Experiment No-1

Title:- Study & Demonstration of Auto Electrical System.

Introduction:

Automobile electrical system includes starting system, charging system, ignition system lighting system & some accessories. that includes Dash-Board Instruments.

Objectives:

List various sub system of typical Automotive electrical systems. Demonstration of storage system. Demonstration of starting system. Demonstration of ignition system. Demonstration of lighting system. Demonstration of accessories. Schematic representation of Automobile electrical system layout.

Outcome:

List the sub system of typical automotive electrical system.
Write function of these system in brief
Draw automotive electrical system Schematically.

Theory :-

The automotive electrical system play vital role in the automobile system. Each & every part of automobile system solely depend on electrical system for its operation & function. From present day to future all vehicle depends on electrical system for operation.

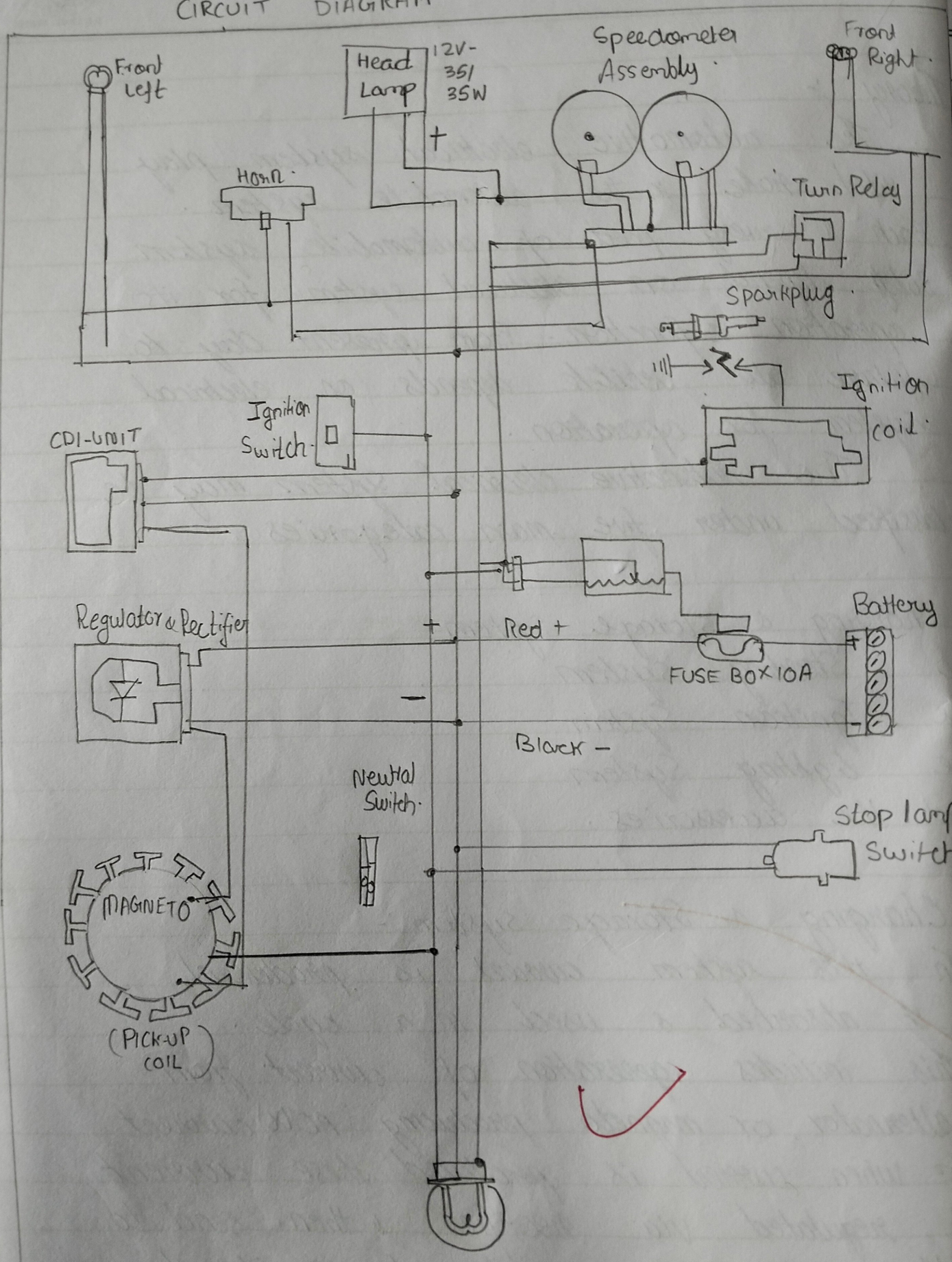
The Automotive electrical system may be classified under five main categories.

The Charging & Storage System
The Starting System
The Ignition System
The Lighting System
And the accessories.

- Charging & Storage System :-

In this system current is produced, & absorbed & used in a cycle. This includes generation of current from alternator or magneto producing (AC/DC) current The when current is produced these current is regulated via rectifier & then send to battery for charging. Current is stored in battery in the form of chemical reaction in each cell. Whenever engine starts in idle

CIRCUIT DIAGRAM



current is produced in alternator.
Current varies according to engine speed.
From low voltage to hight voltage is produced.
All the current that is produced is used by ignition system & accessories via battery.
Battery collects all the regulated current & stores in it according to its specification.
Storage of current occurs only when current from battery is used. Usage & produce of current balances the system hence storage occurs every cycle.

Starting System :-

Starting system occurs through stater motor which is mounted to the engine via gear mesh to it. When the starter is crank all the ~~enge~~ energy for ~~state~~ starter is used via battery. Starter pushes the crank & current is passed the to ignition coil to spark plug for starting of the engine. As the engine is in idle state, all the energy used is from battery ~~to~~ for self ignition. When we turn on the ignition all the electrical system is awake for starting of engine. Battery powers all the ignition & starting system.

Ignition System :-

The fundamental purpose of the ignition system is to supply a spark inside the cyclinder, near the end of the compression stroke, to ignite the compressed charge of air-fuel vapour.
The ignition system has to transform the normal battery voltage of 12V to approximately 8-20KV & in addition has to deliver this high voltage to the sigh cyclinder.

When considering the design of an ignition system many factors must be taken into account, the most important of these being:

- Combustion chamber design
- Air-fuel Ratio
- Engine Speed range
- Engine load
- Engine combustion temperature.
- Intended use
- Emission regulations.

Lighting System :-

Vehicle lighting are very important particularly when road safety is concern. Many techniques have been used, ranging from automatic changeover circuits to thermal circuit breakers which pulse the light rather than puting them out as a blown fuse would.

Modern wiring systems fuse each bulb filament seperately & even if the main supply to the headlight failed, it is likely that dim-dip would still work.

Sidelight, tail lights, brake lights & other ie dashboard, & accessories lights are part of lighting system.

In the conventional bulb the tungsten filament is heated to incandescence by an electric current; the temperature is about 2300°C. Presently all modern cars & two wheeler is shifted to LED bulbs i.e Light Emitting Diode. Which carries greater intensity of light Lumens more then conventional bulb. Major advantage is it need less electricity for operation. Less wattage of power required.

Accessories :-

The accessories of electrical automotive system includes Horn, wiper, dash-board instrument, central locking system, power window, electrical seats, sunroof etc.

These above accessories requires exclusive current for their individual functions. Their are connected to automotive electrical system with a switch to operate whenever required. Special wiring, circuit breaker, fuse are required for their individual connection. They draw certain amount of current from battery. Specific amp & voltage are required for specific accessories. They have vast functions & broadly used.

Conclusion: From the above information we understand basics & different system in automobile electrical system.
Above information is in generalized & basic idea of system, we understand importance & purpose in the ~~fuel~~ automotive electrical system.
From this experiment we understand the detailed construction & working of each system further.

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