



Daily Current Affairs Prelims Quiz 31-07-2022 & 01-08-2022 - (Online Prelims Test)

1) Consider the following statements with respect to Green Hydrogen

1. Green hydrogen can be used in steel industry to decarbonize steel and in the agriculture sector to manufacture green fertilizers.
2. Presently, most of the hydrogen used in the country comes from fossil fuels through a process called the steam methane reforming route.
3. Green Hydrogen can also be produced from biomass.

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

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

Answer : d

Green Hydrogen

- The Indian Institute of Science (IISc), Bengaluru, announced the development of new technology to produce green hydrogen from biomass.
- The technology is said to produce 100 grams of hydrogen from one kilogram of biomass.
- The process consists of two steps.
- First, the biomass would be converted into syngas, a hydrogen-rich fuel gas mixture through a novel reactor using oxygen and steam.
- And then, the pure hydrogen would be generated from syngas using an indigenously developed low-pressure gas separation unit.
- Green hydrogen can be used in industries, including the steel industry to decarbonize steel, and in the agriculture sector to manufacture green fertilizers, said the release.
- Steam methane reforming (SMR) is a process in which methane from natural gas is heated, with steam, usually with a catalyst, to produce a mixture of carbon monoxide and hydrogen used in organic synthesis and as a fuel.
- In energy, SMR is the most widely used process for the generation of hydrogen.

2) Consider the following statements regarding the Space Liability Convention of 1972:

1. The Launching States are liable for the damage caused by their space objects both on the surface of the earth and in space.
2. The convention does not hold the Launching States responsible for the space junk crashing back to earth.

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

- a. 1 only
- b. 2 only

- c. Both 1 and 2
- d. Neither 1 nor 2

Answer : c

Space Liability Convention of 1972

- The Space Liability Convention of 1972 defines responsibility in case a space object causes harm.
- The treaty says that a launching State shall be absolutely liable to pay compensation for damage caused by its space objects on the surface of the earth or to aircraft, and liable for damage due to its faults in space.
- The Convention also provides for procedures for the settlement of claims for damages.
- However, there is no law against space junk crashing back to earth.
- In 1979, re-entry of NASA's 76-ton Skylab had scattered debris over uninhabited parts of Australia, and the space agency was fined \$400 for littering by a local government.
- The only settlement using the Liability Convention was between the erstwhile Soviet Union and Canada over debris of Soviet Cosmos 954 falling in a barren region.
- Canada was paid CAD 3 million in accordance with international law for cleaning up the mess.

3) Consider the following pairs of bilateral military exercises India is part of:

Exercise	Countries
1. AL NAJAH-IV	Iraq
2. VINBAX	Vietnam
3. Nomadic Elephant	Sri Lanka
4. Garuda Shakti	Indonesia

How many of the above pairs are matched correctly?

- a. Only one pair
- b. Only two pairs
- c. Only three pairs
- d. All four pairs

Answer : b

Bilateral Military Exercises

- AL NAJAH-IV - India and Oman
- VINBAX - India and Vietnam
- Nomadic Elephant - India and Mongolia
- Garuda Shakti - India and Indonesia

4) Consider the following statements:

1. AzaadiSat is a satellite mission with the vision to encourage Government school children with a basic understanding and knowledge of space.
2. The mission is an all-women mission and is in line with this year's UN theme, Women in Space.
3. The Department of Space, ISRO, has partnered with and funded this mission.

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

- a. 1 and 2 only
- b. 1 and 3 only
- c. 2 and 3 only

d. 1, 2 and 3

Answer : a

AzaadiSat

- It is a satellite mission with the ambitious vision to encourage Government school children (from economically weak backgrounds) with the basic understanding and knowledge of space and tutor them to build a small experiment and launch it to the edge of space through a "Balloon Satellite" or through an "Orbital Satellite".
- The significance of this project is that it has been conceptualized to pay our tribute to mark the 75th anniversary of Independence, Azaadi Ka Amrit Mahotsav.
- The selected students are predominantly from classes 8th -12th.
- This is a 1st of its kind Space mission with an 'All women concept' to promote Women in STEM as this year's UN theme is "Women in Space".
- Niti Aayog has partnered for this project to bring this opportunity to the Government School Girl children across India.
- Hexaware is supporting by funding the project.

5) Consider the following statements regarding Hybrid Electric Vehicles (HEV):

1. They use both an internal combustion engine(ICE) (petrol or diesel) and electric motors.
2. A parallel HEV uses only the electric motor to drive the wheels, while the ICE powers the generator, which in turn recharges the battery.
3. A series HEV, based on the driving condition, uses the best power source to power the vehicle.

Which of the above statement(s) is/are **incorrect**?

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

Answer : d

Hybrid Electric Vehicles (HEV)

- A hybrid electric vehicle (HEV) uses an ICE (a petrol/diesel engine) and one or more electric motors to run.
- It is powered by the electric motor alone, which uses energy stored in batteries, by the ICE, or both.
- The powertrain of the HEV is more complex than a regular ICE-powered car as it has EV components and a conventional ICE.
- That means a typical HEV will have a low-voltage auxiliary battery, a traction battery pack to store electricity for the electric motor, an electric generator, an AC/DC converter, a power electronics controller, a thermal system to maintain working temperature, an ICE, a fuel tank, a fuel filler, a transmission, and an exhaust system.

How do HEV powertrains work?

- HEV powertrains are designed to power cars in a series, parallel, or series-parallel (power split) method.
- A series HEV uses only the electric motor to drive the wheels, while the ICE powers the generator, which in turn recharges the battery.
- A parallel HEV, based on the driving condition, uses the best power source to power the vehicle.
- It will alternate between the electric motor and the ICE to keep the car moving.

- A series-parallel HEV offers a combination of both models and allows to split power, wherein power is routed from the ICE alone or from the battery to the electric motor to drive the vehicle.
- Moreover, in all three designs, the battery is charged through regenerative braking technology.

Regenerative Braking System (RBS)

- A regenerative braking system (RBS) used in automotive applications has several advantages like better braking efficiency in stop-and-go traffic which enhances fuel economy and also helps in reducing carbon emissions.
- Besides, RBS also helps in energy optimization resulting in minimum energy wastage.



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