Daily Current Affairs Prelims Quiz 17-05-2023 (Online Prelims Test)

1) Consider the following statements with respect to Na-ion Batteries

1. Na-ion batteries are energy dense, non-flammable, and can operate well in cold temperatures.
2. Unlike Li-ion battery, Na-ion is a type of non-rechargeable battery.
3. Lithium (Li) is heavier and possesses a lower standard electrochemical potential than Sodium (Na).

Which of the statement(s) given above is/are correct?

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

Answer : a

Scientists have found an alternative environment-friendly Na-ion batteries for Li-batteries

Na-ion Batteries

- The sodium-ion (Na-ion) battery is a type of rechargeable battery that uses sodium ions (Na+) as its charge carriers.
- Na-ion batteries are energy dense, non-flammable, and can operate well in cold temperatures.
- Sodium-ion batteries can use aqueous as well as non-aqueous electrolytes.

Na-ion vs Li-ion

- Na is thrice heavier and possesses a lower standard electrochemical potential than Li.
- Both types of batteries use a liquid electrolyte to store and transfer electrical energy, but differ in the type of ions they use.
- Na-ion battery is Cost-effective and using raw materials that is abundant from earth compared to Li-ion batteries.
- Both types of batteries are rechargeable.

Na-ion	Li-ion
• It is more abundant • It is cheaper • Less reactive • High energy density • Longer battery life • Longer life-span • More eco-friendly	• It is less abundant • It is costlier • Highly reactive • Low energy density • Smaller battery life • Shorter life-span • Less eco-friendly

2) Consider the following statements with respect to Kuki Tribes

1. Kuki Tribes are confined only to the North eastern states of India.
2. Kuki Tribes are designated as Particularly Vulnerable Tribal Groups (PVTGs) in Manipur.
3. The Chin people of Myanmar and Mizo people of Mizoram are a group of related individuals with respect to Kuki people.

Which of the statement(s) given above is/are correct?

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

Answer : b

Kuki Tribes demanded for a separate Kukiland

Kuki Tribes

- The Kuki ethnic group, which originated in the Mizo hills, includes the Chins of Myanmar, the Mizos of Mizoram, and the Kukis of Bangladesh.
- The three are collectively known as Zo people.
- Kuki Tribes are believed to be the native people of Mizoram.
- Kuki tribes inhabited in the regions of Myanmar, Manipur, Assam and Mizoram of India and Bangladesh.
- Around 50 tribes of kuki people in India are recognized as scheduled tribes based on dialect spoken and region of origin.
- Kuki Tribes are mainly followers of Christianity.
- Traditionally the Kuki lived in small settlements in the jungles, each ruled by its own chief called Lal.
- Kuki Tribes are *not* designated as Particularly Vulnerable Tribal Groups (PVTGs) in Manipur.

3) Consider the following statements with respect to Liquors

1. Liquor is an alcoholic beverage mainly made up of methanol.
2. Spurious liquor is characterized by the liquid mixture containing methanol as well as Ethanol.
3. Food Safety and Standards (Alcoholic Beverages) Regulations, 2018 stipulate the maximum permissible quantity of methanol in different liquors.

Which of the statement(s) given above is/are correct?

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

Answer : c

22 people had died after consuming spurious liquor in Chengalpattu and Villupuram districts of Tamil Nadu

Liquors

- Ethanol is a clear, colorless liquid.

- It is also called ethyl alcohol, grain alcohol, drinking alcohol, is an organic compound.
- Liquor is differentiated by its alcohol content from the 5% or so of beer to the 12% or so of wine to the 40% or so of distilled spirits (all by volume).
- Ethanol is a psychoactive drug in low doses, reduces the level of neurotransmission in the body, leading to its typical intoxicating effects.
- **Spurious liquor** – It is characterised by the liquid mixture containing methanol as well as Ethanol.
- The Food Safety and Standards (Alcoholic Beverages) Regulations 2018 stipulate the maximum permissible quantity of methanol in different liquors.

Methanol

- Hazardous Chemical Rules 1989 includes methanol as a hazardous one.
- The accumulation of formic acid in methonal over time leads to a baneful condition called metabolic acidosis.

4) Consider the following statements with respect to Calcium-41

1. Calcium-41 is a rare long-lived radio-isotope of Calcium.
2. It is used in radiometric dating to determine the age of objects older than 50,000 years.
3. Calcium-41's half-life is lower than the Carbon-14 which is used in conventional carbon dating method.

Which of the statement(s) given above is/are correct?

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

Answer : c

A new study shows a way to use calcium-41 the same way carbon-14 has been used in carbon-dating, but with several advantages.

Radiometric Dating

- When an organic entity is alive, its body keeps absorbing and losing carbon-14 atoms.
- When it dies, this process stops and the extant carbon-14 starts to decay away.
- Using the difference between the relative abundance of these atoms in the body and the number that should've been there, researchers can estimate when the entity died.
- Carbon-14 has a half-life of 5,730 years.
- Carbon-14 atoms occur once in around 10-12 carbon atoms.

Ca-41

- Calcium-41 has a half-life of 99,400 years.
- It's produced when cosmic rays from space smash into calcium atoms in the soil, and is found in the earth's crust, opening the door to dating fossilised bones and rock.
- Calcium-41 is rarer, occurring once in around 10-15 calcium atoms.

C-14 vs Ca-41

- Calcium-41's half-life (99,400 years) is higher than the carbon-14's half-life (5,730 years)

which is used in conventional carbon dating method.
- C-14 uses the carbon content in an organic matter to determine the age and Ca-41 uses the calcium atoms to determine the age when exposed to cosmic rays.

5) Consider the following statements with respect to Trachoma

1. It is a chronic viral infection that may even lead to blindness.
2. WHO recommended SAFE strategy to eliminate Trachoma.
3. India has been granted trachoma free status by WHO in 2022.

Which of the statement(s) given above is/are correct?

a. 2 only

b. 1 and 2 only

c. 1 and 3 only

d. 1, 2 and 3

Answer : a

Benin, Mali in Africa defeat trachoma as public health problem

Trachoma

- Trachoma is a disease of the eye caused by infection with the bacterium *Chlamydia trachomatis*.
- In its early stages, trachoma causes conjunctivitis (pink eye).
- Blindness from trachoma is irreversible.
- Trachoma infection is transmitted by direct or indirect transfer of eye and nose discharges of infected people.
- It particularly affects young children, who harbour the principal reservoir of infection.

India’s status

- According to WHO, the prevalence of trachoma should be less than 5% to mark it as eliminated.
- In its initial study, AIIMS has noted the prevalence of around 3.5% in India.
- WHO is yet to declare India trachoma free.

World Health Organization on Trachoma

- WHO-recommended SAFE strategy to eliminate trachoma. It includes
  - Surgery to prevent blindness in those who have trichiasis/entropion.
  - Antibiotics (tetracycline ointment or azithromycin) to combat active chlamydial infection.
  - Facial hygiene.
  - Environmental change.