BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK

ELECTRICAL ENGG.DEPARTMENT

LESSON PLAN

SEMESTER : 6th (A)

SESSION– SUMMER (2022-23)

SUBJECT: SWITCHGEAR AND PROTECTIVE DEVICE

NAME OF FACULTY: ROJALINE PRIYADARSINI

Discipline: **Electrical Engg.**	Semester:**6th (A)**	Name of the teaching faculty: **Ms.ROJALINE PRIYADARSINI**
Subject-**SWITCHGEAR AND PROTECTIVE DEVICE**	No. of Days/per week class allotted: **05PERIODS /WEEK (MON-1 period, TUE-1 period,WED-1,THU-1 FRI-1period)**	Semester: From Date: **14/02/2023** To Date:**23/05/2023** No. of weeks: **15 WEEKS**
Week	**Class Day**	**Theory**
1st(14/02/2023-18/02/2023)	14/02/2023	**1 INTRODUCTION TO SWITCHGEAR** 1.1 Essential Features of switchgear
	15/02/2023	1.2.Switchgear Equipment.
	16/02/2023	1.3. Bus-Bar Arrangement.
	17/02/2023	1.4 Switchgear Accommodation.
	18/02/2023	**MAHASHIVARATRI**
2nd(20/02/2023-25/02/2023)	20/02/2023	1.5 Short Circuit. 1.6 Short circuit
	21/02/2023	1.7 Faults in a power system.
	22/02/2023	**2.FAULT CALCULATION** 2.1 Symmetrical faults on 3-phase system.
	23/02/2023	2.2 Limitation of fault current
	24/02/2023	2.3 Percentage Reactance.
3rd(27/02/2023-04/03/2023)	27/02/2023	2.4 Percentage Reactance and Base KVA.
	28/02/2023	2.5 Short – circuit KVA.
	01/03/2023	2.6 Reactor control of short circuit currents.
	02/03/2023	. 2.7 Location of reactors.
	03/03/2023	2.8 Steps for symmetrical Fault calculations.

4th(06/03/2023-11/03/2023)	06/03/2023	2.9 Solve numerical problems on symmetrical fault
	07/03/2023	**DOLA PURNAMI**
	08/03/2023	**HOLY**
	09/03/2023	**3.FUSES** 3.1 Desirable characteristics of fuse element.
	10/03/2023	**CLASSTEST 1**
5TH(13/03/2023-18/03/2023)	13/03/2023	3.2 Fuse Element materials.
	14/03/2023	3.3 Types of Fuses and important terms used for fuses.
	15/03/2023	3.4 Low and High voltage fuses.
	16/03/2023	3.5 Current carrying capacity of fuse element.
	17/03/2023	3.6 Difference Between a Fuse and Circuit Breaker.
6TH(20/03/2023-25/03/2023)	20/03/2023	**4.CIRCUIT BREAKERS** 4.1 Definition and principle of Circuit Breaker.
	21/03/2023	4.2 Arc phenomenon and principle of Arc Extinction. 4.3 Methods of Arc Extinction.
	22/03/2023	4.4 Definitions of Arc voltage, Re-striking voltage and Recovery voltage. 4.5 Classification of circuit Breakers.
	23/03/2023	4.7 Plain brake oil circuit breaker. 4.8 Arc control oil circuit breaker.
	24/03/2023	4.9 Low oil circuit breaker. 4.10 Maintenance of oil circuit breaker.
7th(27/03/2023-01/04/2023)	27/03/2023	4.11 Air-Blast circuit breaker and its classification.
	28/03/2023	4.12 Sulphur Hexa-fluoride (SF6) circuit breaker
	29/03/2023	4.13 Vacuum circuit breakers
	30/03/2023	**Rama navami**
	31/03/2023	4.14 Switchgear component. 4.15 Problems of circuit interruption
8th(03/04/2023-08/04/2023)	03/04/2023	4.16 Resistance switching. 4.17 Circuit Breaker Rating.

	04/04/2023	**5.PROTECTIVE RELAYS** 5.1 Definition of Protective Relay. 5.2 Fundamental requirement of protective relay
	05/04/2023	. 5.3 Basic Relay operation 5.3.1. Electromagnetic Attraction type 5.3.2. Induction type
	06/04/2023	5.4 Definition of following important terms 5.5 Definition of following important terms.
	7/04/2023	**Good Friday**
9th (10/04/2023-15/04/2023)	10/04/2023	5.5.1. Pick-up current. 5.5.2. Current setting.
	11/04/2023	5.5.3. Plug setting Multiplier. 5.5.4. Time setting Multiplier
	12/04/2023	5.5.3. Plug setting Multiplier. 5.5.4. Time setting Multiplier.
	13/04/2023	5.6 Classification of functional relays 5.7 Induction type over current relay (Non-directional)
	14/04/2023	**MAHABISUBA SANKRANTI**
10th (17/04/2023-22/04/2023)	17/04/2023	5.8 Induction type directional power relay. 5.9 Induction type directional over current relay.
	18/04/2023	5.10 Differential relay 5.10.1. Current differential relay
	19/04/2023	5.10.2. Voltage balance differential relay. 5.11 Types of protection
	20/04/2023	**6.PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES** 6.1 Protection of alternator. 6.2 Differential protection of alternators.
	21/04/2023	6.3 Balanced earth fault protection.
11th (24/04/2023-28/04/2023)	24/04/2023	6.4 Protection systems for transformer
	25/04/2023	6.5 Buchholz relay.
	26/04/2023	6.6 Protection of Bus bar. 6.7 Protection of Transmission line.
	27/04/2023	**INTERNAL ASSESSMENT**
	28/04/2023	**INTERNAL ASSESSMENT**

12th (01/05/2023-06/05/2023)	01/05/2023	6.8Different pilot wire protection (Merz-price voltage Balance system
	02/05/2023	6.9 Explain protection of feeder by over current and earth fault relay
	03/05/2023	**PROTECTION AGAINST OVER VOLTAGE AND LIGHTING** 7.1. Voltage surge and causes of over voltage.
	04/05/2023	7.2. Internal cause of over voltage. 7.3. External cause of over voltage (lighting)
	05/05/2023	**Budha Purnima**
13th (08/05/2023-13/05/2023)	08/05/2023	7.4. Mechanism of lightning discharge.
	09/05/2023	7.5. Types of lightning strokes. 7.6. Harmful effect of lightning.
	10/05/2023	7.7. Lightning arresters and Type of lightning Arresters. 7.7.1. Rod-gap lightning arrester.
	11/05/2023	**QUIZ TEST**
	12/05/2023	7.7.2. Horn-gap arrester. 7.7.3. Valve type arrester
14th (15/05/2023-20/05/2023)	15/05/2023	7.8. Surge Absorber
	16/05/2023	**8.STATIC RELAY:** 8. 1 Advantage of static relay.
	17/05/2023	8. 2 Instantaneous over current relay.
	18/05/2023	8. 3 Principle of IDMT relay.
	19/05/2023	**SabitriAmabasya….**
15th (15/05/2023-20/05/2023)	22/05/2023	8. 3 Principle of IDMT relay
	23/05/2023	**Revision and Discussions**