

# Vedang Institute of Technology, 2<sup>nd</sup> Shift

Khurda

## Department of Electrical & Electronics Engineering

### Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: Sradhanjali Mishra

Semester: 6th

Subject : SWITCH GEAR AND PROTECTIVE DEVICES

Session Duration: 2020-21    Classes From: 19/04/2021 to 13/08/2021

Week	Class Day	Topics to Cover
1st	1st	Essential Features of switchgear.
	2nd	Switchgear Equipment.
	3rd	Bus-Bar Arrangement.
	4th	Switchgear Accommodation.
2nd	1st	Short Circuit.
	2nd	Faults in a power system.
	3rd	Symmetrical faults on 3-phase system.
	4th	Limitation of fault current.
3rd	1st	Percentage Reactance.
	2nd	Percentage Reactance and Base KVA.
	3rd	Short – circuit KVA.
	4th	Reactor control of short circuit currents.
4th	1st	Location of reactors.
	2nd	Steps for symmetrical Fault calculations.
	3rd	Solve numerical problems on symmetrical fault.
	4th	Desirable characteristics of fuse element.
5th	1st	Fuse Element materials.
	2nd	Types of Fuses and important terms used for fuses.
	3rd	Low and High voltage fuses & Current carrying capacity of fuse element.
	4th	Difference Between a Fuse and Circuit Breaker.
6th	1st	Definition and principle of Circuit Breaker.
	2nd	Arc phenomenon and principle of Arc Extinction. Methods of Arc Extinction.
	3rd	Definitions of Arc voltage, Re-striking voltage and Recovery voltage.
	4th	Classification of circuit Breakers.
7th	1st	Oil circuit Breaker and its classification. Plain brake oil circuit breaker.

7th	2nd	Arc control oil circuit breaker.
	3rd	Low oil circuit breaker. Maintenance of oil circuit breaker.
	4th	Air-Blast circuit breaker and its classification. Sulphur Hexa-fluoride (SF6) circuit breaker.
8th	1st	Vacuum circuit breakers. Switchgear component.
	2nd	Problems of circuit interruption.
	3rd	Resistance switching. Circuit Breaker Rating.
	4th	Definition of Protective Relay. Fundamental requirement of protective relay.
9th	1st	Basic Relay operation
	2nd	Definition of following important terms
	3rd	Pick-up current.
	4th	Current setting.
10th	1st	Plug setting & Time Setting Multiplier.
	2nd	Classification of functional relays
	3rd	Induction type over current relay (Non-directional)
	4th	Induction type directional power relay & over current relay.
11th	1st	Current differential relay
	2nd	Voltage balance differential relay.
	3rd	Protection of alternator.
	4th	Differential protection of alternators.
12th	1st	Balanced earth fault protection.
	2nd	Protection systems for transformer.
	3rd	Buchholz relay.
	4th	Protection of Bus bar.
13th	1st	Protection of Transmission line.
	2nd	Different pilot wire protection (Merz-price voltage Balance system)
	3rd	Explain protection of feeder by over current and earth fault relay.
	4th	Voltage surge and causes of over voltage.
14th	1st	Internal & External cause of over voltage.
	2nd	Mechanism of lightning discharge.
	3rd	Types of lightning strokes.
	4th	Harmful effect of lightning.
15th	1st	Lightning arresters and Type of lightning Arresters.
	2nd	Rod-gap lightning arrester & Horn-gap arrester.
	3rd	Valve type arrester.
	4th	Surge Absorber

*Sandhanjali Mishra*  
Faculty Signature

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HOD

