

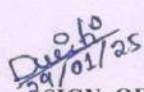
LESSON PLAN FOR 6TH SEM ELECTRICAL ENGINEERING.

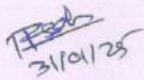
DISCIPLINE:- ELECTRICAL ENGINEERING	SEMESTER :- 6th	NAME OF THE TEACHING FACULTY :- DWITIKRUSHNA BEHERA
SUBJECT :- SWITCHGEAR AND PROTECTIVE DEVICES	NO OF DAYS/PER WEEK CLASS ALLOTTED :- 4+1(TUTORIAL)	SEMESTER FROM DATE :- 04TH FEB 2025 TO DATE 17TH MAY, 2025 NO OF WEEKS :-15
WEEK	CLASS DAY	THEORY TOPICS
1 ST	1 ST	INTRODUCTION TO SWITCHGEAR 1.1 Essential Features of switchgear.
	2 ND	1.2 Switch gear Equipment.
	3 RD	1.3 Bus-Bar Arrangement.
	4 TH	1.4 Switchgear Accommodation.
	5 TH	Tutorial
2 ND	1 ST	1.5 Short Circuit.
	2 ND	1.6 Faults in a power system.
	3 RD	FAULT CALCULATION 2.1 Symmetrical faultson3-phasesystem.
	4 TH	2.2 Limitation of fault current.
	5 TH	Tutorial
3 RD	1 ST	2.3 Percentage Reactance.
	2 ND	2.4 Percentage Reactance and Base KVA.
	3 RD	2.5 Short- circuit KVA
	4 TH	2.6 Reactor control of short circuit currents.
	5 TH	Tutorial
4 TH	1 ST	2.7 Location of reactors.
	2 ND	2.8 Steps for symmetrical Fault calculations.
	3 RD	2.9 Solve numerical problems on symmetrical fault.
	4 TH	2.9 Solve numerical problems on symmetrical fault.
	5 TH	Tutorial
5 TH	1 ST	FUSES 3.1 Desirable characteristics of fuse element.
	2 ND	3.2 Fuse Element materials.
	3 RD	3.3 Type sof Fuses and important terms used for fuses.
	4 TH	3.4 Low and High voltage fuses. 3.5Current carrying capacity of fuse element.
	5 TH	Tutorial
6 TH	1 ST	3.6 Difference Between a Fuse and Circuit Breaker.
	2 ND	CIRCUIT BREAKERS 4.1 Definition and principle of Circuit Breaker.
	3 RD	4.2 Arc phenomenon and principle of Arc Extinction. 4.3 Methods of Arc Extinction.

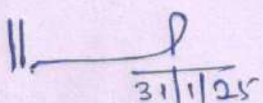
	4 TH	4.4 Definitions of Arc voltage, Re-striking voltage and Recovery voltage. 4.5 Classification of circuit Breakers.
	5 TH	Tutorial
7 TH	1 ST	4.6 Oil circuit Breaker and its classification. 4.7 Plain break oil circuit breaker.
	2 ND	4.8 Arc control oil circuit breaker.
	3 RD	4.9 Low oil circuit breaker. 4.10 Maintenance of oil circuit breaker.
	4 TH	4.11 Air-Blast circuit breaker and its classification. 4.12 Sulphur Hexa – fluoride (SF ₆) circuit breaker.
	5 TH	Tutorial
8 TH	1 ST	4.13 Vacuum circuit breakers. 4.14 Switch gear component.
	2 ND	4.15 Problems of circuit interruption.
	3 RD	4.16 Resistance switching. 4.17 Circuit Breaker Rating.
	4 TH	Tutorial
	5 TH	PROTECTIVE RELAYS 5.1 Definition of Protective Relay. 5.2 Fundamental requirement of protective relay.

9 TH	1 ST	5.3 Basic Relay operation a) Electro-magnetic Attraction type b) Induction type
	2 ND	5.4 Definition of following important terms
	3 RD	5.5 Definition of following important terms.
		a) Pick-up current. b) Current setting. c) Plug setting Multiplier. d) Time setting Multiplier.
	4 TH	5.6 Classification of functional relays
	5 TH	Tutorial
10 TH	1 ST	5.7 Induction type over current relay (Non-directional)
	2 ND	5.8 Induction type directional power relay..
	3 RD	5.9 Induction type directional over current relay
	4 TH	5.10 Differential relay a) Current differential relay b) Voltage balance differential relay
	5 TH	Tutorial
11 TH	1 ST	TYPES OF PROTECTION
	2 ND	6.1 Protection of alternator. 6.2 Differential protection of alternators.
	3 RD	6.3 Balance earth fault protection.
	4 TH	6.4 Protection systems for transformer
	5 TH	Tutorial
12 TH	1 ST	6.5 Buchholz relay
	2 ND	6.6 Protection of Bus bar. 6.7 Protection of Transmission line.

	3 RD	6.8 Different pilot wire protection (Merz - price voltage Balance system) 6.9 Explain protection of feeder by over current and earth fault relay.
	4 TH	Tutorial
	5 TH	7.1 Voltage surge and causes of overvoltage. 7.2 Internal cause of over voltage.
13 TH	1 ST	7.3 External cause of overvoltage (lighting)
	2 ND	7.4 Mechanism of lightning discharge.
	3 RD	7.5 Types of lightning strokes. 7.6 Harmful effect of lightning.
	4 TH	7.7 Lightning arresters.
	5 TH	Tutorial
14 TH	1 ST	7.8 Type of lightning Arresters. a) Rod-gap lightning arrester. b) Horn-gap arrester. c) Valve type arrester.
	2 ND	7.9 Surge Absorber
	3 RD	STATIC RELAY
	4 TH	8.1 Advantage of static relay.
	5 TH	Tutorial
15 TH	1 ST	8.2.1 Instantaneous over current relay.
	2 ND	8.2.2 Instantaneous over current relay.
	3 RD	8.3.1 Principle of IDMT relay.
	4 TH	8.3.2 Principle of IDMT relay.
	5 TH	Tutorial


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