

GOVERNMENT POLYTECHNIC ASTHAWAN, NALANDA

(Department of Electrical Engineering)

Semester:	5th Electrical	
Subject:	Switchgear and protection	
Subject Code:	1620501	
Lecturer /Week:	4	
Name of the Faculty:	Chandan Kumar	

Lesson Plan

WEEK	LECTURE NO. (1 Hr Each)	UNIT	TOPIC OF CLASS & DISCUSSION	TEACHING MODE
Week 1	1	Unit -1	Necessity & functions of protective system.	Lecture/PPT/ Pdf/Video
	2		Normal & abnormal conditions.	Lecture/PPT/ Pdf/Video
	3		Types of faults & their causes.	Lecture/PPT/ Pdf/Video
	4		Short circuit calculations(Symmetrical faults only)	Lecture/PPT/ Pdf/Video
Week 2	5	Unit -2	Use of current limiting reactors & their arrangements.	Lecture/PPT/ Pdf/Video
	6		HRC fuses – construction, types, working	Lecture/PPT/ Pdf/Video
	7		HRC fuses-characteristics, selection and applications	Lecture/PPT/ Pdf/Video
	8		Isolators- vertical break, horizontal break & pentagraph type	Lecture/PPT/ Pdf/Video
Week 3	10	Unit -2	Arc formation process, methods of arc extinction, related terms	Lecture/PPT/ Pdf/Video
	11		continue...	Lecture/PPT/ Pdf/Video
	12		Circuit breakers- Concept, Classification, Working principle, construction	Lecture/PPT/ Pdf/Video
	14		H.T – Bulk oil circuit breaker, Minimum oil circuit breakers	Lecture/PPT/ Pdf/Video
Week 4	15	Unit -2	Sulphur Hexa Fluoride circuit breaker (SF6), Vacuum circuit breaker.	Lecture/PPT/ Pdf/Video
	16		L.T.- Air circuit breakers (ACB), miniature circuit breakers	Lecture/PPT/ Pdf/Video
	17		Moulded case circuit breakers (M C C B) , Earth leakage circuit breaker	Lecture/PPT/ Pdf/Video
	18		Selection of MCCB for motor.	Lecture/PPT/ Pdf/Video
Week 5	19	Unit -3	Selection and rating of circuit breakers.	Lecture/PPT/ Pdf/Video
	20		Requirements- relay time, related terms.	Lecture/PPT/ Pdf/Video
	21		Classification – Electromagnetic attraction, induction static , μP based relays	Lecture/PPT/ Pdf/Video
	22		Continue...	Lecture/PPT/ Pdf/Video
Week 6	23	Unit -3	Protective transformers.	Lecture/PPT/ Pdf/Video
	24		Over current relay-Time current characteristics.	Lecture/PPT/ Pdf/Video
	25		Static over current relays	Lecture/PPT/ Pdf/Video

	26	Unit -3	µP based over current relays.	Lecture/PPT/ Pdf/Video	
Week 7	27		Distance relaying- Principle, static, µP based	Lecture/PPT/ Pdf/Video	
	28		continue.....	Lecture/PPT/ Pdf/Video	
	29		Directional relay.	Lecture/PPT/ Pdf/Video	
	30		Differential Relay.	Lecture/PPT/ Pdf/Video	
	31		Simple numerical on relay setting	Lecture/PPT/ Pdf/Video	
Week 8	32	Unit -4	Abnormalities & Faults	Lecture/PPT/ Pdf/Video	
	33		Differential protection	Lecture/PPT/ Pdf/Video	
	34		Continue.....	Lecture/PPT/ Pdf/Video	
	35		Overcurrent , earth fault, interturn fault	Lecture/PPT/ Pdf/Video	
Week 9	36		Negative phase sequence,	Lecture/PPT/ Pdf/Video	
	37		Over heating protection.	Lecture/PPT/ Pdf/Video	
	38		Reverse power protections.	Lecture/PPT/ Pdf/Video	
	39		numerical on differential protection	Lecture/PPT/ Pdf/Video	
Week 10	40		Unit -5	Abnormalities & faults	Lecture/PPT/ Pdf/Video
	41			Continue.....	Lecture/PPT/ Pdf/Video
	42	Differential, over current, earth fault, interturn		Lecture/PPT/ Pdf/Video	
	43	over heating protection.		Lecture/PPT/ Pdf/Video	
Week 11	44	Buchholtz relay		Lecture/PPT/ Pdf/Video	
	45	Continue....		Lecture/PPT/ Pdf/Video	
	46	Simple numerical on differential protection		Lecture/PPT/ Pdf/Video	
	47	numerical continue...		Lecture/PPT/ Pdf/Video	
Week 12	48	Unit -6		Abnormalities & faults.	Lecture/PPT/ Pdf/Video
	49			Short circuit protection,	Lecture/PPT/ Pdf/Video
	50		Overload protection,	Lecture/PPT/ Pdf/Video	
Week 13	51		Single phase preventor	Lecture/PPT/ Pdf/Video	
	52		Unit-7	Abnormalities & faults	Lecture/PPT/ Pdf/Video
	53			Bus bar protection	Lecture/PPT/ Pdf/Video
54	Continue.....	Lecture/PPT/ Pdf/Video			
Week 14	55	Transmission line,		Lecture/PPT/ Pdf/Video	
	56	over current, distance protection.		Lecture/PPT/ Pdf/Video	
	57	Pilot wire protection		Lecture/PPT/ Pdf/Video	

	58	Unit-8	Introduction & importance.	Lecture/PPT/ Pdf/Video
Week 15	59		Types of earthing	Lecture/PPT/ Pdf/Video
	60		Substation earthing	Lecture/PPT/ Pdf/Video
	61	Unit-9	Causes of over voltages.	Lecture/PPT/ Pdf/Video
62	Lighting phenomena & over voltage due to lightning		Lecture/PPT/ Pdf/Video	
Week 16	63		Protection of transmission line & substation	Lecture/PPT/ Pdf/Video
	64		Types of lightning arresters & surge absorbers	Lecture/PPT/ Pdf/Video
	65		Protection against traveling waves.	Lecture/PPT/ Pdf/Video
	66	Insulation co-ordination.	Lecture/PPT/ Pdf/Video	