

UNIT-II ELECTRICAL MACHINES

1. Tell about the emf equation of DC Generator.

$$E = \frac{PZ\phi n}{A}$$

Where Φ is flux or pole within Webber

'Z' is a total no. of armature conductor

'P' is a number of poles in a generator

'A' is a number of parallel lanes within the armature

'N' is the rotation of armature in r.p.m (revolutions per minute)

'E' is the induced e.m.f in any parallel lane within the armature

'Eg' is the generated e.m.f in any one of the parallel lanes

2. Recall the purpose of yoke in DC generator.

The yoke acts as path for the magnetic flux. It also provides mechanical support and shape to the dc machine.

3. List out the applications of various types of generators.

1. The separately excited type DC generator is used for power and lighting purposes using the field regulators.
2. The series DC generator is used in arc lamps for stable current generator, lighting and booster.
3. Level compound DC generators are used to supply power to hostels, offices, lodges.
4. Compound DC generators are used for supplying power to DC welding machines.
5. A DC generator is used to compensate for the voltage drop in the feeders.

4. State Fleming Left Hand Rule.

Fleming's Left-hand rule states that if the thumb, forefinger and middle finger of the left hand are stretched into mutually perpendicular directions such that the index finger and middle finger of a stretched left hand directing the magnetic field and electric current respectively then the thumb shows the direction of motion or force acting on the conductor.

5. Tell the function of armature in a dc generator?

Its function is to rotate the conductors in a uniform magnetic field and provide a path of very low reluctance to the magnetic flux.

6. List out the major parts of a dc generator?

Magnetic frame

Poles

Armature

Commutator

Brushes

7. Show the function of Commutator and brushes in dc generator?

The commutator converts the alternating emf into unidirectional or direct emf.

The brushes are mainly used to collect current from the commutator

8. How do you reduce the hysteresis loss in armature?

The hysteresis losses can be reduced by using low hysteresis steel containing few percentage of silicon.

9. How the purpose of interpoles in modern dc machine?

In modern machines commutating poles or inter poles are provided to improve commutation.

10. Explain the basic principle of a dc generator?

Basic principle of dc generator is Faradays law of electromagnetic induction .i.e. whenever a conductor is moved in a magnetic field ,dynamically induced emf is produced in that conductor.