Daily Current Affairs Prelims Quiz 23-10-2024 (Online Prelims Test)

1) Consider the following statements with respect to Confirmed Candidate Species (CCS)

1. CCS is a taxonomic unit that has been identified through research as likely being a distinct species, but hasn't yet received formal scientific description and naming.
2. Northern King Cobra can be found in Pakistan and China.

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

Answer : c

Confirmed Candidate Species (CSS)

- A Confirmed Candidate Species is a taxonomic unit that has been identified through research as likely being a distinct species, but hasn't yet received formal scientific description and naming.
- These are organisms that *show clear evidence of being separate species based on multiple lines of evidence*, such as genetic analysis, morphological differences, or ecological distinctions.
- The journey from discovery to formal species typically follows ***3 stages***:
    1. Unconfirmed Candidate Species (UCS)
    2. Confirmed Candidate Species (CCS)
    3. Formal Species Description
- **Unconfirmed Candidate Species (UCS)** – Initial detection of possible new species and based on preliminary evidence.
- The species requires further investigation.
- **Confirmed Candidate Species (CCS)** – Strong evidence supports species distinction.
- Multiple lines of evidence corroborate separation and ready for formal description.
- Given temporary identification codes.
- **Formal Species Description** – Official scientific name assigned and detailed description published.
- Type specimens designated and added to formal taxonomic records
- **Importance in Modern Taxonomy** – The CCS concept is particularly valuable because it:
    - Helps manage the "taxonomic impediment" (the gap between species discovery and formal description).
    - Allows researchers to discuss and study distinct organisms before formal naming.
    - Facilitates conservation efforts for unique populations.
    - Provides a framework for systematic species investigation.
- **Real-World Example** – The recent reclassification of king cobras provides an excellent example of how CCS works in practice:

    - In 2021, researchers identified four geographically separate lineages as CCS.
- These candidate species showed distinct characteristics based on:
    - Geographic distribution
    - Morphological differences
    - Genetic analysis
- By 2024, these CCS were formally described as ***four distinct species***, which include:
    1. Northern King Cobra (Ophiophagus hannah)
    2. Sunda King Cobra (Ophiophagus bungarus)
    3. Western Ghats King Cobra (Ophiophagus kaalinga)
    4. Luzon King Cobra (Ophiophagus salvatana)
- **Northern King Cobra (Ophiophagus hannah)** – Original species named by Cantor in 1836.
- **Range** – Pakistan to China, including northern India, Nepal, Bhutan, Tibet, and Indo-China.
- **Type locality** – Near Kolkata, India.
- **Sunda King Cobra (Ophiophagus bungarus)** – Found south of the Kra isthmus.
    - **Range** – Southern Thailand, Malaysia, Singapore, Indonesia (Sumatra, Borneo, Java, Bali) and southern Philippines.
- **Western Ghats King Cobra (Ophiophagus kaalinga)** – A new endemic species.
    - **Range** – Western Ghats of India (Tamil Nadu to Maharashtra).
    - Named for its dark coloration ("kaalinga" in Kannada).
    - Found in mid-elevation rainforests (500-900m) up to 1800m.
- **Luzon King Cobra (Ophiophagus salvatana)** – Endemic to Luzon island, Philippines.
    - Named after the Tagalog word for king cobra
- **Conservation Impact** – Especially crucial for endemic species (Western Ghats and Luzon).
- Helps focus conservation efforts on specific populations.
- Addresses threats like habitat destruction and poaching.
- **Medical Significance** – Could improve snakebite treatment.
- May lead to better understanding of venom variations.
- Important for developing region-specific anti-venom.

2) Consider the following statements with respect to Candy Leaf

1. Candy Leaf is a plant recognized for its natural non-caloric sweetening characteristics.
2. It has therapeutic properties for diseases like endocrine, metabolic, immune and cardiovascular diseases, because of its effect on cellular signalling systems.

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

Answer : c

Candy Leaf (Stevia rebaudiana (Bertoni) Bertoni)

According to a new study, Candy Leaf has therapeutic properties due to its effect on cellular signalling systems.

- Candy Leaf (Stevia rebaudiana (Bertoni) Bertoni) a *plant recognized for its natural non-caloric sweetening characteristics*.
- It also has *therapeutic properties for diseases* like endocrine, metabolic, immune and cardiovascular diseases, because of its *effect on cellular signalling systems*.

- *Assam exports Stevia worldwide* and the North Eastern Council also highlighted stevia cultivation's potential to help the northeast Indian economy due to high demand and use.
- Stevia suppresses Protein Kinase C (PKC) phosphorylation, which alters downstream pathways that cause inflammation, a significant cause of endocrine metabolic and cardiovascular issues.
- This study shows Stevia's promise in this field for the first time.
- The study also found that active stevia molecules strongly interact with AMPK, highlighting the need for additional research.

3) Consider the following statements with respect to Schizophrenia

1. It is one of the most serious of all psychiatric disorders.
2. It has life-changing consequences, including social isolation, stigma, and diminished prospects of finding a partner.
3. Cobenfy is the first antipsychotic drug to treat schizophrenia by targeting cholinergic receptors instead of dopamine receptors

How many of the statements given above are correct?

a. Only one

b. Only two

c. All three

d. None of the above

Answer : c

Schizophrenia

The U.S. Food and Drug Administration (FDA) has recently approved a drug called Cobenfy to treat schizophrenia.

- Schizophrenia is a *chronic brain disorder*, being one of the most serious of all psychiatric disorders.
- It has life-changing consequences, including social isolation, stigma, and diminished prospects of finding a partner.
- **Symptoms** – Delusions, hallucinations, disorganized speech, trouble with thinking and lack of motivation.
- **Causes** – It is not a single cause has been identified for the schizophrenia.
- It is thought that an interaction between genes and a range of environmental factors may cause schizophrenia.
- Psychosocial factors may also affect the onset and course of schizophrenia.
- *Heavy use of cannabis* is associated with an elevated risk of the disorder.
- **Disease Impact** – It affects 1% of population lifetime prevalence and reduces life expectancy by 13-15 years.
- *5% suicide rate* and more common in men.
- Typically develops in late adolescence/early adulthood.
- **Treatment** – With treatment most symptoms of schizophrenia will greatly improve and the likelihood of a recurrence can be diminished.
- **Cobenfy** – The U.S. Food and Drug Administration (FDA) has recently approved a drug called ***Cobenfy to treat schizophrenia***.
- It is a combination of xanomeline and trospium chloride that has a novel mechanism of action that steers clear of older drugs' side-effects, too.
- It has side-effects of its own, of course.

4) Consider the following statements:

1. Geoengineering refers to any large-scale attempt to alter the Earth's natural climate system to

counter the adverse impacts of global warming.
2. Under Direct Air Capture (DAC) methods, carbon dioxide is sucked out through large “artificial trees” from ambient air and directed towards storage sites or utilisation.

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

Answer : c

Geoengineering

A new study has argued that spraying millions of tonnes of diamond dust in the Earth’s upper atmosphere every year could help cool down the Earth and combat global warming.

- Geoengineering refers to any large-scale attempt to alter the Earth’s natural climate system to counter the adverse impacts of global warming.
- The ***examples*** of geoengineering include:
- Spraying millions of tonnes of diamond dust in the Earth’s upper atmosphere every year could help cool down the Earth and combat global warming.
- Several other compounds, such as sulphur, calcium, aluminium, and silicon, have been suggested previously for doing the same job.
- The installation of space-based mirrors has also been proposed.
- *Solar Radiation Management (SRM)*, in which materials are proposed to be deployed in Space to reflect incoming solar rays and prevent them from reaching Earth.

Solar geoengineering refers to proposed approaches to cool the Earth by reflecting solar radiation back to space.

- Carbon Dioxide Removal (CDR) technologies include *Carbon Capture and Sequestration (CCS)* which offer quick-fix solutions for reducing emissions or temperatures, they are not particularly viable.
- The only method being tried out in practice is CCS.
- Carbon dioxide emitted, from industry or power plants, is “captured” at source and deposited deep below the Earth’s surface in suitable geological formations for long-term storage.
- Since carbon dioxide is not released into the atmosphere, overall emissions are reduced.
- Another option involves the captured carbon being used as an input for other industrial processes (known as Carbon Capture and Utilisation or CCU).
- In ***Carbon Capture***, Utilisation and Storage (CCUS), some carbon dioxide is utilised and the rest is stored underground.
- Under *Direct Air Capture (DAC) methods*, carbon dioxide is sucked out through large “artificial trees” from ambient air and directed towards storage sites or utilisation.
- Since these methods can potentially eliminate carbon dioxide accumulated over the years, the benefits are larger compared to CCS.

5) Anguiculus dicaprioi, sometimes seen in the news recently, is associated with?

a. A species of Bamboo which can be used as reusable straw.
b. A species of snake in the Western Himalayas.
c. A Nano compound that has ability to trace counterfeit currency.

d. A species of dancing frogs.

Answer : b

Anguiculus Dicaprioi

A new snake species recently found in Western Himalayas is named after Hollywood star Leonardo DiCaprio

- Anguiculus dicaprioi Di or Caprio's Himalayan snake is a colubrid snake that has been named after DiCaprio (Hollywood Actor) for his efforts to create awareness about biodiversity loss.
- Anguiculus dicaprioi is a member of the Colubridae, the largest family of snakes on the planet with 304 genera and 1,938 species.
- They account for almost 2/3rd of all living snakes in the world.
- Features – Dozens of teeth is "small sized", growing to around 22 inches.
- It has a "broad collar with small dark brown spots", a "robust skull", and a "steeply domed snout".
- They live at heights of around 6,000 feet above sea level.
- **Range** – Found in Chamba, Kullu and Shimla in *Himachal Pradesh*, Nainital in ***Uttarakhand*** and Chitwan National Park in ***Nepal***.
- The snake resembled ***Liopeltis rappi***, a species known to be found in the eastern Himalayas.