

Explanation Of Current Test 5

Question 1

Answer : D

- Compressed Natural Gas (CNG) is methane (CH_4) stored at high pressure. CNG as a fuel can be used in place of gasoline, diesel fuel and propane (C_3H_8) / LPG and its combustion produces fewer undesirable gases than the other mentioned fuels. Combustion is a high temperature exothermic chemical reaction between a fuel and an oxidant that produces oxidized products.
- HCNG is a mixture of compressed natural gas (CNG) and some % Hydrogen by energy.

$\text{HCNG} = \text{CNG} + \text{H}_2$

- HCNG which may be used as a fuel of Internal Combustion Engine (ICE) is considered a cleaner source of fuel, more powerful and offers more mileage than even CNG.
- Trials of HCNG have been held in countries like US, Brazil and South Korea.
- Delhi Government has tied up with Indian Oil Corporation Limited to study the technology and infrastructure needs to induct 50 HCNG buses on a trial basis. IOCL has plans to mix (18-20) % Hydrogen in these buses.
- The shift to HCNG buses in future will be the second big step in Delhi for public transport buses towards a cleaner fuel after the shift to CNG buses in 2002.
- Delhi Government was earlier planning to shift towards electric buses to curb pollution. But, following the Supreme Court's order to explore new cleaner fuels, it has made plans to run HCNG buses.
- There has been a constant stress on reducing the Carbon footprints and stopping the effects of climate change. This has forced the research towards alternative fuels.

Advantages of HCNG:

- HCNG reduces emissions of CO up to 70%.
- Enables up to 5 % savings in fuel.
- First step towards future Hydrogen economy.
- Engines can be calibrated to release lower amounts of NO.
- Engines need minimum modification to run on HCNG.
- Ideal fuel for high load applications and heavy-duty vehicles.
- Better performance due to higher Octane rating of H_2 .

Disadvantages of using HCNG:

- Determining the most optimized H_2 / NG (Natural Gas) ratio.
- It requires new infrastructures for preparing HCNG.
- Many steps need to be taken for commercializing it at a large scale.

- Current cost of H₂ is more than the cost of Natural Gas. So, HCNG's cost is more than CNG.

Question 2

Answer : C

Type of hydrogen depend up on the process of its formation: Green hydrogen is produced by electrolysis of water using renewable energy (like Solar, Wind) and has a lower carbon footprint. Electricity splits water into hydrogen and oxygen. By Products : Water, Water Vapor. Brown hydrogen is produced using coal where the emissions are released to the air. Grey hydrogen is produced from natural gas where the associated emissions are released to the air. Blue hydrogen is produced from natural gas, where the emissions are captured using carbon capture and storage.

Question 3

Answer: A

- United Nations Educational, Scientific and Cultural Organization (UNESCO) has included Mumbai and Hyderabad in its network of 'Creative Cities' among the 66 cities selected on the occasion of World Cities Day 2019 (31st October).
 - With the addition of 66 new cities, the UNESCO Creative Cities Network counts a total of 246 cities.
- Mumbai has been designated as Creative City of Films and Hyderabad as a Creative City of Gastronomy.
 - Earlier, Indian cities like Chennai and Varanasi have been included in UNESCO Cities of Music while Jaipur has been included in the City of Crafts and Folk Arts.

Question 4

Answer : C

Kalbeliya is Folk Dance of Rajasthan

Question 5

Answer : B

The International Renewable Energy Agency is an intergovernmental organisation mandated to facilitate cooperation, advance knowledge, and promote the adoption and sustainable use of renewable energy.

