A NAAC Accredited Institution

KINGS COLLEGE OF ENGINEERING

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Affiliated to Anna University, Chennai

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACADEMIC YEAR 2022-2023 (ODD SEMESTER)

REFRESHER COURSE - REPORT

The Department of Electrical and Electronics Engineering has organized Refresher course on the following dates for final year EEE students. Final year EEE RFC Session dates: 27.08.2022, 03.09.2022, 17.09.2022, 08.10.2022, 15.10.2022, 29.10.2022.

OBJECTIVE:

The main objective of this course is to help the students to review the previous courses which they studied earlier so that they are mentally ready to face competitive exam in their domain of engineering. Also, this course helps the students in enhancing employability, so that they get employed in their respective stream of engineering.

PROGRAMME SCHEDULE:

S.No.	DATE	TOPIC	FACULTY
1.	27.08.2022	Network elements: Ideal voltage and current sources, dependent sources, R, L, C elements; Network solution methods: KCL, KVL, Node and Mesh analysis	Dr.R.Arulraj, AP/EEE Mrs.P.Thirumagal, AP/EEE
2.	03.09.2022	Network Theorems: Thevenin's, Norton's, Superposition and Maximum Power Transfer theorem	Mr.R.Sundaramoorthi, AP/EEE Mr.J.Arokiaraj, AP/EEE
3.	17.09.2022	Transient response of dc and ac networks, Sinusoidal steady-state analysis, Resonance, two port networks, Balanced three phase circuits, Star-delta transformation, Complex power and power factor in ac circuits.	Mr.S.R.Karthikeyan, AP/EEE Mrs.C.Senthamilarasi, AP/EEE
4.	08.10.2022	Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency	Dr.P.Narasimman, AP/EEE Mrs.A.Prabha, AP/EEE
5.	15.10.2022	Three-phase transformers: connections, vector groups, parallel operation; Auto-transformer, Electromechanical energy conversion principles	Dr.R.Arulraj, AP/EEE Mrs.P.Thirumagal, AP/EEE
6.	29.10.2022	DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, speed control of dc motors	Mr.R.Sundaramoorthi, AP/EEE Mr.J.Arokiaraj, AP/EEE

SESSION DETAILS:

The refresher course on "Electrical Circuits and Machines" was allotted for IV-year EEE Students and totally six sessions each of two hours (off-line) and three hours (on-line) duration was planned. During the first and second sessions, the basic concepts of circuit theory such as ideal voltage and current sources, dependent sources, behavior of R, L, C elements, Kirchoff's Voltage Law (KVL) and Kirchoff's Current Law were discussed. Also, network solution methods such as Mesh analysis and Nodal analysis are explained to the students in the first session. In the second session, various network theorems such as Thevenin's theorem, Norton's theorem, Superposition theorem and Maximum Power Transfer theorem are taught to the students. To improve the problem solving skills of the students, different theorems are applied to the same circuit to attain the response for a particular circuit element. The network solutions attained for different theorems are carried out for circuits containing both dependent and independent sources. In the third session, transient response for source free and step input RL and RC circuit are demonstrated to the students. The series and parallel resonance and also two port networks are explained to the students. After completion of single phase circuits, three phase circuits along with star-delta transformation are explained to the students in third session sessions. Finally, sinusoidal steady state analysis was covered for students to get better understanding of various concepts in solving a.c. circuits.

In the fourth and fifth session various basic and advanced concepts related to transformers were discussed. Firstly, single phase transformer in which its equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency were discussed, whereas, in three phase transformers, the different connections, vector groups and parallel operation are demonstrated to the students. Finally, equivalent circuit and operation of auto transformers are discussed in the fifth session along with electromechanical energy conversion principles, which is the basic concept behind operation of DC machines. The construction and working of DC machines were explained in sixth session. In DC machines, separately excited, series excited and shunt excited types of motors are presented and also important concepts such as motoring and generating mode of operation, different motor characteristics and finally speed control of dc motors were explained to the students. The students actively participated throughout the entire six sessions. They raised interesting questions and their queries were clarified by the faculty in

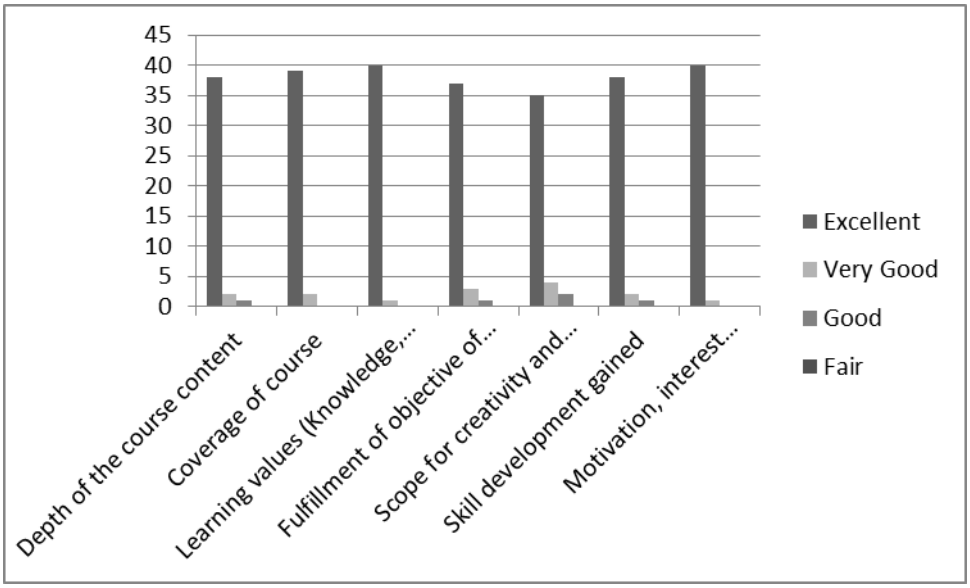
the respective sessions itself. Finally, the overall feedback of the students about the course was collected for future enhancements.

OUTCOME:

At the end of course, the students should be able to,

- Explain circuit's behavior using circuit laws and apply mesh analysis, nodal analysis, network theorems to determine behavior of the given d.c. and a.c. circuits.
- Compute the transient response of first order system to step and sinusoidal input.
- Explain the frequency response of series and parallel RLC circuits and also the behavior of magnetically coupled circuits.
- Compute power, line / phase voltage and currents of the given three phase circuit
- Analyze the magnetic circuits and understand the concepts of electromechanical energy conversion.
- Acquire the knowledge in constructional details and working principles of Transformers and DC Motor.

FEEDBACK ANALYSIS:



Snapshots from Refresher Course

4/11/22

4/11/22

14.11.22

FACULTY INCHARGE

4/11/2022

PRINCIPAL

4/11/22

HOD/EEE