SAMSKRUTI COLLEGE OF ENGINEERING & TECHNOLOGY

LESSONPLAN

SWITCHGEAR AND PROTECTION

(IV Year I Sem)

NAME OF THE FACULTY: B.SRAVANTHI

Sl. No.	Name of the Topic	No. of Classes required	Cumulative number of periods	Teaching Aid
UNIT – 1: Circuit Breakers				
1.	Elementary principles of arc interruption	01	1	Chalk & Talk
2.	Recovery, Restricting voltage & recovery voltages	01	2	Chalk & Talk
3.	Restricting phenomenon	01	3	PPT
4.	Average & maximum RRRV	01	4	Chalk & Talk
5.	Current chopping & resistance switching	01	5	PPT
6.	CB ratings & specifications	01	6	Chalk & Talk
7.	Types & Numerical Problems – Auto reclosusers	01	7	Chalk & Talk
8.	Description & Operation of different types of circuit breakers	02	9	Chalk & Talk
9.	Minimum Oil Circuit breakers	02	11	PPT
10.	Air blast circuit breakers	01	12	PPT
11.	SF_6 circuit breakers	02	14	PPT
12.	Vacuum circuit breakers	01	15	Chalk & Talk
13.	Tutorial Class -I	01	16	Chalk & Talk
14.	Tutorial Class -II	01	17	Chalk & Talk
15.	Classes for beyond syllabus	01	18	Chalk & Talk

16.	Descriptive Test	01	19	Chalk & Talk
UNIT –II : Electromagnetic & Static Relays				
17.	Principles of operation and construction of attracted armature	01	20	Chalk & Talk
18.	Balanced – beam - Induction	01	21	Chalk & Talk
19.	Disc and induction – Cup relays	01	22	Chalk & Talk
20.	Classification of relays : Instantaneous, DMT Types	01	23	PPT
21.	Application or Relays : Over current / under voltage relays, Direction relays, Differential Relays – Percentage differential relays.	02	25	Chalk & Talk
22.	Universal Torque equation, Distance relays, Impedance, reactance and Mho and off-set Mho relays	02	27	PPT
23.	Characteristics of Distance Relays & Comparison	01	28	Chalk & Talk
24.	Static relays – Static relays Versus Electromagnetic relays	01	29	Chalk & Talk
25.	Tutorial Class -I	01	30	Chalk & Talk
26.	Tutorial Class -II	01	31	Chalk & Talk
27.	Remedial Classes/NPTL	01	32	Chalk & Talk
UNIT – III: Generator & Transformer Protection				
28.	Protection of generators against Stator faults, and Abnormal conditions	01	33	Chalk & Talk
29.	Rotor protection Field ground fault protection Loss of excitation and overheating	01	34	PPT
30	Misce. Fault. over speeding ,aux. failure	01	35	Chalk & Talk

31.	Numerical Problems on % winding unprotected	01	36	Chalk & Talk
32.	Protection of Transformers ,types of fault	01	37	Chalk & Talk
33	Overheating	01	38	Chalk & Talk
34	Magnetising inrush current	01	39	Chalk & Talk
35	Earth fault.	01	40	Chalk & Talk
36.	Percentage differential protection	01	41	Chalk & Talk
37	3-winding transformer	01	42	PPT
39.	Numerical Problem on design of CTs ratio	01	43	Chalk & Talk
39.	Buchholtz relay protection	01	44	PPT
43.	Tutorial Class -I	01	45	Chalk & Talk
44.	Tutorial Class -II	01	46	Chalk & Talk
UNIT – IV: Feeder & Bus Bar Protection & Grounding				
45.	Protection of lines	01	47	Chalk & Talk
50.	Over current, Carrier current & Three zone distance relay protection using Impedance relays	02	49	Chalk & Talk
51.	Tran slay Relay	01	50	Chalk & Talk
52.	Protection of Bus Bar	01	51	PPT
53.	Differential Protection	01	52	Chalk & Talk
54.	Grounded & ungrounded neutral systems	02	54	Chalk & Talk
55.	Effects of Ungrounded neutral on system performance	01	55	Chalk & Talk
56.	Methods of Neutral Grounding	02	57	PPT
57.	Solid, Resistance, Reactance	02	59	PPT
58.	Arcing grounds and Grounding Practices	02	61	Chalk & Talk
59.	Tutorial Class -I	01	62	Chalk & Talk

60.	Tutorial Class -II	01	63	Chalk & Talk
61.	Remedial Classes/NPTL	01	64	Chalk & Talk
62.	Descriptive Test	01	65	
UNIT – V: Protection Against Over Voltages				
63.	Generation of over voltage in power systems	01	66	Chalk & Talk
64.	Protection against Lightening over voltages	01	67	Chalk & Talk
65.	Valve Type & Zinc oxide type lightening arresters	01	68	Chalk & Talk
66.	Insulation & co-ordination	02	70	PPT
67.	BIL, Impulse Ratio, Standard Impulse Test Wave	01	71	PPT
68.	Volt-time characteristics & Insulation co-ordinaion	02	73	Chalk & Talk
69.	Tutorial Class -I	01	74	Chalk & Talk
70.	Tutorial Class -II	01	75	Chalk & Talk