PHYSICS - X-PART-4 CLASS 18

Stages of rotation of an armature coil while completing one rotation in a magnetic field

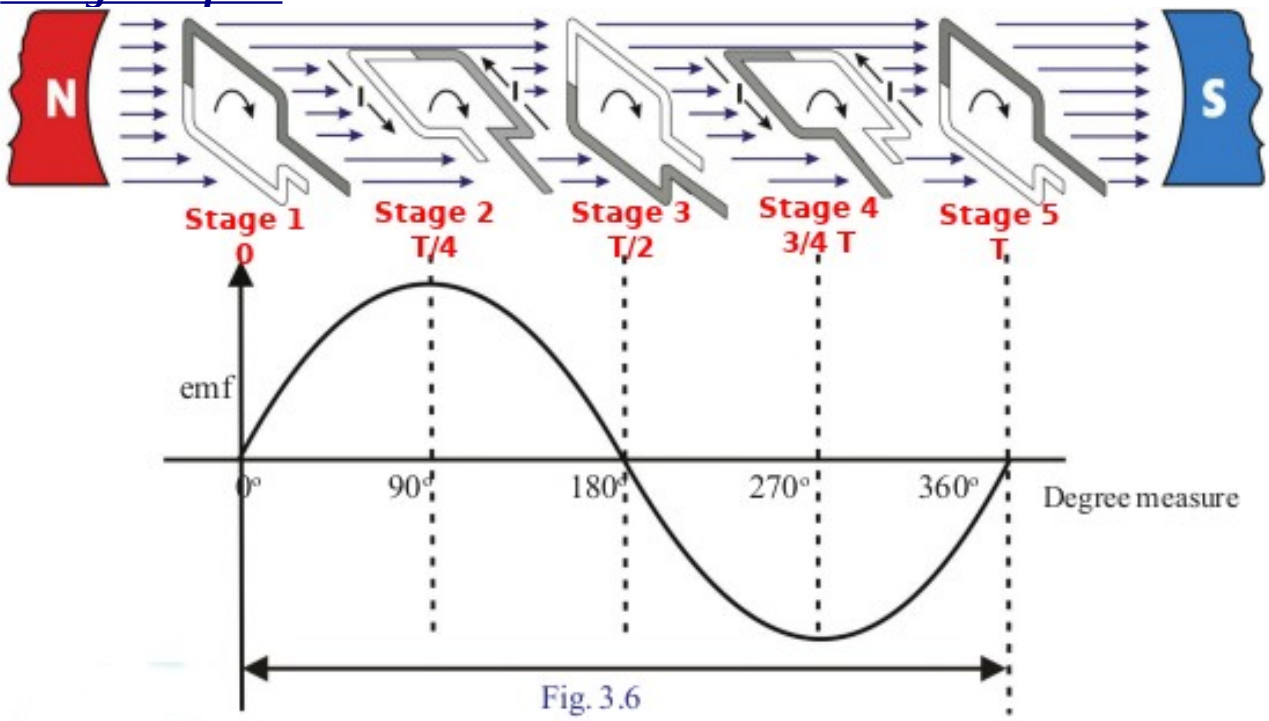

Fig. 3.6

Stage 1 (angle of rotation 0 ,Time 0)

- *The plane of armature coil is perpendicular to the direction of magnetic field.*
- *The rate of change of Flux is zero.*
- *Induced current in the coil is zero.*

Stage 2 (angle of rotation 90 ,Time T/4)

- *The plane of armature coil is parallel to the direction of magnetic field.*
- *The rate of change of Flux is maximum.*
- *Induced current in the coil is maximum.*

Stage 3 (angle of rotation 180 ,Time T/2)

- *The plane of armature coil is perpendicular to the direction of magnetic field.*
- *The rate of change of Flux is zero.*
- *Induced current in the coil is zero.*

Stage 4 (angle of rotation 270 ,Time 3/4T)

- *The plane of armature coil is parallel to the direction of magnetic field.*
- *The rate of change of Flux is maximum in the opposite direction.*
- *Induced current in the coil is maximum in the opposite direction.*

Stage 5 (angle of rotation 360 ,Time T)

- *The plane of armature coil is perpendicular to the direction of magnetic field.*
- *The rate of change of Flux is zero.*
- *Induced current in the coil is zero.*

	Time				
	0	T/4	T/2	¾ T	T
Angle of rotation of the armature.	0^0	90^0	180^0	270^0	360^0
Rate of change of flux.	0	maximum	0	maximum in opposite direction	0
Induced emf in volts V.	0	maximum	0	maximum in opposite direction	0

Period T

The time taken by the armature coil for a full rotation is called the period, T. Time taken for half rotation (180^0) is T/2.

WORKSHEET

** The coil in the picture is a closed circuit, Find the direction of current in AB ,CD*