

PSIET, KARANDA, DHENKANAL

LESSON PLAN

Session-(2023-2024)

Discipline:Electrical Engineering.	Semester:6 th	NameoftheTeachingFaculty: Bibhuti Bhusan Sahu, Lecturer
Subject:Switch Gear& ProtectiveDevices, Theory-2	No.OfDays/Week:5	StartDate:16/01/2024 EndDate: 26/04/2024

Week	ClassDay	Theory/PracticalTopics
1st	1st	EssentialFeaturesofswitchgearSwitchgearequipment
	2nd	Bus-BarArrangement.SwitchgearAccommodation.
	3rd	ShortCircuitShortcircuit faults
	4th	Faultinpower system
	5th	TUTORIALCLASS
2nd	1st	ASSIGNMENTQUESTIONDISCUSSION
	2nd	Symmetricalfaultson3-phasesystem. AndLimitationof faultcurrent
	3rd	PercentageReactance.PercentageReactanceandBase KVA.Short – circuit KVA.
		PercentageReactanceandBaseKVA.Short–circuitKVA.
	4th	Reactorcontrolofshortcircuitcurrents.
	5th	TUTORIALPROBLEM
3rd	1st	Locationofreactors
	2nd	StepsforsymmetricalFaultcalculations..
	3rd	Solvenumericalproblems onsymmetricalfault.
	4th	FuseElementmaterial
	5th	QUIZTEST
4th	1st	Desirablecharacteristicsoffuseelement.
	2nd	TypesofFusesandimportanttermsusedforfuses.

	3rd	Low and High voltage fuses.
	4th	Current carrying capacity of fuse element.
	5th	TUTORIAL CLASS
	1st	Difference Between a Fuse and Circuit Breaker
	2nd	Definition and principle of Circuit Breaker.
	3rd	Arc phenomenon and principle of Arc Extinction
	4th	Methods of Arc Extinction. Definition of Arc voltage, Re-striking voltage and Recovery voltage.
	5th	Quiz Test
	1st	Classification of circuit Breakers.
	2nd	Oil circuit Breaker and its classification
	3rd	Plain break oil circuit breaker & Arc control oil circuit breaker
	4th	Low oil circuit breaker & Maintenance of oil circuit breaker
	5th	TUTORIAL CLASS
	1st	Air-Blast circuit breaker and its classification.
	2nd	Sulphur Hexafluoride (SF ₆) circuit breaker
	3rd	Vacuum circuit breakers & Switch gear components
	4th	Problems of circuit interruption.
	5th	TUTORIAL CLASS
6th	1st	Resistances switching & circuit Breaker Rating.
	2nd	Class test
	3rd	Definition of Protective Relay & Fundamental requirement of protective relay.
	4th	Basic Relay operation a) Electromagnetic Attraction type b) Induction type
	5th	TUTORIAL CLASS
7th	1st	Definition of following important terms of relay.
8th	2nd	Definition of following important terms a) Pick-up current. b) Current setting. c) Plug setting Multiplier. d) Time setting Multiplier.

	3rd	Classification of functional relays
	4th	Induction type overcurrent relay (Non-directional)
	5th	TUTORIAL CLASS
	1st	Induction type directional power relay
	2nd	Induction type directional over current relay.
	3rd	Differential relay a) Current differential relay b) Voltage balance differential 5.11
	4th	Types of protection
	5th	TUTORIAL CLASS
	1st	Protection of alternator & Differential protection of alternators.
	2nd	Balanced earth fault protection
	3rd	Protection systems for transformer.
	4th	Buchholz relay & Protection of Busbar.
	5th	TUTORIAL CLASS
	1st	Protection of Transmission line
11th	2nd	Different pilot wire protection (Merz-price voltage Balance system)
	3rd	Explain protection of feeder by overcurrent and earth fault relay
	4th	Voltage surge and causes of overvoltage
	5th	TUTORIAL CLASS
12th	1st	Internal cause of overvoltage
	2nd	External cause of overvoltage
	3rd	Mechanism of lightning discharge.
	4th	Types of lightning strokes. Harmful effect of lightning. & Lightning arresters.
	5th	TUTORIAL CLASS
13th	1st	External cause of overvoltage
	3rd	Type of lightning Arrestors. a) Rod-gap lightning arrester.
	4th	b) Horn-gap arrester. c) Valve type arrester.
	5th	TUTORIAL CLASS

14th	1st	SurgeAbsorber
	2nd	Advantageofstaticrelay.
	3rd	Instantaneousovercurrentrelay.
	4th	PrincipleofIDMTrelay
	5th	TUTORIALCLASS
15th	1st	REVIEWCLASS
	2nd	REVIEWCLASS
	3rd	VERYSIMILARTEST
	4th	VERYSIMILARTEST
	5th	VERYSIMILARTEST

Signature of the faculty

Signature of the Principal