

DRONACHARYA COLLEGE OF ENGINEERING

KHENTAWAS, FARRUKHNAGAR, GURGAON, HR

Department: EEE

Academic Session: 2020-21 (May-Aug, 2021)

Lecture Plan with Assignment questions

Subject with code: Electrical Machines-II (PCC-EE-206G)

Name of Faculty with designation : Dr.Jyothi Varanasi, Associate Professor

S.No.	Month	Date & Day	Sem-Class	Unit	Topic/Chapter covered	Write Lecture Wise Questions
1			IV EEE	I	Constructional features, Principal of operation of Induction Motor	1.Explain the constructional features of Induction Motors?
2			IV EEE	I	production of rotating magnetic field, induction motor action,	1.What is meant by rotating magnetic field? 2.Differentiate slip-ring induction motor and squirrel cage induction motor
3			IV EEE	I	torque production	1.Derive the expression for torque developed in 3-phase induction motor.
4			IV EEE	I	development of equivalent circuit	1.Draw the equivalent circuit of 3-phase IM. 2.How do you represent the mechanical load in equivalent circuit?
5			IV EEE	I	testing	1.Explain No-Load test and Rotor Blocked test. Write the purpose of Rotor blocked test. 2.
6			IV EEE	I	performance characteristics	1. Draw torque-slip characteristics of 3-phase induction motor. 2.Derive the relation ship between starting torque and maximum torque.
7			IV EEE	I	circle diagram	1. What is the purpose of circle diagram. Describe the steps to draw circle diagram. 2.
8			IV EEE	I	starting methods	1.Explain Auto-transformer starting method. Describe rotor resistance starting method. 2.

9			IV EEE	I	double cage and deep bar motors	1. Describe working principle and the operation of double cage rotor.
10			IV EEE	II	Methods of speed control - stator voltage control, stator resistance control	1. Describe stator voltage control method to control speed. 2. Differentiate stator voltage speed control and stator resistance speed control methods.
11			IV EEE	II	frequency control, rotor resistance control, slip power recovery control	1. Mention some demerits rotor resistance speed control method. 2. Explain Speed control of IM by varying frequency with a neat ckt. Diagram.
12			IV EEE	II	Induction Generator Principle of operation	1. Describe how does induction machine work as a generator. 2. Draw torque-slip characteristics of induction generator.
13			IV EEE	II	types and applications.	1. Write some applications of induction generator.
14			IV EEE	II	Single Phase Induction motors: Double revolving field theory, cross field theory	1. Why is 1-phase IM not self-starting? 2. Describe the ways to produce starting torque.
15			IV EEE	II	different types of single phase induction motors,	1. What are the different types of 1-phase IM available? 2. Compare them for their merits and demerits.
16			IV EEE	II	circuit model of single phase induction motor.	1. Draw the equivalent circuit of 1-phase Induction motor.
17			IV EEE	II	Synchronous Generator-working Principle & working	1. What is the working principle of synchronous generator? 2. Describe the operation of synchronous generator.
18			IV EEE	III	construction of cylindrical rotor and salient pole machines	1. Explain the construction of cylindrical rotor and salient pole machines. 2. Compare cylindrical rotor and salient pole machines
19			IV EEE	III	winding, EMF equation, Armature reaction	1. Describe armature reaction. How does it effect the performance of synchronous generator. 2. Derive EMF equation for synchronous generator.
20			IV EEE	III	testing, model of the machine	1. Explain OCC and SCC of a synchronous generator. 2. Draw the equivalent circuit of a synchronous generator.
21			IV EEE	III	regulation – synchronous reactance method	1. What is meant by voltage regulation. 2. Explain synchronous reactance method to find voltage regulation of a synchronous generator.
22			IV EEE	III	Potier triangle method.	1. Obtain the voltage regulation of a synchronous generator using potier triangle method with the help of experiment conducted graph paper.

23			IV EEE	III	Output power equation, power angle curve.	1. Derive the expression for output power of a synchronous generator. 2. Draw power angle curve for a synchronous generator.
24			IV EEE	IV	Three Phase Synchronous Generators:	1. Write some applications of Three Phase Synchronous Generators
25			IV EEE	IV	Transient and sub-transient reactances	1. What is transient reactance. 2. Differentiate Transient and sub-transient reactances
26			IV EEE	IV	synchronization, parallel operation.	1. Describe the process of synchronization. 2. Why does parallel operation of alternators need synchronization.
27			IV EEE	IV	Synchronous Motor: Principles of synchronous motor, starting,	1. Why synchronous motor is not self starting? Describe the ways of starting. 2.
28			IV EEE	IV	power angle curve, V-curve,	1. Draw V & inverted V curves with the help of phasor diagrams.
29			IV EEE	IV	damper winding, synchronous condenser	1. How synchronous motor is working as condenser. Explain. What is the use of damper winding. 2.
30			IV EEE	IV	applications.	1. List out some applications of synchronous condenser.
31			IV EEE	IV	Revision Class	Some numerical questions will be discussed
32			IV EEE	IV	Revision Class	Some derivations will be revised
33			IV EEE	IV	Revision Class	Test based on the assignments
34			IV EEE	IV	Revision Class	Test based on the assignments