

1. BS VI Vehicles

Topic: Economy

Mechanics of BS-VI

▶ Bharat Stage VI (BS-VI) norms will take effect in India from **1 April 2020**

▶ BS-VI is the **most advanced emission standard** for automobiles and is equivalent to Euro-VI norms

▶ In order to **reduce vehicular pollution**, the government decided to leapfrog from BS-IV to BS-VI

▶ The new norms make on-board diagnostics (**OBD**) **mandatory** for all vehicles



▶ The OBD unit can identify likely **areas of malfunction** by means of default codes stored on a computer

▶ For two-wheelers, manufacturers will introduce a **fuel injection system**—a first in India

In News: The Union Ministry of Road Transport and Highways has allowed retrofitment of CNG and LPG kits in petrol and diesel vehicles that are compliant with BS-VI emission norm.

More on the Topic:

- Bharat stage (BS) emission standards are laid down by the government to regulate the output of air pollutants from internal combustion engine and spark-ignition engine equipment, including motor vehicles.
- The central government has mandated that vehicle makers must manufacture, sell and register only BS-VI (BS6) vehicles from April 1, 2020.
- The abbreviation BS, as mentioned above, **refers to 'Bharat Stage'**. It is prefixed to the iteration of the actual emission norms. The primary rules with the soubriquet Asian nation 2000 were introduced in the year 2000, with the second and third iterations being introduced in 2001 and 2005 with the soubriquet BSII (BS2) and BSIII (BS3), respectively.
- The fourth iteration, BSIV, was introduced in 2017 and therefore the delay between the introduction of BS3 and BS4 resulted in fast-tracking the BSVI or BS6 emission norms rather than BSV (BS5) norms.

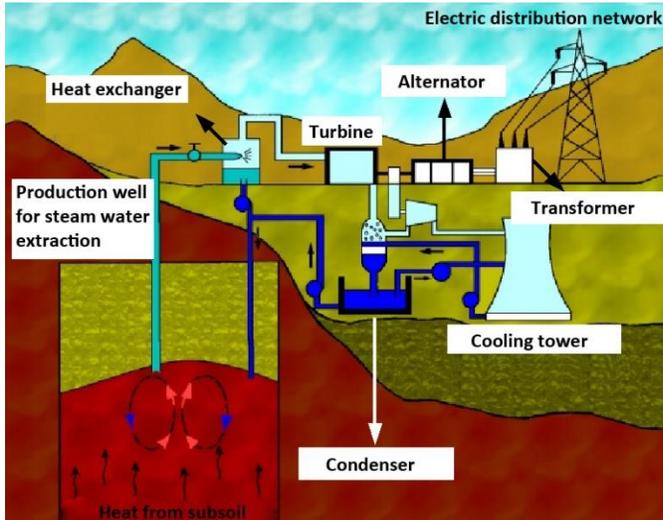
BS-VI Standards:

- BS-VI emission norms **set the maximum permissible levels for pollutants that an automotive or a two-wheeler exhaust can emit.**
- **Sulphur content in BS-IV fuel has five times lower** (10ppm) as compared to sulphur content in BS-IV fuel (50ppm).
- The nitrogen oxide emission level for diesel engines and petrol engines will decline by 70% and 25% with the BS-VI standards.
- It also introduced Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR).

Source: Indian Express

2. Ladakh Geothermal Power Plant

Topic: Science and Technology



In News: ONGC has started drilling its first well at Puga (Ladakh) to generate electricity using geothermal power.

More on the Topic:

- The project, being developed by the Oil and Natural Gas Company (ONGC), is potentially the first geothermal power plant in India.
- For the first phase of the project, the plan is to drill two wells at approximately 1000 meters depth to power a small-scale 1-MW pilot plant.
- Geothermal energy is heat within the earth.

Geothermal Energy:

- Geothermal energy is the **thermal energy in the Earth's crust which originates from the formation of the planet and from radioactive decay of materials.**
- The high temperature and pressure in Earth's interior cause some rock to melt and solid mantle to behave plastically.
- To produce the geothermally generated electricity, wells, 1.6 kilometres deep or more holes are drilled into underground reservoirs.
- **These wells tap steam and hot water to drive the turbines.** The turbines are in turn linked to electricity generators.

Potential Geothermal Reservoirs in India:

- Puga- Ladakh
- Tatapani- Chhattisgarh
- Godavari

- Manikaran- Himachal Pradesh
- Bakreshwar- West Bengal
- Tuwa- Gujarat
- Unai- Maharashtra
- Jalgaon- Maharashtra
- Rajgor and Munger- Bihar

Source: Indian Express

3. UPI

Topic: Economy



In News: Amid reports that there may be possibility of UPI transactions carrying a service charge, the government has recently clarified that there is no consideration in Govt to levy any charges for UPI services.

More on the Topic:

- Unified Payments Interface (UPI) is an instant real-time payment system **developed by National Payments Corporation of India (NPCI)**.
- UPI is a system that **powers multiple bank accounts into a single mobile application** (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood.
- It facilitates **inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions**.
- **UPI is currently the biggest among the National Payments Corporation of India (NPCI) operated systems** including National Automated Clearing House (NACH), Immediate Payment Service (IMPS), Aadhaar enabled Payment System (AePS), Bharat Bill Payment System (BBPS), RuPay etc.
- The top UPI apps today include PhonePe, Paytm, Google Pay, Amazon Pay and BHIM, the latter being the Government offering.

Significance of UPI:

- **Immediate money transfer** through mobile device round the clock 24*7 and 365 days.

- Single mobile application for accessing different bank accounts.
- **Single Click 2 Factor Authentication** – Aligned with the Regulatory guidelines, yet provides for a very strong feature of seamless single click payment.
- **Virtual address of the customer** for Pull & Push provides for incremental security with the customer not required to enter the details such as Card no, Account number; IFSC etc.
- Raising Complaint from Mobile App directly.

NPCI:

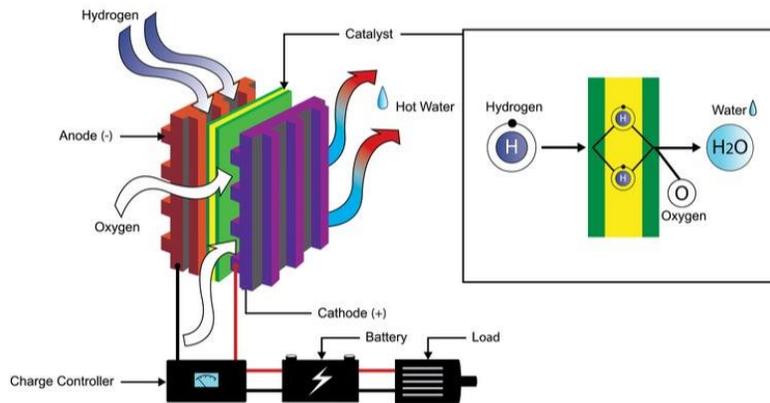
- The National Payments Corporation of India is **the specialised division of Reserve Bank of India** which is under the jurisdiction of Ministry of Finance.
- This organisation was founded in the year 2008 under **the Payment and Settlement Systems Act, 2007**. NPCI has been incorporated as a ‘not for profit’ company under section 8 of Companies Act 2013.

Source: Hindu

4. Hydrogen Fuel Cell Bus

Topic: Science and Technology

Hydrogen Fuel Cells



In News: Indigenously developed Hydrogen Fuel Cell Bus was unveiled recently at Pune.

More on the Topic:

- The fuel cell **utilizes Hydrogen and Air to generate electricity to power the bus.**
- Hydrogen Fuel Cell Bus is **an excellent means to eliminate the on-road emissions** from this sector. Since, 12-14% CO2 emissions and particulate emissions come from diesel powered heavy commercial vehicles and these are decentralised emissions and hence difficult to capture.

- **The only effluent from the bus is water**, therefore making it possibly the most environmentally friendly mode of transportation.
- **The operational costs in Rupee per kilometre for fuel cell trucks and buses are lower than diesel powered vehicles**, the high efficiency of fuel cell vehicles and the high energy density of hydrogen ensures the same.

About Hydrogen Fuel Cell:

- A hydrogen fuel cell uses **the chemical energy of hydrogen to produce electricity**. It is a clean form of energy with electricity, heat and water being the only products and by products.
- Hydrogen fuel cells generate electricity using a chemical reaction. Each fuel cell has two electrodes; a negative anode and a positive cathode.
- The reaction to produce the electricity happens at these electrodes, with an **electrolyte carrying electrically charged particles between them and a catalyst to speed up the reactions**.
- Hydrogen acts as the basic fuel in a hydrogen fuel cell, but the cell also needs oxygen to work.

Source: Indian Express

5. Pandurang Khankhoje

Topic: Modern Indian History



In News: The Lok Sabha Speaker Om Birla will travel to Mexico to unveil the statue of freedom fighter and agriculturalist Pandurang Khankhoje.

More on the Topic:

- The Maharashtra-born revolutionary has close ties to Mexico as he sought refuge there due to his association with the Ghadar Party.
- Khankhoje's earliest nationalist work abroad dates back to the time around 1908 when he, along with Pandit Kanshi Ram founded the **Indian Independence League in Portland, USA**.

- His works also brought him close to other Indian nationalists in United States at the time, including Tarak Nath Das.
- In the years preceding World War I, Khankhoje was one of **the founding members of the Pacific coast Hindustan association, and subsequently founded the Ghadar Party.** He was at the time one of the most influential members of the party.
- He met Lala Har Dayal in 1911. He also enrolled at one point in a West Coast military academy.
- As he was facing possible deportation from Europe and could not go to India, he sought shelter in Mexico.
- Soon, in part due to his prior friendship with Mexican revolutionaries, he was appointed a professor at the National School of Agriculture in Chapingo, near Mexico City.
- **He researched corn, wheat, pulses and rubber, developing frost and drought-resistant varieties, and was part of efforts to bring in the Green Revolution in Mexico.**
- Later on, the American agronomist Dr Norman Borlaug, called the Father of the Green Revolution in India, brought the Mexican wheat variety to Punjab.
- Khankhoje was revered as an agricultural scientist in Mexico.

Source: Business Standard

6. Niger Seed Cultivation

Topic: Agriculture



NIGER SEEDS

In News: India's Niger seed cultivation is declining.

More on the Topic:

- **Niger is a minor oilseed crop** that is grown predominantly under rainfed conditions.
- Native to Ethiopia, Eritrea and Malawi, niger seeds are also grown in India.
- Niger seeds resemble sunflower seeds in shape, but are smaller in size and black.
- The crop neither requires much water nor fertilisers and pesticides.
- **It is one of the 14 kharif crops for which the Centre releases a minimum support price (MSP) every year.**

- In 2020-21, the cultivated area shrunk by 80 per cent to a little over 0.1 million ha, the lowest among the 14 kharif crops with MSP. Paddy, the most widely grown kharif crop, is cultivated on almost 40 million ha.

Reasons for Decline:

- Niger plants are regularly destroyed by amarbel, a twining parasitic plant known as *Cuscuta chinensis*.
- Government research institutes have developed high-yielding, amarbel-resistant niger varieties, but these seldom reach farmers.
- Most farmers informally procure seeds from private growers or fellow farmers. Such seeds aid in the spread of amarbel weeds
- The existing formal system of seed production had been hardly sufficient to cope with the seed requirement.
- Niger is an important tribal food and tribal food has not been a priority for the government.

Source: Business Standard

7. Gene Modulation

Topic: Science and Technology



In News: Gene modulation was used to enhance productivity of a chinese rice variety (containing a gene *OsDREB1C*) by 40%.

More on the Topic:

- Gene modulation refers to **the process of temporarily altering gene expression levels without making heritable changes to the underlying cellular DNA.**
- The most common gene modulation techniques involve silencing gene function (knockdown) via RNAi or CRISPRi techniques, or increasing expression (activation/overexpression) via cDNA, ORF or CRISPRa techniques.

Source: Business Standard



RV Educational Institutions®
RV Training Academy
(Sardar Vallabh Bhai Academy)

No 18, B.B.M.P Building
Kanakapura road,
Tata Silk Farm, Jayanagar,
Bengaluru, Karnataka-560028

+91 89710 43904

rvta@rvei.edu.in

Go, change the world