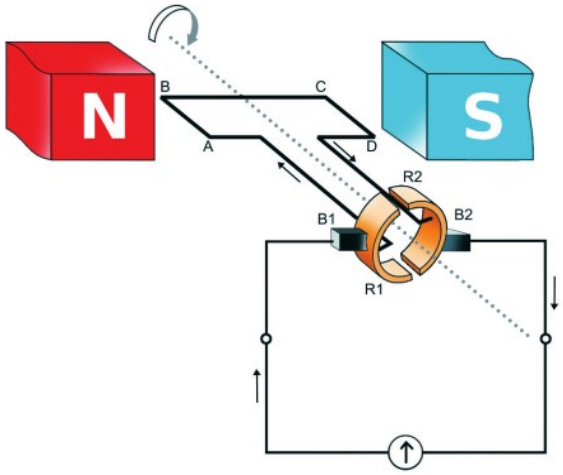
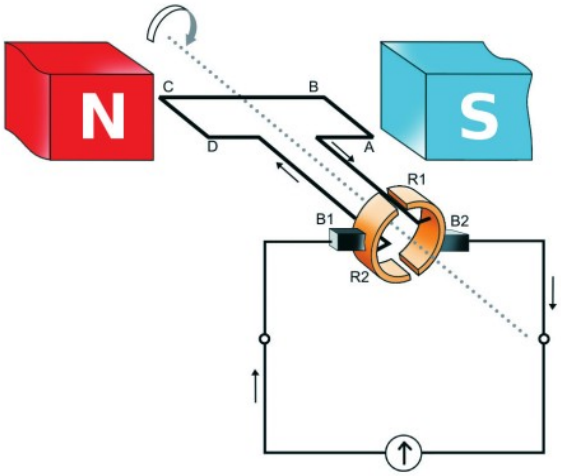
PHYSICS - X-PART-05 CLASS 23

DC - Generator

Working principle : Electromagnetic Induction

Energy change : Mechanical Energy → Electrical Energy





The main Parts of DC generator

* Field magnet (NS)
* Armature (ABCD)
* Split ring commutator (R1,R2)
* Brushes(B1,B2)

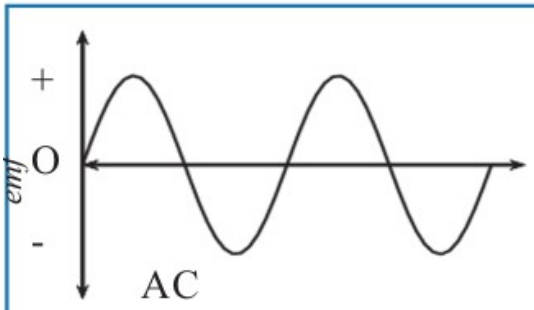
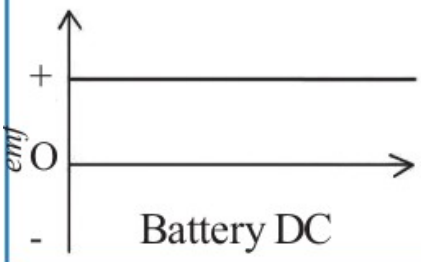
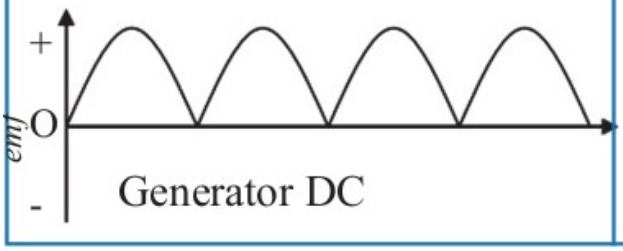
* If split ring commutator is used in a generator instead of slip rings
* Though AC current is produced in a DC generator with the help of split ring commutator AC is converted into DC .
* The AC generated in the armature becomes DC in the external circuit as a result of the change in contact between the ring and the brush at each half-rotation of the armature

* What are the similarities between the DC motor and a DC generator?

Permanent magnet.
Armature
Brushes
Split rings

* Connect the output of a small DC generator to a galvanometer and rotate the armature continuously.
How is the needle deflected?
* Same direction
Is the direction of current changing?
* No
Is the magnitude of current the same?
* No. Emf increases and decreases

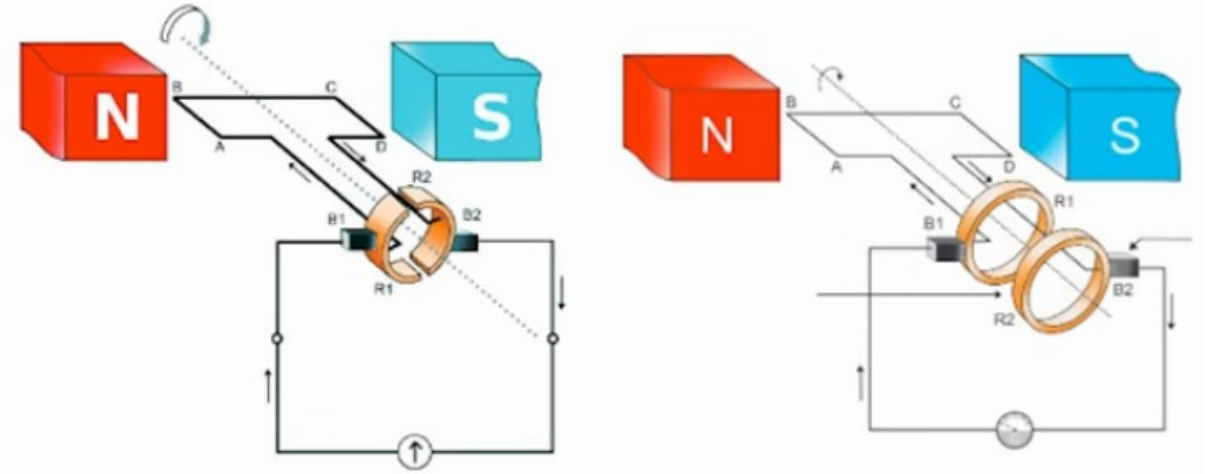
Graphical representation of emf obtained from an AC generator, a battery & a DC generator are given in the table, Write down the peculiarities of the emf ?

	• Direction changes continuously • **emf increases and decreases**
	• **Direction constant** • **emf constant**
	• **Direction constant** • emf increases and decreases.

Assignment

1.

Line diagrams of a generator are given.



a) What is the speciality of the electricity reaching the galvanometer if the armatures of both the generators are made to rotate?

b) What is the speciality of the electricity reaching the galvanometer if the field magnets of both the generators are made to rotate?

c) Draw the graphical representation of electricity obtained in both.

2.

Electromagnetic induction is

a) charging a substance

b) process of developing a magnetic field around a coil by passing electricity through a coil

c) process of rotating the armature of a generator.

d) process of making electricity by the relative motion of a magnet or a coiled conductor.

3.

Which is the device used to generate electricity?

a) generator b) galvanometer

c) motor d) ammeter

4.

Write down the similarities and differences in the structure of a an AC generator and a DC generator.