SYNERGY POLYTECHNIC, BBSR

Lesson Plan

Discipline : EE	Semester : 6th	Name of the Teaching Faculty : DILIP KUMAR NAYAK
SUBJECT : SGPD	No of Days/per week class allotted: 04	Semester from Date: 16/01/2024 to Date: 16/04/2024 No of Weeks: 14
Week	Class Day	Theory/Practical Topics
1st	1st	**1. INTRODUCTION TO SWITCHGEAR**
	2nd	Essential Features of switchgear ,Switchgear Equipments
	3rd	Bus-Bar Arrangement,Switchgear Accommodation.
	4th	Short circuit, Faults in a power system.
2nd	1st	**2.FAULT CALCULATION : Symmetrical faults on 3-phase system.**
	2nd	Limitation of fault current,Percentage Reactance.
	3rd	Percentage Reactance and Base KVA, Short – circuit KVA.
	4th	Reactor control of short circuit currents, Location of reactors.
3rd	1st	Steps for symmetrical Fault calculations.
	2nd	Solve numerical problems on symmetrical fault.
	3rd	**3.FUSES :Desirable characteristics of fuse element.**
	4th	Fuse Element materials.
4th	1st	Types of Fuses and important terms used for fuses.
	2nd	Low and High voltage fuses,Current carrying capacity of fuse element.
	3rd	Difference Between a Fuse and Circuit Breaker.
	4th	**4.CIRCUIT BREAKERS:Definition and principle**
5th	1st	Arc phenomenon and principle of Arc Extinction.
	2nd	Methods of Arc Extinction.
	3rd	Definitions of Arc voltage, Re-striking voltage and Recovery voltage.
	4th	Classification of circuit Breakers.
6th	1st	Oil circuit Breaker and its classification.
	2nd	Plain brake oil circuit breaker,Arc control oil circuit breaker.
	3rd	Low oil circuit breaker,Maintenance of oil circuit breaker.
	4th	Air-Blast circuit breaker and its classification.
7th	1st	Sulphur Hexa-fluoride (SF6) circuit breaker.
	2nd	Vacuum circuit breakers,Problems of circuit interruption.
	3rd	Resistance switching , Circuit Breaker Rating.
	4th	**5.PROTECTIVE RELAYS:Definition of Protective Relay.**
8th	1st	Fundamental requirement of protective relay.
	2nd	Basic Relay operation,Electromagnetic Attraction type
	3rd	Induction type
	4th	Pick-up current, Current setting,Plug setting Multiplier.

9th	1st	Time setting Multiplier,Classification of functional relays
	2nd	Induction type over current relay (Non-directional)
	3rd	Induction type directional power relay.
	4th	Induction type directional over current relay.
10th	1st	Differential relay
	2nd	Current & Voltage balance differential relay
	3rd	Types of protection
	4th	**6.PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES**
11th	1st	Protection of alternator, Differential protection of alternators.
	2nd	Balanced earth fault protection, Protection systems for transformer.
	3rd	Buchholz relay,Protection of Bus bar & Transmission line.
	4th	Different pilot wire protection (Merz-price voltage Balance system)
12th	1st	Explain protection of feeder by over current and earth fault relay.
	2nd	**7.PROTECTION AGAINST OVER VOLTAGE AND LIGHTING**
	3rd	Voltage surge and causes of over voltage.
	4th	Internal & External causes of over voltage.
13th	1st	Cause of over voltage, Mechanism of lightning discharge.
	2nd	Types of lightning strokes,. Harmful effect of lightning.
	3rd	Lightning arresters and Type of lightning Arresters.
	4th	Rod-gap lightning arrester,Horn-gap arrester,
14th	1st	Valve type arrester,Surge Absorber
	2nd	STATIC RELAY:Advantage of static relay.
	3rd	Instantaneous over current relay,Principle of IDMT relay.

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Principal