10) Define Smart Grid, Explain the need of smart grid?

Smart Grid:

A smart Grid is an electricity Network based on Digital Technology that is used to supply eletricity to consumers via Two-Way Digital Communication. This system allows for monitoring, analysis, control and communication within the supply chains to help improve efficiency, reduce the ~~angry~~ energy consumption and cost and ~~renewable~~ Maximise the transparency and reliability of the energy supply chain.

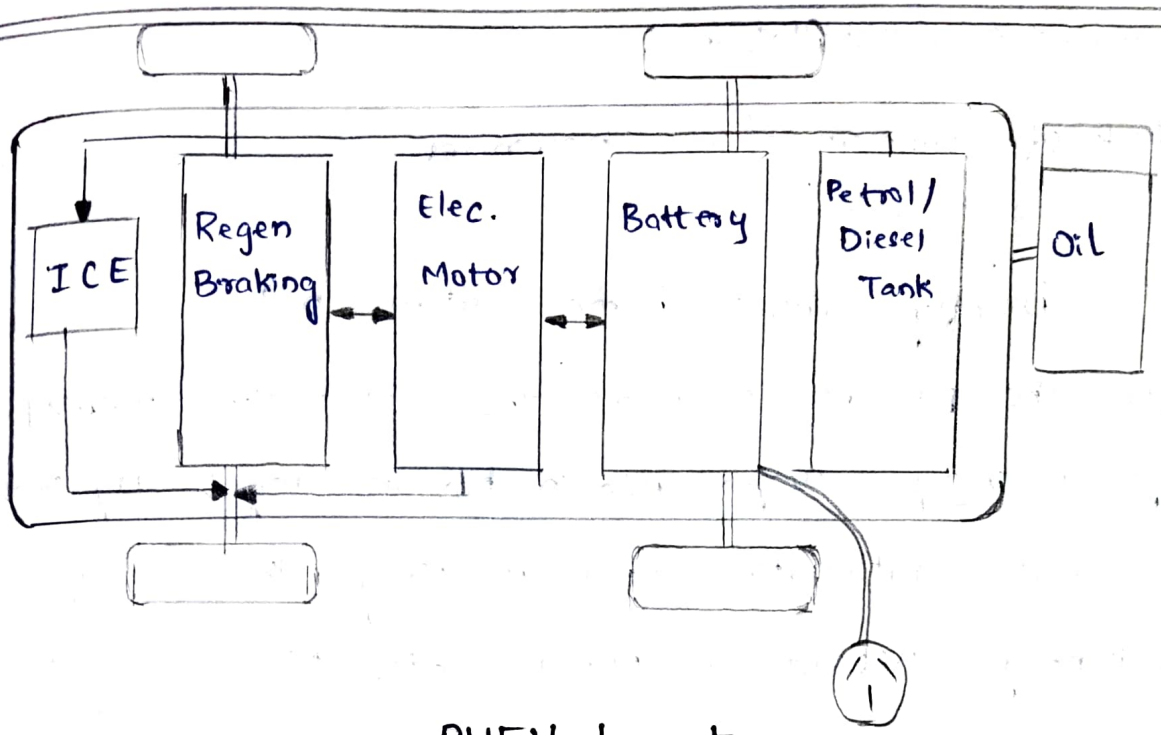
Need for Smart Grid:

A smart grid distribution system, whose objective is to develop a power grid more efficient and reliable, improving safely and quality of supply in accordance with the requirement of the digital age

→ Higher Operating efficiency.
→ Greater resiliency against attacks and natural disastes.
→ Automated metering and rapid power resolution
→ Provided greater customer participation.

2) Explain about plug in Hybrid Electric Vehicle?

Plug-In Hybrid Electric vehicles (PHEVs) are being introduced in the market as an option for transportation. The introduction of HEVs into the transportation sector can be viewed as a good start, but the range is not adequate. So PHEVs have started penetrating the market, in which the batteries can be charged at any point where a charging outlet is available. For HEVs, the impact on the grid is not a matter of concern, since HEVs are charged from their internal combustion engine by regeneration braking, whenever the driver applies a brake. As a result batteries in HEVs maintain a certain amount charge (70-80%). In the case of PHEVs the car batteries are used steadily while driving in order to maximize fuel efficiency and the battery charge decreases over time.



PHEV Layout

3) What are advantageous and disadvantages of smart grid in four points?

Advantages of Smart Grid:

* Improved Reliability
* Higher asset utilization
* Reduced Operating costs for utilities
* Increased efficiency and conservation
* Lower greenhouse gas (GHG) and other emissions.

Disadvantages of Smart Grid:

* Regulatory challenges
* Data Usage and Vulnerability
* Integration Complexity.

* Expensive Installation

* Risk of Communication challenges.

4) Write briefly about home automation?

In the present scenario, the automation industry plays a very major role in human day-to-day living. The word automation mean making the use of machinery instead of human efforts as well as it may be defined as the technique of making an apparatus, a process, or a system that operates automatically.

Home Automation is a system that allows users to control various appliances of varying kinds and also makes controlling of home appliances easier and saves energy. Nowadays, home automation is used more and more. On the other, it provides increased comfort especially when everyone is busy with their work. Home automation installed in houses does not only increased comfort but also allows centralised control of heating, ventilation, air-condition, and lighting.

Some of the most common applications of home automation are as follows-

* Heating, Ventilation, and air conditioning.
* Lighting control system.
* Occupancy-aware control system.
* Leak detection
* Smoke sensors
* Air quality control
* Smart Kitchen.