



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



COIMBATORE-35

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EEB201 DC Machines and Transformers

II YEAR / III SEMESTER

Unit 1 – DC Generator

Topic 7: `Commutation



What We'll Discuss

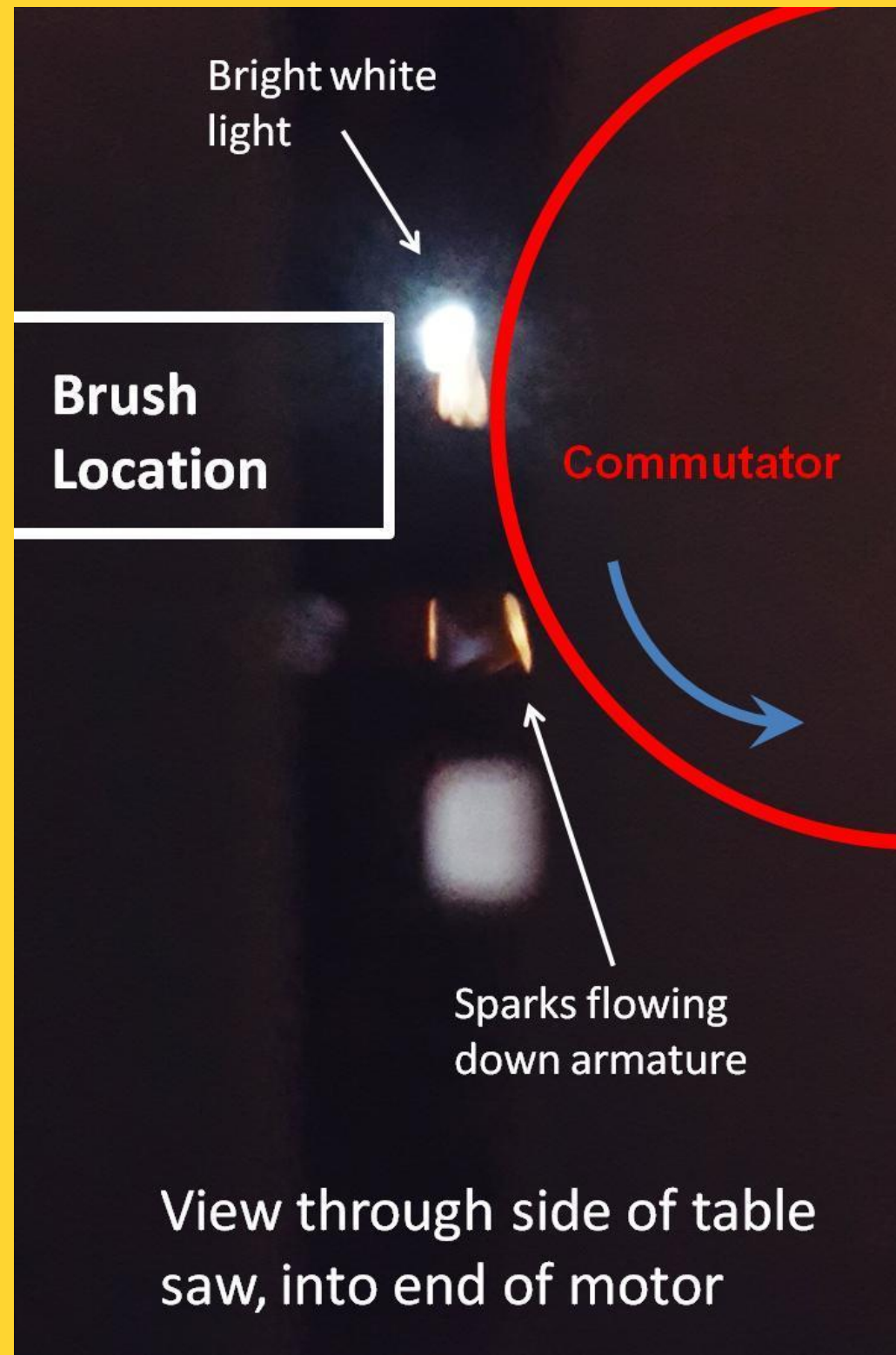
TOPIC OUTLINE



A Case
Commutation
Commutation process
Methods of improving commutation
Assessment



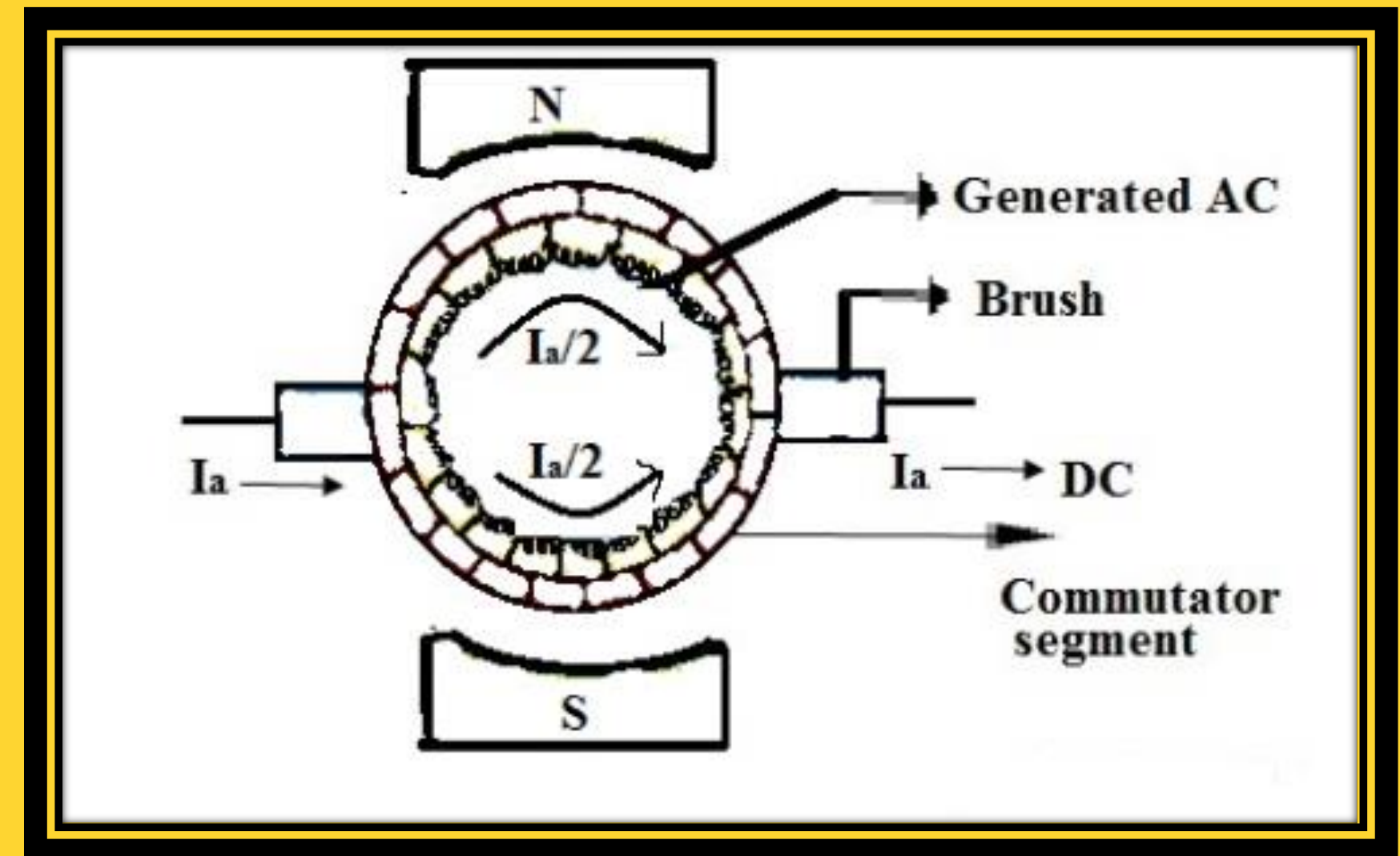
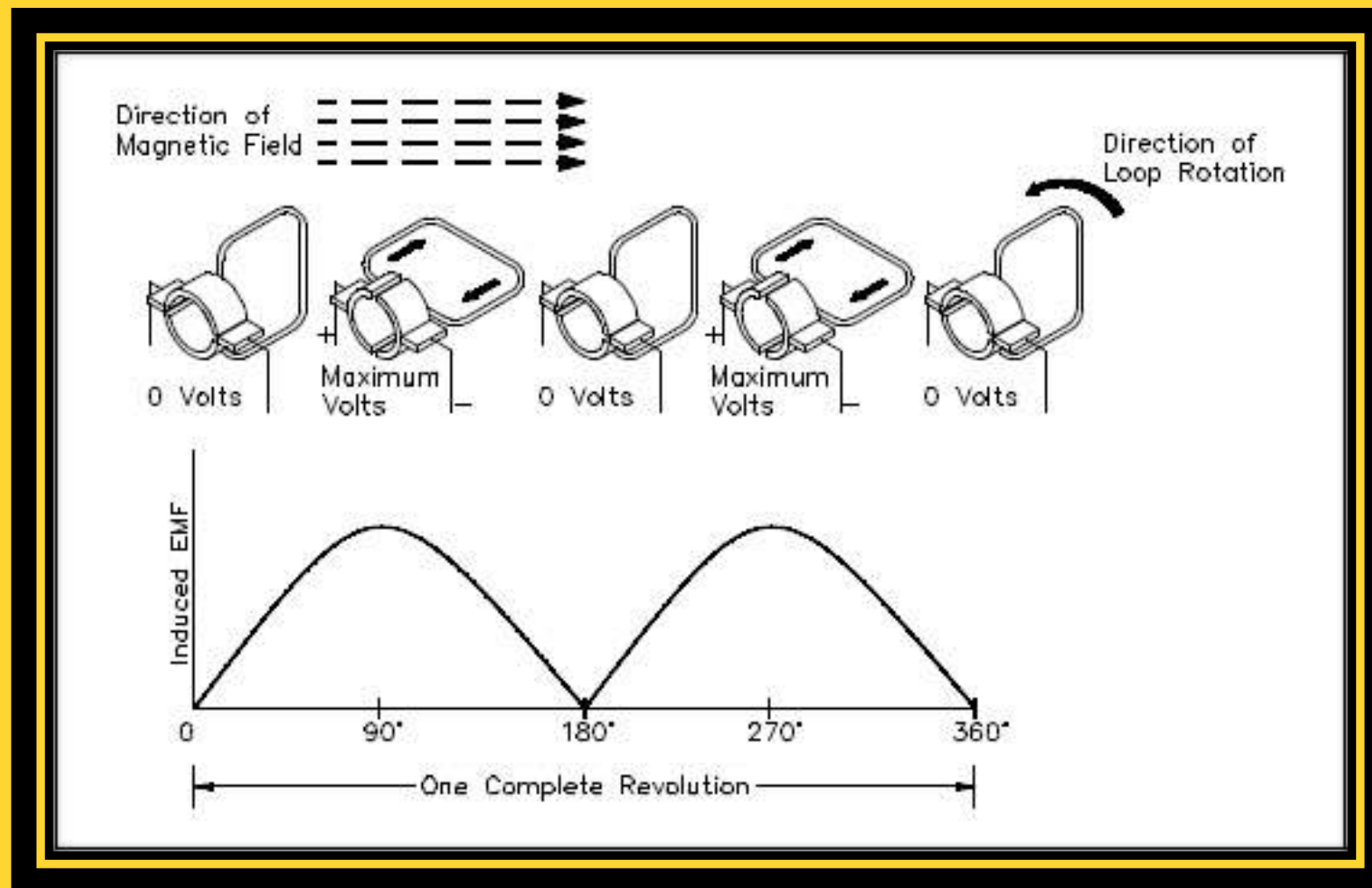
CASE



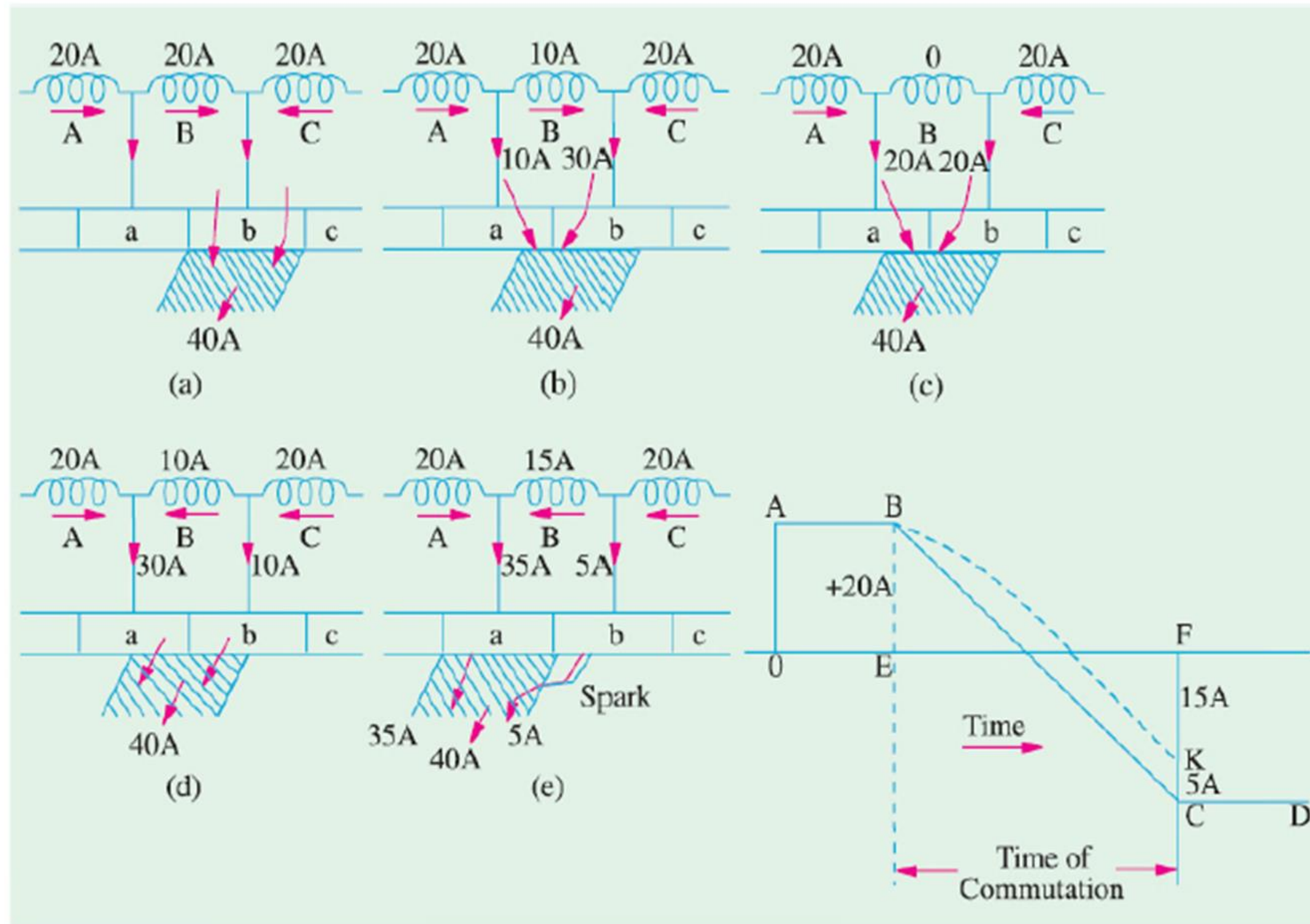
- Have u ever seen in the side of a DC Machine.....

Commutation

- 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