

Course: Electrical Machines - II

Course Code: noc20-ee38

Session: 2019-20

Duration: 12 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1: Brief review of transformer. Rotating machine: general constructional features. Conditions for steady production of electromagnetic torque. Torque production can be explained in terms of interaction of two sets of magnetic poles – one produced by stator coil current and the other by rotor coil currents.

Week 2: MMF and flux density distribution along the air-gap of a rotating machine by a single coil and by multiple coils. Basic winding terms and elementary balanced 3-phase winding. Idea of electrical and mechanical angle.

Week 3: Production of rotating field by a 3-phase winding – its speed and direction of rotation and its far-reaching implications.

Week 4: The expression of induced voltage in a coil when it moves relative to a field distribution – its rms value and frequency.

Week 5: Types and constructional features of 3-phase induction motor. Slip and its importance. Development of equivalent circuit of the motor when it runs with a slip. Getting expression for torque in terms of equivalent circuit parameters and supply voltage.

Week 6: Typical torque slip characteristic. Fixing operating point when load torque is present. Modification of the torque -slip characteristic by varying rotor resistance, supply voltage and frequency.

Week 7: Estimation of equivalent circuit parameters from no load and locked(blocked) rotor tests. Problem solving.

Week 8: Single phase induction motor: double revolving field theory and development of equivalent circuit and expression for torque. Torque-slip characteristic. Expression for starting torque in presence of auxiliary winding. Estimation of starting capacitance for auxiliary coil using concept of phase splitting.

Week 9: Synchronous machine: Types and constructional features. EMF equation and concept of synchronous reactance. Synchronizing an incoming generator (alternator) to the bus. Phasor diagram as generator. Regulation. Effect of excitation variation when generator is connected to bus. Power-angle characteristic. Steady state stability limit.

Week 10: Synchronous machine connected to bus and operating as motor. Phasor diagram under various operating conditions. Effect of excitation variation.

Week 11: Salient pole synchronous machine: concept of direct axis and quadrature axis reactances. Phasor diagrams under various operating conditions both for motoring and generating mode

Week 12: Swing equation under dynamic condition. Equal area criteria. Steady state and transient stability limits.

List of students enrolled

S. No	Name of Student
1	Vishnu Gupta
2	Akash Yadav
3	Abhay
4	Abhishek Jangir
5	Abhishek Kumar Sarang
6	Aditya Gaur
7	Akshay Garg
8	Amit Soni
9	Ankit Jonwal
10	Ankush Joshi
11	Ankush Meena
12	Anurag Singh Chauhan
13	Anveshika Singh
14	Archit Jain
15	Arpit Gangwal
16	Ashish Latiyal
17	Ashveen Dasaya
18	Avadhesh Khandelwal
19	Ayush Choudhary
20	Ayush Pawar
21	Bharat Khandelwal
22	Bharat Kumar
23	Bhavesht Sharma
24	Akshay
25	Chetan Jangid
26	Chetan Prajapat
27	Chitranjan Arya
28	Deeksha Choudhary
29	Pradhun Malhotra
30	Yash Kumar Sen
31	Devendra Sharma
32	Dishant Doriya

33	Deepak
34	Gari
35	Bhagchand Gurjar
36	Harsh Dixit
37	Harshit Singh
38	Himanshu Vijay
39	Hukam Chand Gwala
40	Divyanshu
41	Milind Jalwania
42	Aarambh Jangir
43	Jayesh Singh Sagar
44	Tanishk Jharwal
45	Jitendra Agrawal
46	Aviral Jain
47	John Gulpadiya
48	Kamal Singh
49	Karishma Tomar
50	Kaushal Kumar
51	Khagendra Singh Naruka
52	Mayank Khandelwal
53	Rakshit Khandelwal
54	Khushal Kumar Sain
55	Gaurav Kumar Khandelwal
56	Harshit Kumawat
57	Yash Verma
58	Kushal Maheshwari
59	Lalit Meena
60	Manish Poswal
61	Monika Jareda
62	Meenakshi Meena
63	Megha Sharma
64	Mohit Agrawal
65	Mohit Kumawat

66	Pushpendra Meena
67	Mudit Surana
68	Nakul Singh Jadon
69	Naveen Kumar Verma
70	Nidhi Mahawar
71	Nikhil Chopra
72	Nikhil Singh
73	Nikita Meena
74	Vansh Pradeep Singh Rathore
75	Piyush Pal
76	Pankaj Dhakad Dhakad
77	Paras Sharma
78	Prashu Jain
79	Prince Meena
80	Rahul Meena
81	Ratan Soni
82	Ravi Ram Meena
83	Rishi Bhargav
84	Ritik Verma
85	Amisha Jain
86	Lakshit Sharma
87	Rohit Jain

88	Rupesh Kumar Yadav
89	Saurabh Meena
90	Aarti Shah
91	Jatin Sharma
92	Yash Kumar Sharma
93	Shreya Meena
94	Shubham Naryani
95	Siddharth Darji
96	Amit Yadav
97	Sourabh Kumawat
98	Ajay Meena
99	Shubham Prajapati
100	Vibhor Bansal
101	Suarj Choudhary
102	Poorvaja Verma
103	Unnati Kumawat
104	Vishal Singh
105	Vishal Dhakad
106	Shivam Sharma
107	Yaduveer Chaudhary
108	Yash Kumar Sharma