

# Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electrical and Electronics Engineering

Lesson plan of faculty member for the academic year 2020-2021

Class: II B Tech

Branch-Section: EEE

Semester: I

Subject: Electrical Machines-I

Lectures per week: 3+1(Tutorial)

Lecture Number	Topics to be covered	Date (s)
<b>UNIT-I: DC Generators</b>		
1	Principle of operation	01 September 2020
2	Action of commutator	02 September 2020
3	Tutorial: Numerical	04 September 2020
4	Constructional features, Armature windings	07 September 2020
5	Lap and Wave winding	08 September 2020
6	Simplex and multiplex windings, use of laminated core, EMF equation	09 September 2020
7	Tutorial: Numerical on EMF equation	11 September 2020
8	Armature reaction	14 September 2020
9	Cross magnetizing and demagnetizing AT/pole, Compensating winding	15 September 2020
10	Commutation, Reactance voltage, methods of improving commutation	16 September 2020
11	Tutorial: Numerical on AT/pole	18 September 2020
12	Methods of Excitation, Separately & Self excited generators	21 September 2020
13	Build-up of EMF, critical field resistance and critical speed	22 September 2020
14	Causes for failure to self-excite and remedial measures	23 September 2020
15	Tutorial: Numerical on critical resistance and speed	25 September 2020
16	Load characteristics of shunt, series generator	28 September 2020
17	Load characteristics of compound generator	29 September 2020
<b>UNIT-II: DC Motors</b>		
18	Principle of operation, back EMF, torque equation	30 September 2020
19	Characteristics of series, shunt and compound motors	05 October 2020
20	Armature reaction and commutation	06 October 2020
21	Speed control of Dc Motors; Armature voltage and field flux control method	07 October 2020
22	Tutorial: Numerical on Torque equation	09 October 2020
23	Motor starters (3-point and 4-point starters)	12 October 2020
24	Testing of DC machines, Constant & variable losses	13 October 2020
25	Calculation and condition for maximum efficiency	14 October 2020
26	Tutorial: Numerical on efficiency	16 October 2020
<b>UNIT-III: Testing of DC Machines</b>		
27	Methods of Testing direct, indirect testing	26 October 2020
28	Methods of regenerative testing	27 October 2020
29	Brake Test	28 October 2020
30	Swinburne's test	09 November 2020
31	Hopkinson's test	10 November 2020
32	Field's test	11 November 2020
33	Tutorial: Numerical on tests	13 November 2020
34	Separation of stray losses in a DC motor test	16 November 2020
<b>UNIT-IV: Single Phase Transformers</b>		
35	Constructional details, minimization of hysteresis and eddy current loss	17 November 2020
36	EMF equation, Operation on no-load – Phasor diagram	18 November 2020
37	Tutorial: Numerical on EMF equation	20 November 2020
38	Operation on on-load – Phasor diagram	23 November 2020
39	Equivalent circuit	24 November 2020
40	Losses and efficiency	25 November 2020
41	Tutorial: Numerical on losses, regulation	27 November 2020
42	Regulation	01 December 2020

Lecture Number	Topics to be covered	Date (s)
43	All-day efficiency	02 December 2020
44	Tutorial: Numerical on efficiency	04 December 2020
45	Effect of variations of frequency & supply voltage on Iron losses	07 December 2020
<b>UNIT-V: Testing of Transformers and Poly- Phase Transformers</b>		
46	OC and SC Tests	08 December 2020
47	Sumpner's Test	09 December 2020
48	Tutorial: Numerical on OC & SC tests	11 December 2020
49	Predetermination of efficiency and regulation	14 December 2020
50	Separation of losses test	15 December 2020
51	Parallel operation with equal and unequal voltage ratios	16 December 2020
52	Tutorial: Problems on parallel operation	18 December 2020
53	Auto transformers - Equivalent circuit	21 December 2020
54	Comparison with two winding transformers	22 December 2020
55	Poly phase transformers	23 December 2020
56	Poly phase connections Y/Y, Y/ $\Delta$ , $\Delta$ /Y	28 December 2020
57	Open $\Delta$ connection	29 December 2020
58	Previous Papers discussion	30 December 2020

**Textbooks:**

1. J. Nagarath & D. P. Kothari, "Electric machines", Tata Mc Graw Hill Publishers, 3<sup>rd</sup> Edition, 2004.
2. P. S. Bimbhra, "Electrical Machines", Khanna Publishers, 7<sup>th</sup> Edition 2014.
3. V. K. Mehta, Rohit Mehta, "Principles of Electrical Machines", 2<sup>nd</sup> Edition, S. Chand Publishers, 2015.
4. E. Clayton & N.M. Hancock "The performance and Design of Direct Current Machines" 3<sup>rd</sup> Edition

Name and signature of the faculty: Ms Sri Lakshmi Vani V ----

Name and signature of Head of the Department: Mrs Manju Bhargavi R ----