LESSON PLAN FOR ACADEMIC SESSION: 2023-24(Summer-24)

Discipline: Electrical Engineering		Semester : 6th	Name of the Teaching Faculty : DHANANJAYA MAHAKUR
Subject : SGPD	No. of days / week class allotted		Semester From : 16.01.24 to 23.04.2024 Nos. of Weeks per semester : 15
Week	Class Day	Chapter	Theory Topics
1ST	1st	Chapter-1 INTRODUCTION TO SWITCHGEAR	1.1 Essential Features of switchgear.
	2nd		1.2 Switchgear Equipment.
	3rd		1.3 Bus-Bar Arrangement.
	4th		1.4 Switchgear Accommodation.
2ND	1st		1.5 Short Circuit.
	2nd		1.6 Short circuit. 1.7 Faults in a power system.
	3rd	Chapter-2 FAULT CALCULATION	2.1 Symmetrical faults on 3-phase system
	4th		2.2 Limitation of fault current.
3RD	1st		2.3 Percentage Reactance
	2nd		2.4 Percentage Reactance and Base KVA.
	3rd		2.5 Short – circuit KVA
	4th		2.6 Reactor control of short circuit current.
4TH	1st		2.7 Location of reactors.
	2nd		2.8 Steps for symmetrical Fault calculations
	3rd		2.9 Solve numerical problems on symmetrical fault.
	4th		Continue.....
5TH	1st	Chapter-3 FUSES	3.1 Desirable characteristics of fuse element.
	2nd		3.2 Fuse Element materials.
	3rd		3.3 Types of Fuses and important terms used for fuses.
	4th		3.4 Low and High voltage fuses.
6TH	1st		3.5 Current carrying capacity of fuse element.
	2nd		3.6 Difference Between a Fuse and Circuit Breaker.
	3rd	Chapter-4 CIRCUIT BREAKERS	4.1 Definition and principle of Circuit Breaker
	4th		4.2 Arc phenomenon and principle of Arc Extinction. 4.3 Methods of Arc Extinction.
7TH	1st		4.4 Definitions of Arc voltage, Re-striking voltage and Recovery voltage.
	2nd		4.5 Classification of circuit Breakers. 4.6 Oil circuit Breaker and its classification
	3rd		4.7 Plain brake oil circuit breaker. 4.8 Arc control oil circuit breaker.
	4th		4.9 Low oil circuit breaker.
8TH	1st		4.10 Maintenance of oil circuit breaker. 4.11 Air-Blast circuit breaker and its classification
	2nd		4.12 Sulphur Hexa-fluoride (SF6) circuit breaker.
	3rd		4.13 Vacuum circuit breakers.

	4th		4.14 Switchgear component. 4.15 Problems of circuit interruption.
9TH	1st		4.16 Resistance switching. 4.17 Circuit Breaker Rating.
	2nd	Chapter-5 PROTECTIVE RELAYS	5.1 Definition of Protective Relay. 5.2 Fundamental requirement of protective relay.
	3rd		5.3 Basic Relay operation 5.3.1. Electromagnetic Attraction type 5.3.2. Induction type
	4th		5.4 Definition of following important terms 5.5 Definition of following important terms. 5.5.1. Pick-up current. 5.5.2. Current setting. 5.5.3. Plug setting Multiplier. 5.5.4. Time setting Multiplier
10TH	1st		5.6 Classification of functional relays 5.7 Induction type over current relay (Non-directional)
	2nd		5.8 Induction type directional power relay.
	3rd		5.9 Induction type directional over current relay.
	4th		5.10 Differential relay 5.10.1. Current differential relay 5.10.2. Voltage balance differential relay.
11TH	1st		5.11 Types of protection
	2nd	Chapter-6 PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES	6.1 Protection of alternator. 6.2 Differential protection of alternators
	3rd		6.3 Balanced earth fault protection. 6.4 Protection systems for transformer
	4th		6.5 Buchholz relay.
12th	1st		6.6 Protection of Bus bar. 6.7 Protection of Transmission line
	2nd		6.8 Different pilot wire protection (Merz-price voltage Balance system)
	3rd		6.9 Explain protection of feeder by over current and earth fault relay.
	4th	Chapter-7 PROTECTION AGAINST OVER VOLTAGE AND LIGHTING	7.1. Voltage surge and causes of over voltage. 7.2. Internal cause of over voltage
13th	1st		7.3. External cause of over voltage (lighting) 7.4. Mechanism of lightning discharge.
	2nd		7.5. Types of lightning strokes
	3rd		7.6. Harmful effect of lightning
	4th		7.7. Lightning arresters and Type of lightning Arresters. 7.7.1. Rod-gap lightning arrester. 7.7.2. Horn-gap arrester.
14th	1st		7.7.3. Valve type arrester.
	2nd		7.8. Surge Absorber
	3rd	Chapter-8 STATIC RELAY	8. 1 Advantage of static relay.
	4th		Continue.....
15th	1st		8. 2 Instantaneous over current relay.

	2nd		Continue.....
	3rd		8. 3 Principle of IDMT relay.
	4th		Continue.....

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