



# **SNS COLLEGE OF TECHNOLOGY**

**(An Autonomous Institution)**



**COIMBATORE-35**

**Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade**

**Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai**

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**COURSE NAME: 23EET203 Electrical Machines I**

**II YEAR / III SEMESTER**

**Unit 1 – DC Generator**

**Topic 7: `Commutation**



# What We'll Discuss

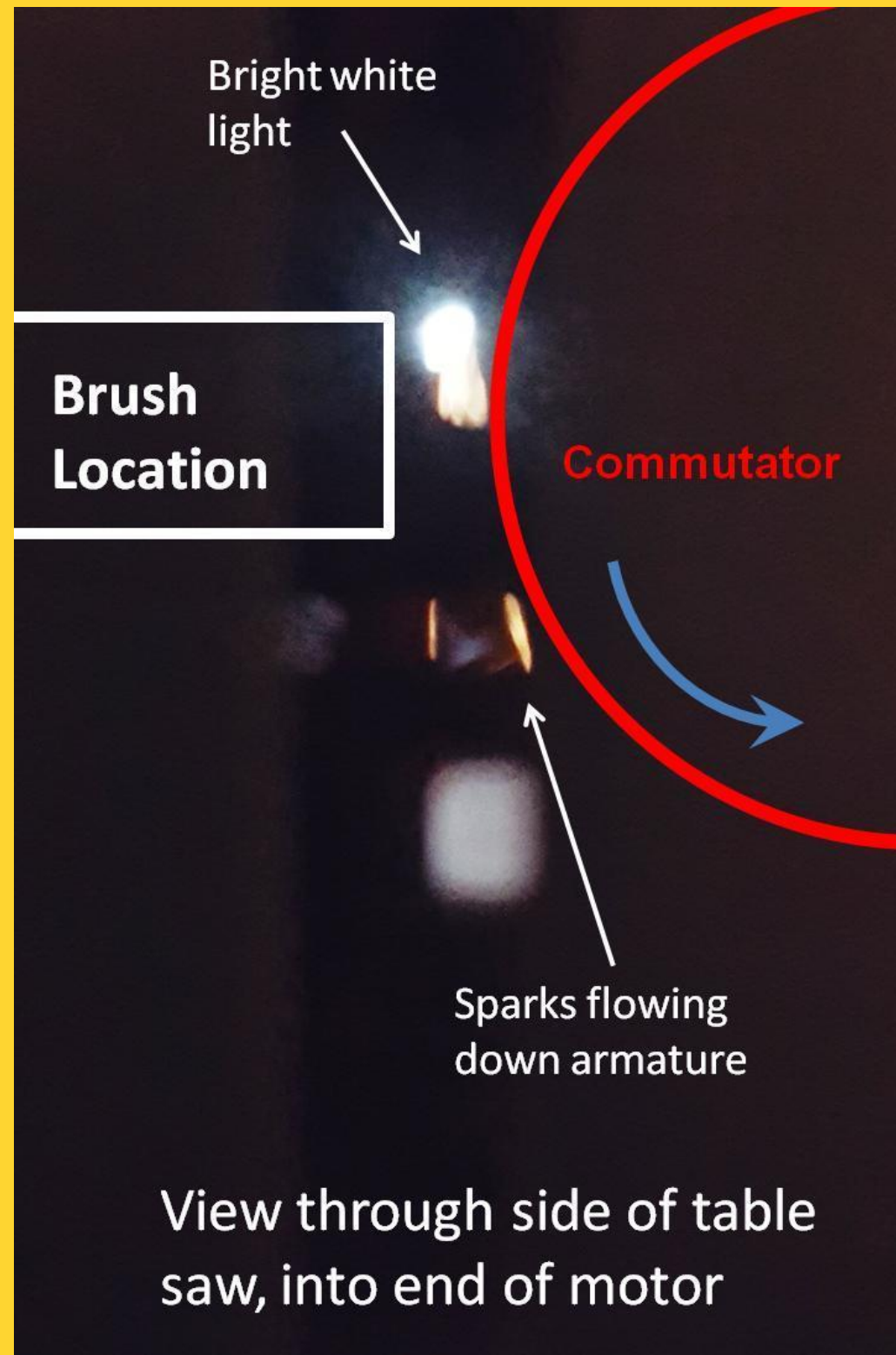
## TOPIC OUTLINE



A Case  
Commutation  
Commutation process  
Methods of improving commutation  
Assessment



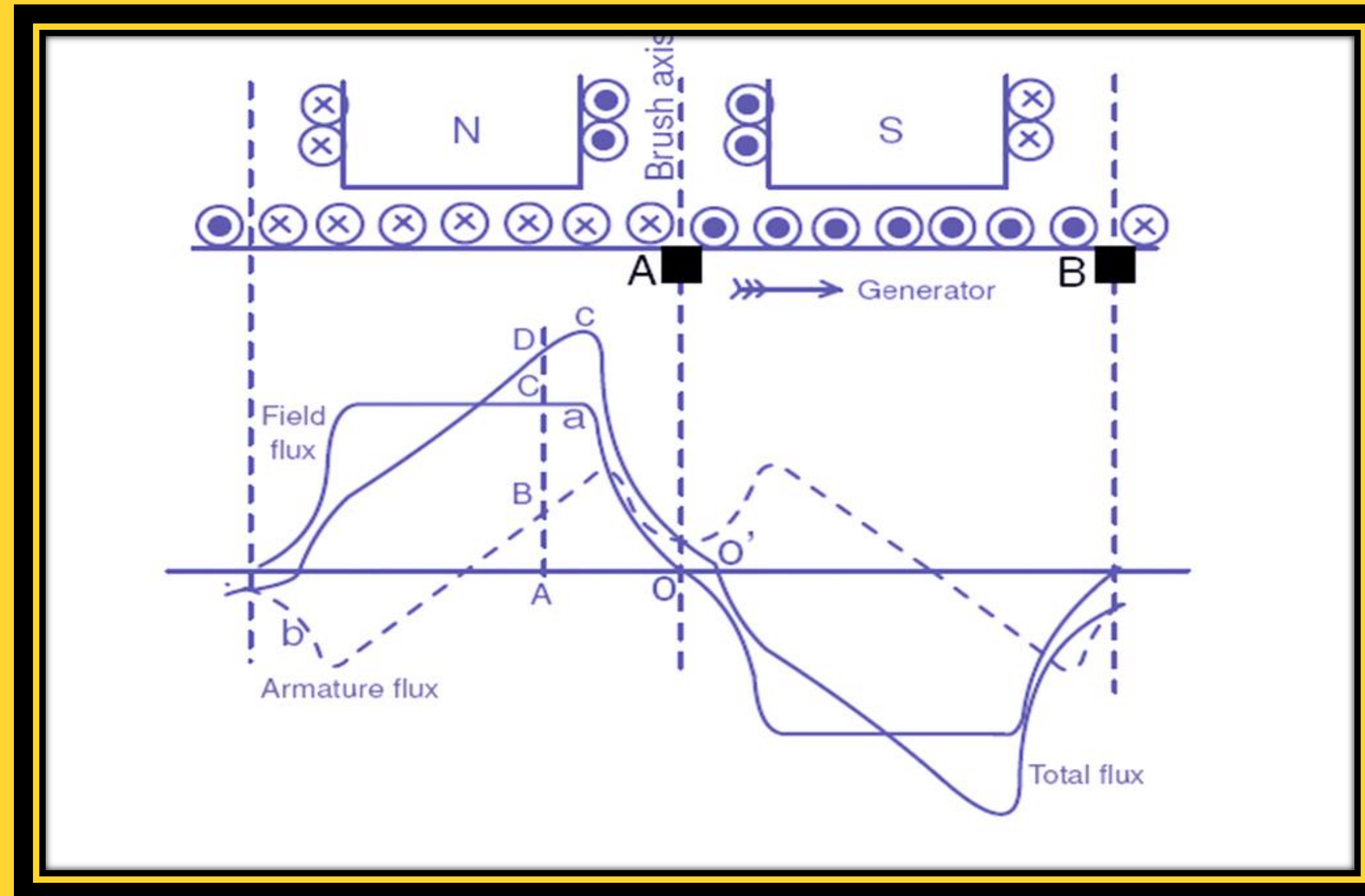
# CASE



- Have u ever seen in the side of a DC Machine.....

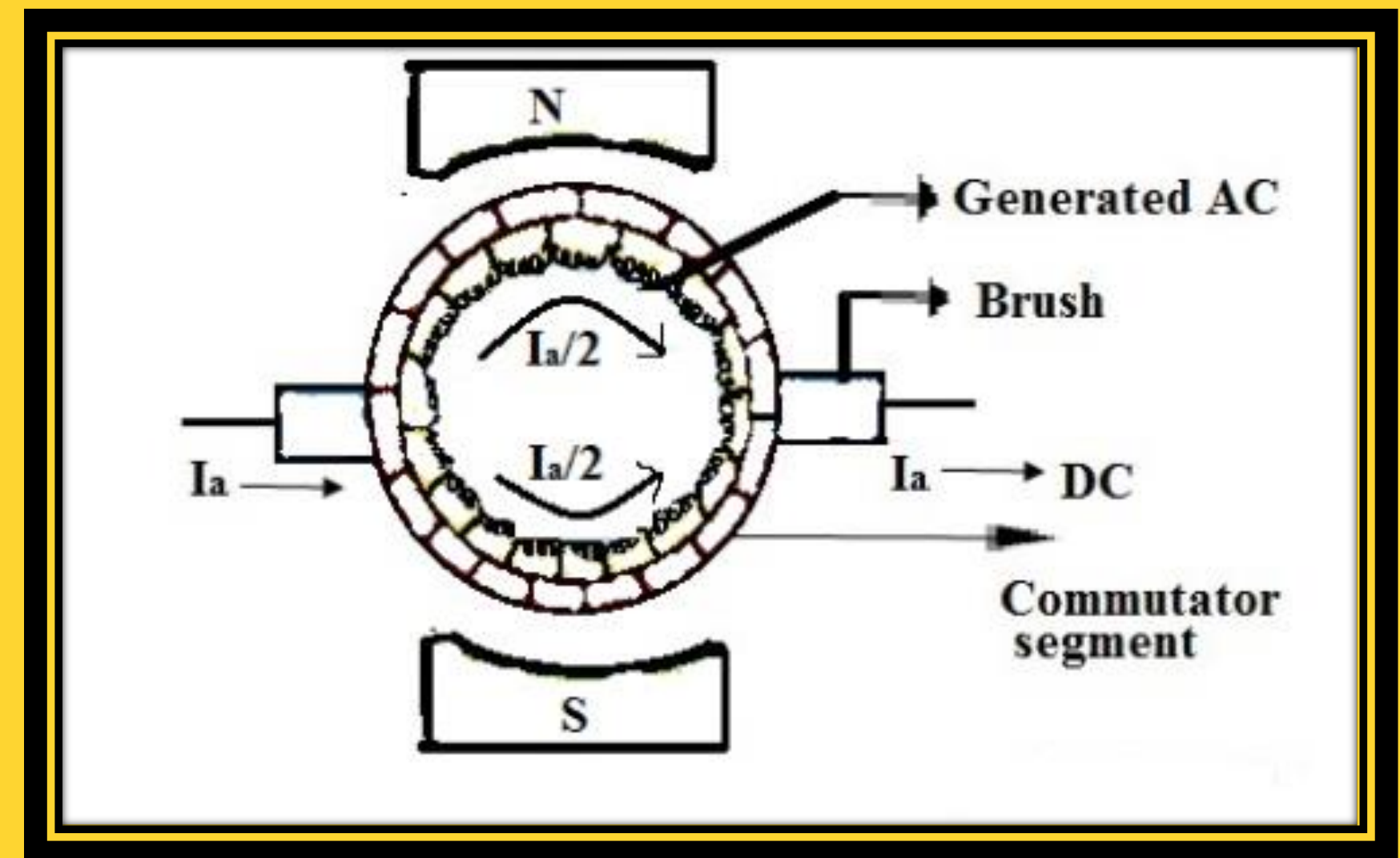
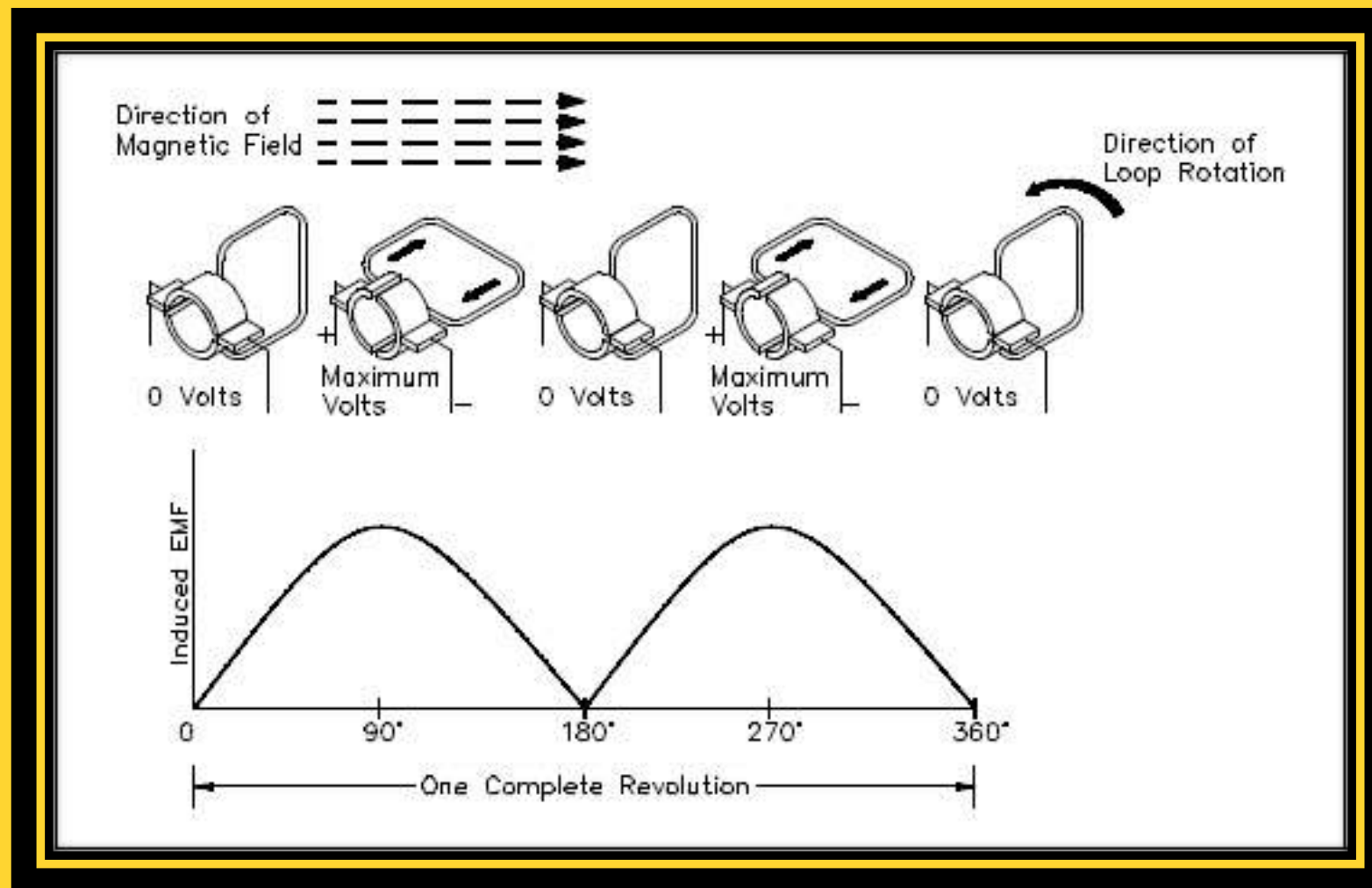
# Commutation

- It is the process of converting A.C generated voltage in the armature conductors to D.C for external load.
- Commutation in DC machines is the process by which the reversal of current takes place.

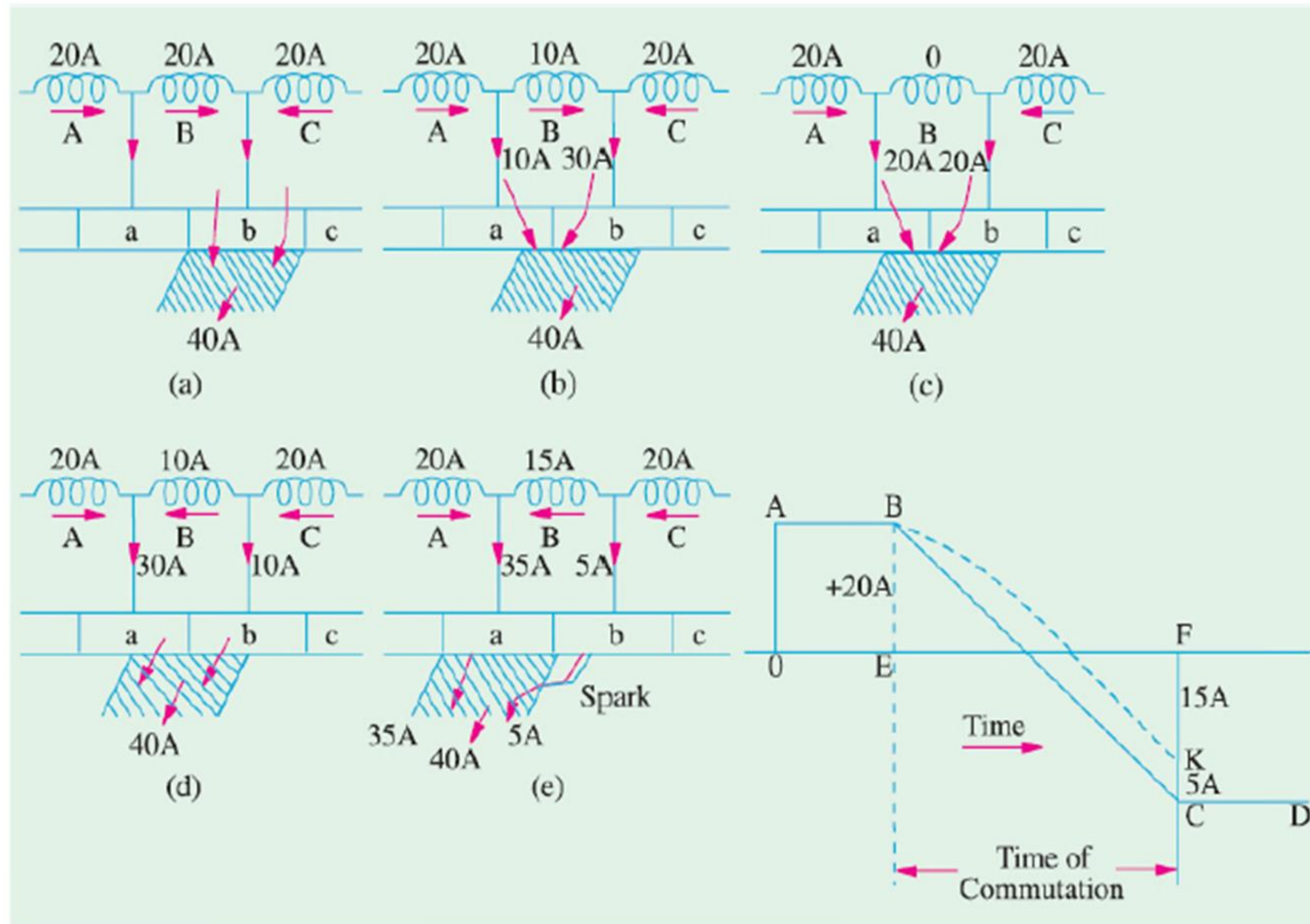


# Commutation

- Each Armature coil contains two commutators attached at its end.
- For the transformation of current, the Commutator segments and brushes should maintain a continuously moving contact.
- The coil is short-circuited for a very short period of time with the help of brushes.
- This period is known as commutation period.



# Commutation Process





# Effects of Commutation

- If the current reversal is completed during the commutation period, sparking occurs at the contact of brushes and overheating occurs damaging the surface of the commutator.
- This defect is called Poorly commutated Machine.

To prevent this type of defects there are three types of methods for improving commutation.

1. **Resistance commutation.**
2. **EMF commutation.**
3. **Compensating winding.**



# Methods of Improving commutation

## Resistance Commutation

- Copper brushes of lower resistance are replaced with carbon brushes of higher resistance.
- Resistance increases with the decreasing area of cross-section.
- This stops the early reversal of current and prevents sparking in the DC machine.



## EMF Commutation

- Induction property of the coil is one of the reasons for the slow reversal of current during commutation process.
- This problem can be tackled by neutralizing the reactance voltage produced by the coil by producing the reverse e.m.f in the short circuit coil during the commutation period.

This can be done in two methods.

- By Brush Shifting method.
- By Using commutating poles.





# Recall

Name the methods of improving commutation

What is the input and output of a commutator





# THANK YOU