QUIZ OF THE DAY

Refer to The Hindu News Analysis Video (YouTube)

Date: 22nd Dec 2022

Q1. Consider the following statements about Green hydrogen:

1. Green hydrogen is defined as hydrogen produced from biomass like trees and plants materials.
2. Green hydrogen energy is vital for India to meet its Nationally Determined Contribution (INDC).

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

a) 1 only
b) 2 only
c) Both 1 and 2
d) None of these

Q2. SANKALP and STRIVE scheme are related to which sector

a) Health
b) Education
c) Skilling
d) Public Administration

Explanation and Solutions

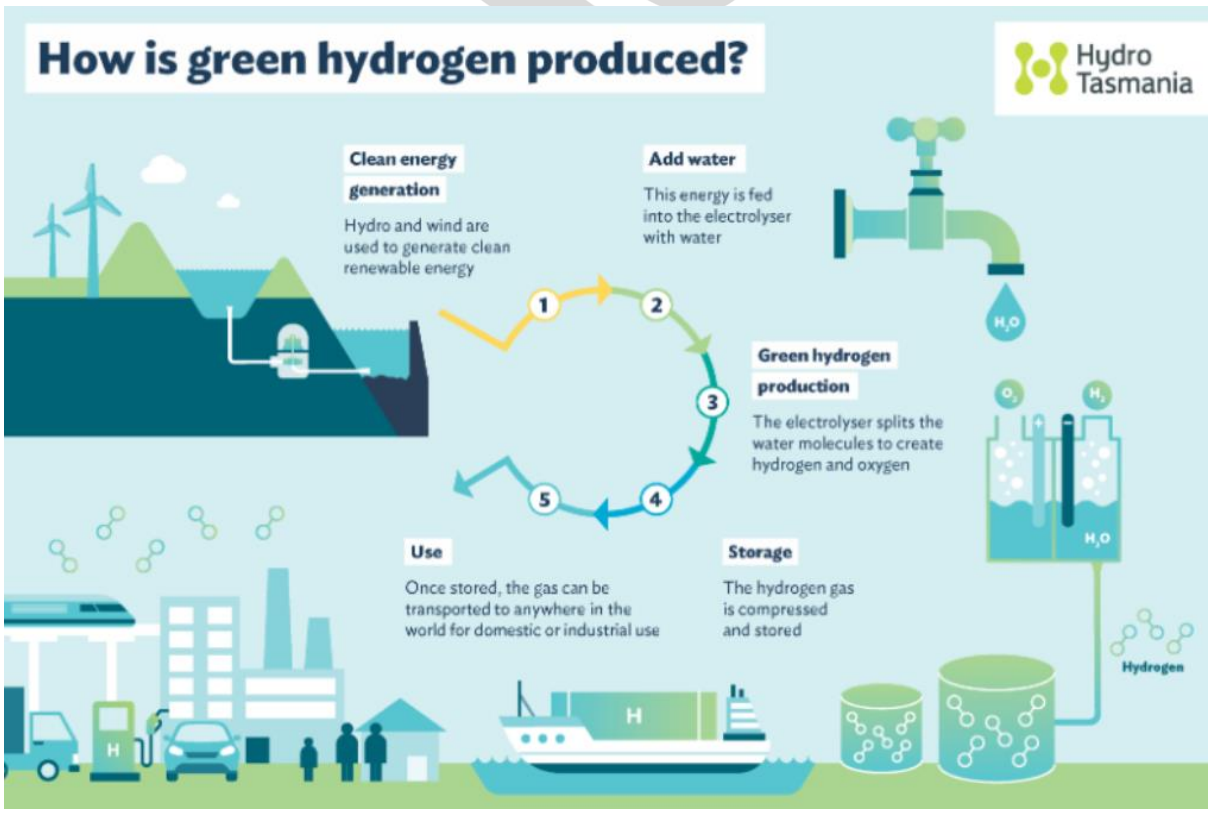
Q1. Answer: B

Explanation:

WHAT IS GREEN HYDROGEN AND HOW IS IT OBTAINED?

This technology is based on the generation of hydrogen — a universal, light and highly reactive fuel — through a chemical process known as electrolysis. This method uses an electrical current to separate the hydrogen from the oxygen in water. If this electricity is obtained from renewable sources we will, therefore, produce energy without emitting carbon dioxide into the atmosphere.

As the IEA points out, this method of obtaining green hydrogen would save the 830 million tonnes of CO2 that are emitted annually when this gas is produced using fossil fuels. Likewise, replacing all grey hydrogen in the world would require 3,000 TWh/year from new renewables — equivalent to current demand of Europe. However, there are some questions about the viability of green hydrogen because of its high production cost; reasonable doubts that will disappear as the decarbonisation of the earth progresses and, consequently, the generation of renewable energy becomes cheaper.



HYDROGEN AS CLEAN ENERGY

Hydrogen is the most abundant chemical element in nature. As noted by the IEA, the global demand for hydrogen for use as a fuel has tripled since 1975 and reached 70 million tonnes a year in 2018. In addition, green hydrogen is a clean energy source that only emits water vapour and leaves no residue in the air, unlike coal and oil.

Hydrogen has a long-standing relationship with industry. This gas has been used to fuel cars, airships and spaceships since the beginning of the 19th century. The decarbonisation of the world economy, a process that cannot be postponed, will give hydrogen more prominence. In addition, if its production costs fall by 50 % by 2030, as predicted by the World Hydrogen Council, we will undoubtedly be looking at one of the fuels of the future.

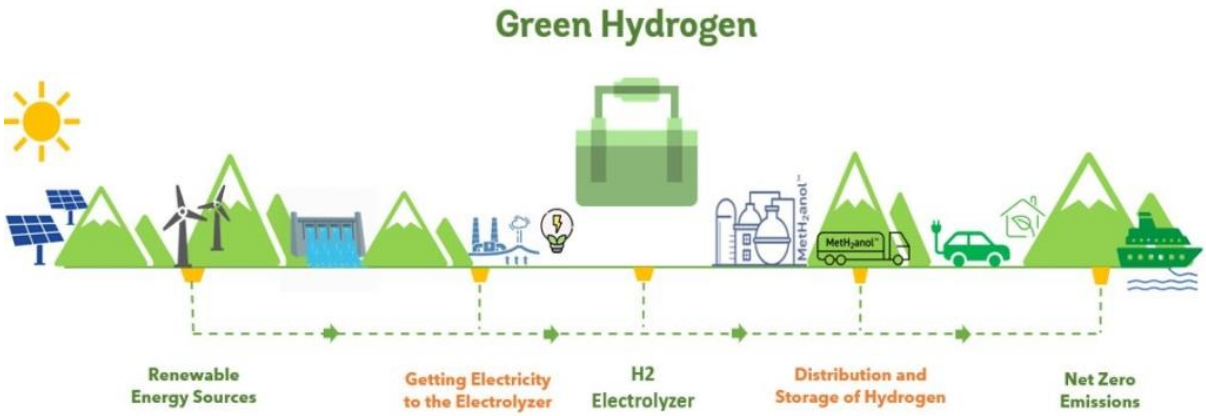
ADVANTAGES AND DISADVANTAGES OF GREEN HYDROGEN

This energy source has pros and cons that we must be aware of. Let's go over some of its most important good points:

- 100 % sustainable: green hydrogen does not emit polluting gases either during combustion or during production.
- Storable: hydrogen is easy to store, which allows it to be used subsequently for other purposes and at times other than immediately after its production.
- Versatile: green hydrogen can be transformed into electricity or synthetic gas and used for commercial, industrial or mobility purposes.

However, green hydrogen also has negative aspects that should be borne in mind:

- High cost: energy from renewable sources, which are key to generating green hydrogen through electrolysis, is more expensive to generate, which in turn makes hydrogen more expensive to obtain.
- High energy consumption: the production of hydrogen in general and green hydrogen in particular requires more energy than other fuels.
- Safety issues: hydrogen is a highly volatile and flammable element and extensive safety measures are therefore required to prevent leakage and explosions.



IMPACT OF GREEN HYDROGEN

Hydrogen as a fuel is a reality in countries like the United States, Russia, China, France and Germany. Others like Japan are going even further and aspire to become a hydrogen economy. Below we explain what the impact will be in the future:

Electricity and drinking water generator

These two elements are obtained by reacting hydrogen and oxygen together in a fuel cell. This process has proved very useful on space missions, for example, by providing crews with water and electricity in a sustainable manner.

Energy storage

Compressed hydrogen tanks are capable of storing energy for long periods of time and are also easier to handle than lithium-ion batteries because they are lighter.

Transport and mobility

Hydrogen's great versatility allows it to be used in those consumption niches that are very difficult to decarbonise, such as heavy transport, aviation and maritime transport. There are already several projects under way in this area, such as Hycarus and Cryoplane, which are promoted by the European Union (EU) and aim to introduce it in passenger aircraft.

Q2. Answer: C

Explanation:

The Cabinet Committee on Economic Affairs has approved two new schemes in 2019: Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) and Skill Strengthening for Industrial Value Enhancement (STRIVE) to boost the Skill India Mission. Both are central sector with half of the scheme outlay as loan assistance from the World Bank.

The schemes are being implemented to satisfy the long-felt need for a national architecture for promoting convergence, regulating skill training, catalyzing industry efforts in vocational training space and ensuring effective governance.

The schemes shall set up national bodies for regulation of accreditation and certification in both long and short term Vocational Education and Training (VET). The architecture shall converge the efforts of the state, central and private sector institutions for creating a better impact. The schemes shall thus provide the required momentum for the National Skill Development Mission, 2015 and various other missions under the scheme.