

Department of Electrical Engineering

Branch: Electrical Engineering	Semester: 6th	Name of the Lecturer: Chacha Amitav Tripathy
Subject: SGPD	No of classes alloted in a week: 5	Duration of Semester: 04.02.2025 - 17.05.2025
Week	Class Day	Theory Topic
1st	1	INTRODUCTION TO SWITCHGEAR: Essential Features of switchgear
	2	Switchgear Equipment
	3	Bus-Bar Arrangement
	4	Switchgear Accommodation
	5	Short Circuit, Faults in a power system.
2nd	1	FAULT CALCULATION: Symmetrical faults on 3-phase system, Limitation of fault current, Percentage Reactance.
	2	Percentage Reactance and Base KVA, Short circuit KVA, Reactor control of short circuit currents, Location of reactors
	3	Steps for symmetrical Fault calculations.
	4	Solve numerical problems on symmetrical fault
	5	Solve numerical problems on symmetrical fault
3rd	1	Solve numerical problems on symmetrical fault
	2	Solve numerical problems on symmetrical fault
	3	Solve numerical problems on symmetrical fault
	4	Solve numerical problems on symmetrical fault
	5	Solve numerical problems on symmetrical fault
4th	1	FUSES: Desirable characteristics of fuse element
	2	Fuse Element materials
	3	Types of Fuses and important terms used for fuses
	4	Low voltage fuses
	5	High voltage fuses, Current carrying capacity of fuse element
5th	1	Difference Between a Fuse and Circuit Breaker
	2	CIRCUIT BREAKERS: Definition and principle of Circuit Breaker. Arc phenomenon and principle of Arc Extinction, Methods of Arc Extinction
	3	Definitions of Arc voltage, Re-striking voltage and Recovery voltage, Classification of circuit Breaker
	4	Oil circuit Breaker and its classification. Plain brake oil circuit breaker
	5	Arc control oil circuit breaker
6th	1	Low oil circuit breaker, Maintenance of oil circuit breaker
	2	Air-Blast circuit breaker and its classification
	3	Sulphur Hexa-fluoride (SF6) circuit breaker
	4	Vacuum circuit breakers,
	5	Switchgear component, Problems of circuit interruption
7th	1	Resistance switching. Circuit Breaker Rating
	2	PROTECTIVE RELAYS: Definition of Protective Relay, Fundamental requirement of protective relay, Basic Relay operation
	3	Electromagnetic Attraction type, Induction type, Definition of following important terms: Pick-up current, current setting,
	4	Plug setting Multiplier & Time setting Multiplier, Classification of functional relays, Induction type over current relay (Non-directional)
	5	Induction type directional power relay

8th	1	Induction type directional over current relay
	2	Differential relay: Current differential relay,
	3	Voltage balance differential relay, Types of protection
	4	PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES: Protection of alternator, Differential protection of alternators, Balanced earth fault protection.
	5	Protection systems for transformer, Buchholz relay
9th	1	Protection of Bus bar, Protection of Transmission line
	2	Different pilot wire protection (Merz-price voltage Balance system)
	3	Explain protection of feeder by over current and earth fault relay.
	4	PROTECTION AGAINST OVER VOLTAGE AND LIGHTNING: Voltage surge and causes of over voltage.
	5	Internal cause of over voltage, External cause of over voltage (lightning)
10th	1	Mechanism of lightning discharge
	2	Types of lightning strokes
	3	Harmful effect of lightning
	4	Lightning arresters and Type of lightning Arresters, Rod-gap lightning arrester, Horn-gap arrester, Valve type arrester
	5	Surge Absorber
11th	1	STATIC RELAY: Advantage of static relay
	2	Instantaneous over current relay
	3	Principle of IDMT relay
	4	Previous Semester Question Discussion
	5	Previous Semester Question Discussion

Signature of the
Lecturer

Signature of the
H.O.D.