A NAAC Accredited Institution

KINGS COLLEGE OF ENGINEERING

Recognized under 2(f) & 12(B) of UGC
Approved by AICTE, New Delhi
Affiliated to Anna University, Chennai

TÜVRheinland CERT ISO 9001

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACADEMIC YEAR 2021-2022 (EVEN SEMESTER)

REFRESHER COURSE - REPORT

The Department of Electrical and Electronics Engineering has organized Refresher course on the following dates for second and third year EEE students. II-Year & Year RFC Session dates: 19.03.2022, 26.03.2022, 09.04.2022, 23.04.2022, 30.04.2022, 07.05.2022, 21.05.2022, 28.05.2022.

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:

II – Year:

S.No.	DATE	TOPIC	FACULTY
1.	19.03.2022	Ideal voltage and current sources, dependent sources, R, L, C elements	Dr.R.Arulraj, AP/EEE
2.	26.03.2022	Network solution methods: KCL, KVL, Node and Mesh analysis	Mrs.C.Senthamilarasi, AP/EEE
3.	09.04.2022	Network Theorems: Thevenin's, Norton's, Superposition and Maximum Power Transfer theorem	Dr.P.Narasimman, AP/EEE
4.	23.04.2022	Transient response of dc and ac networks	Mrs.P.Thirumagal, AP/EEE
5.	30.04.2022	Resonance, two port networks	Dr.M.Meenalochani, AP/EEE
6.	07.05.2022	Balanced three phase circuits	Mr.S.R.Karthikeyan, AP/EEE
7.	21.05.2022	Star-delta transformation	Mr.J.Arokiaraj, AP/EEE
8.	28.05.2022	Complex power and power factor in ac circuits	Mr.R.Sundaramoorthi, AP/EEE

III – Year:

S.No.	DATE	TOPIC	FACULTY
1.	19.03.2022	Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency;	Mr.R.Sundaramoorthi, AP/EEE
2.	26.03.2022	Three-phase transformers: connections, vector groups, parallel operation;	Mr.J.Arokiaraj, AP/EEE
3.	09.04.2022	Auto-transformer, Electromechanical energy conversion principles;	Mr.S.R.Karthikeyan, AP/EEE
4.	23.04.2022	DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, speed control of dc motors;	Dr.R.Arulraj, AP/EEE
5.	30.04.2022	Three-phase induction machines: principle of operation, types, performance, torque-speed characteristics, no-load and blocked-rotor tests, equivalent circuit;	Dr.M.Meenalochani, AP/EEE
6.	07.05.2022	Three-phase induction machines: starting and speed control; Operating principle of single-phase induction motors;	Mrs.P.Thirumagal, AP/EEE
7.	21.05.2022	Synchronous machines: cylindrical and salient pole machines, performance and characteristics;	Dr.P.Narasimman, AP/EEE
8.	28.05.2022	Synchronous machines: regulation and parallel operation of generators, starting of synchronous motors; Types of losses and efficiency calculations of electric machines	Mrs.C.Senthamilarasi, AP/EEE

SESSION DETAILS:

The refresher course on Circuit Theory was allotted for II-year EEE Students and totally eight sessions each of two hours 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 second session. In the third 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 fourth 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 in the fifth session. After completion of single phase circuits, three phase circuits along with star-delta transformation are explained to the students in sixth and seventh sessions. Finally, sinusoidal steady state analysis was covered in the final session for students to get better understanding of various concepts in solving a.c. circuits. The students actively participated throughout the eight sessions and the various doubts raised by the students were clarified during the respective sessions itself.

The refresher course on Electrical Machines was allotted for III-year EEE Students. Also, similar to II-Year, totally eight sessions each of two hours duration was planned for III -year EEE students. The refresher course for third year EEE students started with Transformers. In the first, second and third sessions, 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 third 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 fourth 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.

In the fifth and sixth session, basic and advanced concepts related to three phase induction machines were discussed. In three-phase induction machines various concepts such as principle of operation, types, performance, torque-speed characteristics, no-load and blocked-rotor tests, equivalent circuit, starting and speed control were demonstrated to the students. Apart from three-phase induction machines, operation and principle of single-phase induction motors were also explained to the students in the sixth session. The construction and operation of synchronous machines were discussed in seventh and eighth sessions. In synchronous machines important concepts such as cylindrical and salient pole machines, performance and characteristics, regulation and parallel operation of generators, starting of synchronous motors were presented to the students in detail. The students raised interesting questions and their queries were clarified by the faculty in the respective session. Finally, the overall feedback of the students about the course was collected for future enhancements.

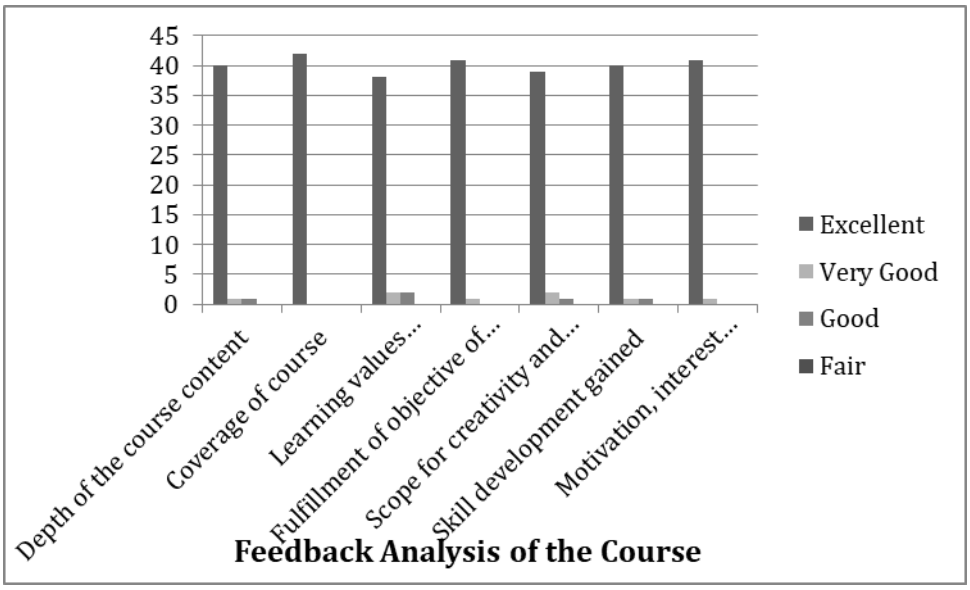
OUTCOME:

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.

- Acquire the knowledge in constructional details and working principles of single phase induction machines, three phase induction machines and synchronous machines.

FEEDBACK ANALYSIS:



6/6/22

FACULTY INCHARGE

6/6/22

HOD/EEE

06/6/2022

PRINCIPAL