Daily Current Affairs Prelims Quiz 29-05-2024 (Online Prelims Test)

1) Kousika River, sometimes seen in the news recently, is located in?

a. Tamil Nadu
b. Uttarakhand
c. Manipur
d. Odisha

Answer : a

Kousika River

- Kousika River, also called River Madhuram.
- It originates from the Kurudimalai or Kuruthi Hills in the Kongu region of ***Tamil Nadu***.
- In revenue records, it is officially called as ***Vannathangarai Odai***.
- It is believed to have fostered an ancient civilization about 2,000 years ago based on archaeological excavations along its banks dating artefacts to the Iron Age era (1500-500 BCE).
- The river once traversed 52 km after merging with several streams from the hills near the foothills.
- But now its width has narrowed to 12-20 meters due to encroachments like brick kilns blocking one of its rivulet tributaries in ***Thadagam valley***.
- It faces multiple interruptions from encroachments along its course in Coimbatore and Tiruppur districts. Its total catchment area is 525 sq km.
- The ***once perennial river*** has started drying up in the last 10-12 years, even during monsoons sometimes, *due to changes in waterways, low rainfall and depleted groundwater levels*.
- Conservationists highlight the need to revive and rejuvenate the ancient river amid rapid development and depleting water resources in the region.

2) Consider the following statements with respect to PREFIRE Mission

1. The mission measures variations in Far InfraRed (FIR) emissivity and greenhouse effect via thermal radiometric sampling at the top of the polar atmosphere.
2. It is an initiative of NASA, in collaboration with ISRO.
3. It makes the first full spectral measurements of Far InfraRed (FIR) radiation, revealing the full spectrum of Arctic radiant energy.

How many of the statements given above are correct?

a. Only one
b. Only two
c. All Three
d. None of the above

Answer : b

PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment)

The National Aeronautics and Space Administration (NASA) has recently launched one of the two climate satellites under the PREFIRE Mission.

- PREFIRE measures variations in Far-InfraRed (FIR) emissivity and greenhouse effect via thermal radiometric sampling at the top of the polar atmosphere.
- These measurements are integrated with models to understand the role of FIR radiation in Arctic climate.
- The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation.
- The mission designed for a pair of ***tiny satellites*** to measure a little studied portion of the radiant energy emitted by Earth, for clues about sea ice loss, ice-sheet melting, and a warming Arctic.
- Each of the PREFIRE satellites is a 6U CubeSat and is equipped with a thermal infrared spectrometer, known as Thermal Infrared Spectrometer (TIRS).
- ***Two 6U CubeSat spacecraft*** in two different 525 km altitude, near-polar sun-synchronous (97.5° inclination) orbits are part of the mission.
- CubeSats are essentially miniature satellites whose basic design is a 10 cm x 10 cm x 10 cm (which makes up for “one unit” or “1U”) cube, just a little bigger than a Rubik’s cube.
- Two spacecraft in near-polar orbits sample Arctic and Antarctic surfaces and clouds, providing multiple observations of those regions each day.
- ***It is an initiative of National Aeronautics and Space Administration (NASA), in collaboration with University of Wisconsin–Madison, USA***.

3) Halloween Crack, sometimes seen in the news recently, is associated with?

a. A rift observed in Antarctica.

b. San Andreas Fault in USA.

c. Himalayan frontal faults in India.

d. Longest crack in the world, in East African Rift.

Answer : a

Halloween Crack

A large iceberg measuring around 380 square km in area has recently calved (broken off) from the Brunt Ice Shelf in Antarctica.

- The "Halloween Crack" is a ***significant rift or fracture on the Brunt Ice Shelf in Antarctica***.
- It runs from an area known as the McDonald Ice Rumples, where the underside of the floating ice shelf is grounded on the shallow seabed.
- The McDonald Ice Rumples, where the crack originates, are formed due to ice flow over an underwater obstruction or bedrock rise that impedes the ice flow and causes pressure waves, crevasses, and rifts to form on the ice shelf's surface.
- This pinning point slows the ice flow and causes fractures on the ice surface.
- The Halloween Crack runs adjacent to the precarious tip of the Brunt Ice Shelf, which is hanging by a narrow strip of ice around 600 meters long at the northern end.
- A large iceberg measuring around 380 sq km in area has calved (broken off) from the Brunt Ice Shelf in Antarctica.
- It is the third major iceberg calving event near the Halley research base in the last three years.
- This iceberg broke off after a new 14km-long crack emerged at 90 degrees from the pre-existing "Halloween Crack" on the ice shelf.

4) Consider the following statements with respect to Golden Rice

1. It is genetically engineered crop to contain higher levels of the micronutrients iron and zinc in the grains.
2. China is the first country to approve commercial production of the rice variety.
3. It is water intensive and requires special cultivation practices, unlike traditional rice.

How many of the statements given above are correct?

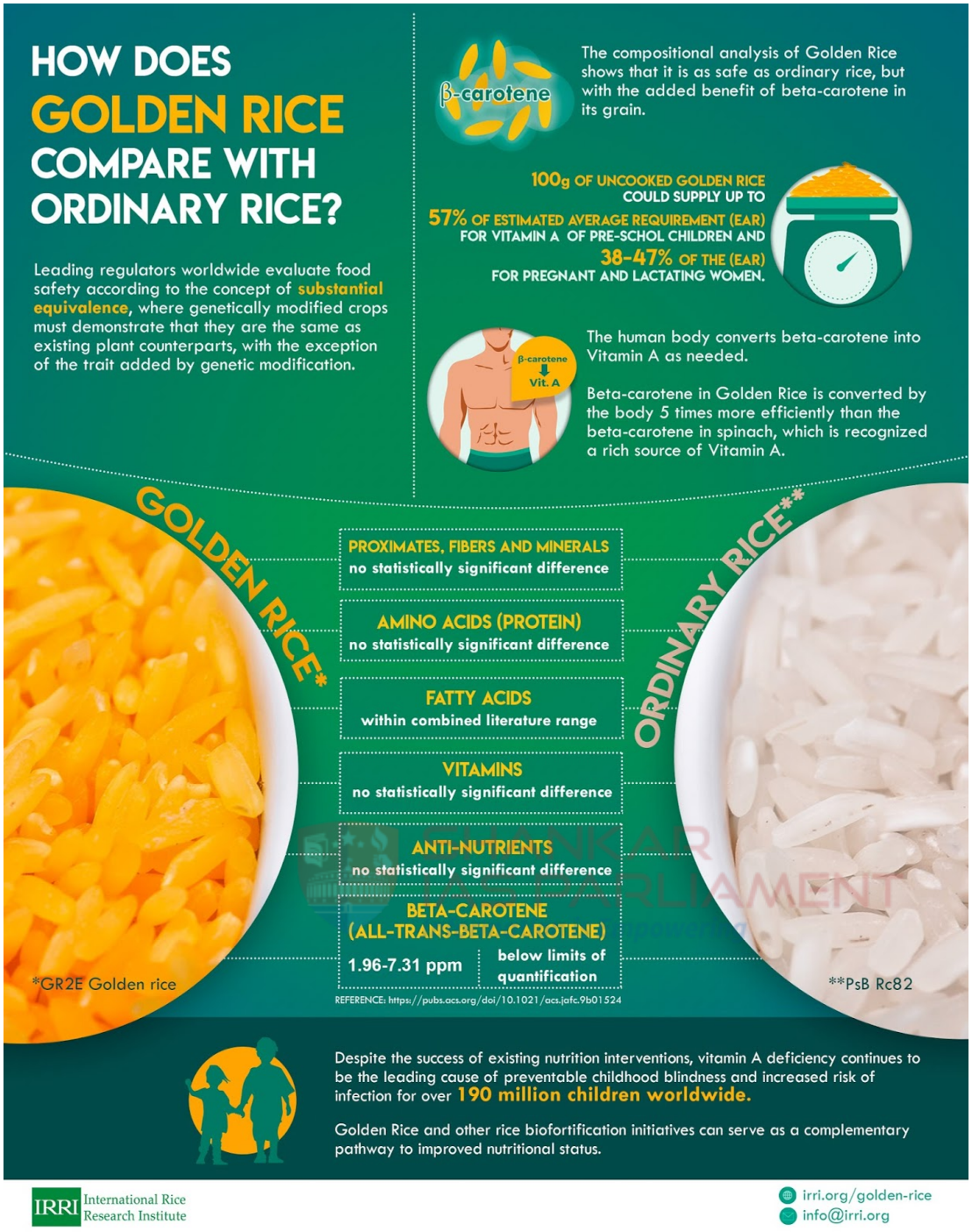
a. Only one
b. Only two
c. All Three
d. None of the above

Answer : a

Golden Rice

A court in the Philippines recently revoked biosafety permits for commercial propagation of genetically modified golden rice.

- Golden Rice is a new type of rice that contains ***beta carotene*** (provitamin A, a plant pigment that the body converts into vitamin A as needed).
- This compound is what gives this grain it's yellow-orange or golden colour, hence its name.
- Golden Rice is developed through genetic engineering.
- ***Philippines became the first country to approve commercial production of the rice variety in 2021***.
- Golden Rice is an *enhanced version of ordinary rice* designed to handle a specific nutrition issue, without any additional cost or difference in taste.
- While Golden Rice is expected to cost and taste the same as regular rice, its beta carotene content makes it a valuable asset in the battle against vitamin A deficiency (VAD).
- ***Like ordinary rice, Golden Rice does not require any special cultivation practices***, and generally has the same yield and agronomic performance.
- The World Health Organization has classified vitamin A deficiency as a public health problem affecting about 1/3rd of children aged 6 to 59 months in 2013, the highest rates in sub-Saharan Africa (48 %) and South Asia (44 %).



5) Consider the following statements with respect to Amazon Rainforest

1. It is the world’s largest drainage system.
2. It is the world’s largest tropical forest.
3. It is the origin of the world's largest river by volume.
4. It serves as the world's largest carbon sink.

Select the correct answer using the code given below:

a. 1, 2 and 3 only
b. 2, 3 and 4 only
c. 1, 2 and 3 only
d. 1, 2, 3 and 4

Answer : a

Amazon Rainforest

A new study has highlighted that 37 % of Amazon Rainforest is struggling to recover due to frequent droughts over the past two decades.

- The Amazon is a vast biome that spans 8 rapidly developing countries, which includes:
    - Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname and French Guiana, an overseas territory of France.
- **Significance** – It is the world's largest drainage system.
- It is the world's largest tropical forest.
- It is the origin of the world's largest river by volume.
- There is a clear link between the health of the Amazon and the health of the planet.
- *20% of the world's liquid freshwater*.
- It accounts for more than half the total volume of rainforests in the world.
- ***The ocean is the world's largest carbon sink, absorbing 25% of all carbon dioxide emissions and helping to buffer the effects of climate change***.
- **Issues –** More than a third of the mature Amazon rainforest 37 % is struggling to recover due to frequent droughts over the past two decades.
- It is showing signs of 'critical slowing down' of vegetation activity.
- The climate change may be the potential driver of large-scale ecosystem collapse.
- Between 2001 and 2019, the Amazon has witnessed three, "one-in-a-century" droughts and these extreme events are estimated to become more severe owing to climate change.
- Amazon areas experiencing the lowest rainfall since the 2000s have suffered significantly, with a notable decline in their stability.
- Increased drought severity and frequency would result in reduced forest recover rates due to gradual decrease in tree growth, eventually leading to tree mortality and potential forest dieback.
- The two main reasons why the trees will die are:
    1. Carbon starvation
    2. Hydraulic failure
- **Hydraulic Failure** – Caused by excessive water loss from transpiration that exceeds water uptake by the roots.
- Leads to air bubbles forming in the xylem vessels that transport water.
- These air bubbles block the flow of water and rupture the xylem, disabling water transport.
- It leaves the tree unable to transpire or photosynthesize effectively.
- **Carbon Starvation** – Trees close their stomata (leaf pores) to reduce transpiration and avoid hydraulic failure.
- But closed stomata also prevent CO_2 uptake, halting photosynthesis.
- Without photosynthesis, the tree has no way to produce new carbohydrates for energy/growth.
- Prolonged stomata closure leads to carbon starvation and potential death of the tree.