 million metric tonnes of carbon dioxide emissions a year.

