SAMSKRUTI COLLEGE OF ENGINEERING & TECHNOLOGY

LESSON PLAN - ELECTRICAL MACHINES –I : (II year B.Tech. I SEM.)

NAME OF THE FACULTY:B.SRAVANTHI.

Sl. No	Name of the topic	No. Of classes required	Cumulative number of periods
UNIT – I : D.C. GENERATORS			
1	Principles of operation of D.C. Generators	01	1
2	Construction of D.C. Machine	01	2
3	Armature winding & Commutator	01	3
4	Generator emf equation & Problems	01	4
5	Causes and effects of armature reaction	02	6
6	Methods of limiting effects of armature reaction	02	8
7	Commutation process & problems	02	10
8	Classification of D.C. Generators	01	11
9	Open circuit characteristic	02	13
10	Losses in d.c. Generators & problems	02	15
11	Load characteristics of D.C. Shunt &Series generators	01	16
12	Load characteristics of D.C. Compound generator	01	17
13	Internal & External characteristics of D.C. Generators	01	18
UNIT-II D.C. MOTORS			
14	Principles of operation	1	19
15	Torque equation	1	20
16	Classification of motors	01	21
17	Characteristics of shunt motor & series motor	01	22
18	Characteristics of compound motor	01	23
19	Performance curves of series and shunt motors	01	24

20	Power stages in D.C. Motor & problems	02	26
21	Introduction to speed control of d.c motors	01	27
22	Speed control by varying field flux : shunt motor & series motor	01	28
23	Speed control by varying field circuit resistance : shunt motor	01	29
24	Speed control by varying circuit resistance : series motor	01	30
25	Speed control by varying armature terminal voltage & problems	02	32
26	Testing of dc machines&losses	1	33
27	Condition for maximum efficiency and related problems	2	35
	UNIT-III TESTING OF D.C. MACHINES		
28	Power stages in D.C. Machines	01	36
29	Efficiency and testing of D.C. Machines	01	37
30	Direct method of testing & Indirect method of testing	01	38
31	Regenerative method of testing	01	39
32	Field test for series machine & problems	01	40
33	Brake test and swimburns test	2	42
34	Hopkinson's test& separation of losses	1	43
	UNIT – IV : SINGLE PHASE TRANSFORMERS		
35	Introduction to single phase Transformer and principle of working & constructional details	01	44
36	Hysteresis and eddy current losses and how to minimize it	01	45
37	E.M.F equation of transformer and related problems	01	46
38	Operation of Ideal Transformer on no load and on load with Phasor diagram	01	47
39	Operation of practical Transformer on no load and on load with Phasor diagram& Problems	01	48
40	Equivalent circuit of a transformer	01	49
41	losses and efficiency in a Transformer	01	50
42	Condition for maximum Efficiency and problems	01	51
43	All day efficiency and problems	01	52

44	Regulation and problems	01	53
45	effect of variations of frequency & supply voltage on iron losses	01	54
46	Problems	02	55
	UNIT – V : TESTING OF SINGLE PHASE TRANSFORMER		
47	OC and SC tests on single phase Transformer	01	56
48	predetermination of efficiency and regulation from O. C and S. C Test , Sumpner's test and problems	01	57
49	separation of losses test	01	58
50	parallel operation of transformers with equal voltage ratios	01	59
51	parallel operation of transformers with unequal voltage ratios	02	61
52	auto transformers , comparison with two winding transformer	01	62
53	equivalent circuit of autotransformer and problems	01	63
54	Construction and operation of Polyphase transformers	01	64
55	Polyphase connections – Y/Y, Y/Δ, Δ/Y, Δ/Δ and problems	01	65