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(Deemed to be University under section 3 of UGC Act, 1956)

DIGITAL ASSIGNEMENT-3

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Literature background for planned work

Charge up:

Air pollution is one of the greatest threats in the global context, and in a country comprising of world second largest population of almost a 130 million (equivalent to 17.7% of world's population), people are finding problematic to breath in most of the metropolitan cities. India is facing some serious air pollution issues since a decade and it is increasing at an alarming rate.

The main cause of this exponential increase in the pollution levels is poor fuel quality, old vehicles, inadequate maintenance, congested traffic, poor road condition and old automotive technologies and traffic management system

The major pollutants emitted from the automobiles are hydrocarbons, nitrogen dioxide, lead, carbon monoxide, sulphur dioxide, and particulate matter. Reason behind large share of vehicular pollution is India's gigantic automotive industry i.e., 4th largest in the world. According to the Ref. [1], the population of electric vehicle in India is increasing at the rate of 37.5%. And the government is focusing the more concern towards the Electric Vehicles [2] and charging stations .

ADVANTAGES OF EVS:

In order to reduce air pollution, we need to move towards an alternate source of transport from convention ICE vehicles and EVs can act as an alternate source of transportation giving plenty of advantages to the consumers which are mentioned below:

EVs are envirnment friendly:

Compared to ICE vehicles EVs does not produce smoke resulting in no pollution. EVs don't even have an exhaust system, meaning they have zero emissions. And since gas-powered vehicles are large contributors to greenhouse-gas making the switch to an EVs can help in making the planet healthy

Electricity is the cheaper than gasoline :

Per kilometer cost to EVs is cheaper compared to ICE vehicles. The fact cannot be denied that many EVs run at one-third of the cost, given that electricity is significantly less expensive than gasoline. And since consumer charge there EVs in garage most of the time, installing solar panels at home can save even more money

Low maintanance :

Due to absence of internal combustion engine in EVs its maintenance requirement becomes less.

CHALLENGES AHEAD:

Presently, there are many more challenges to establish the Electric Vehicle future. The major role to run the Electric Vehicle in India is power generation. Without electricity, we cannot imagine Electric Vehicle future. Therefore, responsibility of distribution network increases to supply the proper electric power without failure. Which can be possible by proper monitoring of the network. Phasor Measurement Unit (PMU) [6-10] measure the

voltage and current in real time and protect the network from any failure.

Lack of charging infrastructure :

The main hindrance behind commercial viability of EVs in India is inadequate charging infrastructure. India only had 650 charging stations in 2018, whereas China had over 456K charging points in the same year. Other reason creating anxiety is charging time. Battery charger efficiency according to the present available technologies all over the world varies in percentage from low 70s to high 90s