



## Experiment No. 4.

Title :- Demonstration & testing of alternator.

Aim - To have demonstration of an automobile alternator for the same of testing of the output.

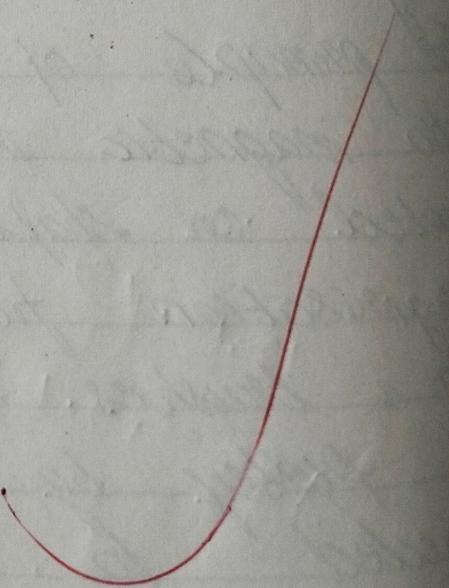
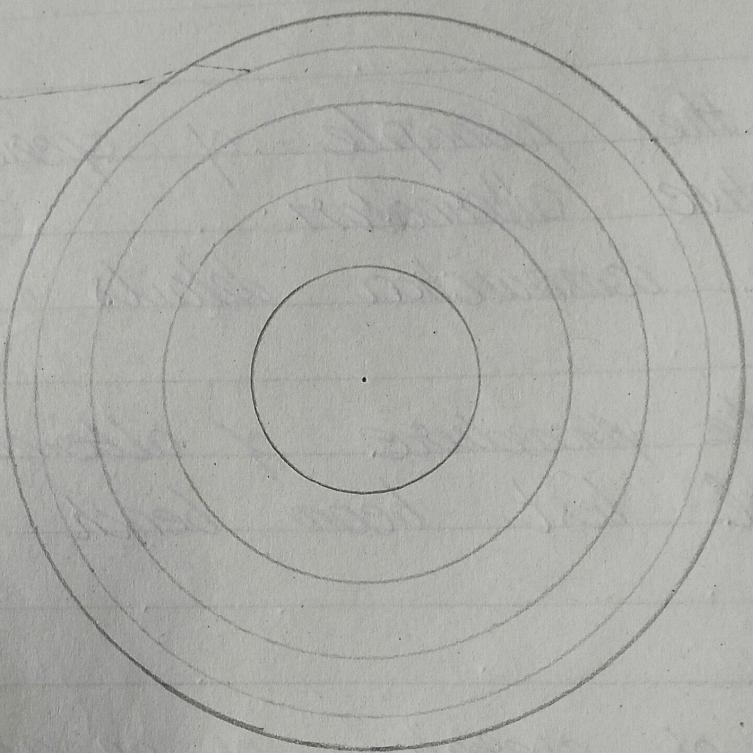
### Objectives:

- i) To write the principle of operation of typical automotive alternator.
- ii) To know the construction details & working of alternator.
- iii) To know the procedure of alternator testing using electrical test beam bench.

### Theory:

The principle of operation of an alternator is electro magnetic induction. An electro magnet is mounted on shaft is applied current for its energisation from a battery through the slip & brushes the motor & it turned by a belt pulley by the engine which are further connected to outside electric circuit.

When the electro magnetic is rotated the magnetic lines as an induce current however after half revolution the magnet reverse its-





## Construction Details.

### Frame :-

The frame encloses the entire alternator assembly in a mass of aluminium in two pieces.

### Rotor :

Rotor consist of iron. It is bounded with copper wire around the rotor shaft. Copper wires are wound over the ~~core~~ core on both side of rotor winding. These are thick metal plates bent over the winding.

### Slip ring & brushes:

Slipping is as to carry the current to the rotor carbon brush, which makes sliding contact with rings through which current is taken & send to external circuit

### Stator :

The stationary loops of wire are known as the stator which consist of these separate place each with number of windings

### Rectifier :-

Rectifier controls the output of alternator from AC to DC component mostly used in the



## single phase & three phase circuit

Working :

As when a conductor cuts or is cut by magnetism a voltage is induced in the conductor. The direction of the induced voltage depends upon the direction of the magnetic field a the direction in which the field moves relative to the conductor.

The alternator generates AC current but it is converted to DC current with help of rectifier. To summarize, alternator must meet the following criteria

Supply the current demands made by all loads.

Supply whatever charge invert the battery demands.

Operate at idle speed.

## Testing Alternators:

Rotor testing - To test the rotor for grounds, shorts & open;

Make the connection that are required to connect to the voltage regulator of alternator

Select the voltage on test bench as 12 V

go for alternator.

Check all connected once again & also

check for AC mains.



Now press the start button & take readings of current & voltage for zero load.

Conclusion:

In this test we understand the working & test procedure of alternators. This experiment is based on automotive alternator.

