UNIVERSAL ENGINEERING COLLEGE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACTIVITY BASED LEARNING

EET202 DC MACHINES AND TRANSFORMERS

Semester:	**IV**	**Programme period:**	**2021-2025**
Faculty :	**Meenu Jose Thekkan**	**Academic Year :**	**2022-2023**

Activity title	:	Chart Making
Location	:	A102 Classroom
Date	:	11-02-2023
Participants	:	S4 EEE

Purpose of the Activity

The DC Machines activity was designed to help students understand the key components, types, and working principles of DC motors and DC generators. The aim was to provide students with a visual representation of the various types of DC machines and their connections, along with their applications in real-world electrical systems. This activity enabled students to grasp the functioning of DC motors and generators by visualizing different types of connections, such as separately excited, self-excited, and compound systems.

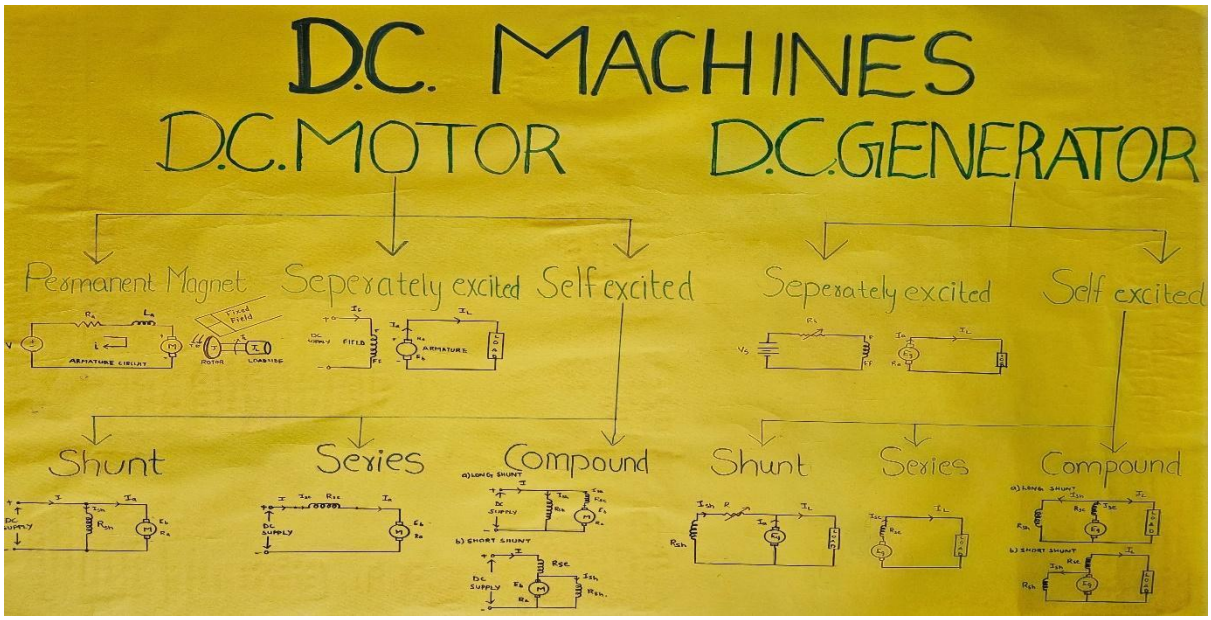
Activity Description

In this activity, students created a detailed chart to represent the different types of DC machines, including both DC Motors and DC Generators. The chart illustrated the key components and their working principles, including:

- DC Motors: The chart showed the different configurations of DC motors, including Permanent Magnet, Separately Excited, and Self-Excited motors, with a focus on the shunt, series, and compound connections.
    - Permanent Magnet Motor: This motor uses a fixed magnet to create a magnetic field and is commonly used in low-power applications.

- Separately Excited Motor: The field winding is supplied by an external source, providing more control over the motor's speed.
- Self-Excited Motor: This motor uses its own field windings to generate the magnetic field, making it simpler and more cost-effective.

- DC Generators: The chart also covered the various types of DC Generators, such as Separately Excited and Self-Excited generators, explaining the differences in their excitation and how they generate electricity.
  - Separately Excited Generator: Similar to the separately excited motor, this generator uses an external power source for the field winding.
  - Self-Excited Generator: This generator's field winding is powered by the generator itself, typically used in smaller power systems.



The chart also included the different types of connections used in both DC motors and generators, such as:

- Shunt Connection: The field winding is connected in parallel with the armature.
- Series Connection: The field winding is connected in series with the armature.
- Compound Connection: A combination of both series and shunt connections, used for specific performance characteristics.

By working on this chart, students visualized the different configurations and gained a deeper understanding of the electrical characteristics and working principles of DC machines.

Conclusion

The DC Machines activity allowed students to visually understand the different types of DC motors and generators, their working principles, and how they are connected in practical systems. This activity reinforced the theoretical knowledge gained in class and gave students a clearer understanding of how DC machines operate in real-world applications. By creating and analyzing the chart, students also developed their ability to connect theory with practice, preparing them for more advanced topics in electrical engineering. Overall, this activity provided a comprehensive, hands-on learning experience, making it easier for students to grasp the complexities of DC machines and transformers.

Name and signature of faculty **Name and signature of HOD**