

DISCIPLINE – ELECTRICAL ENGG	SEMESTER 6 TH	NAME OF THE TEACHING FACULTY- SIBANI PANDA, LECT(ELECT.)	
SUB-SGPD	No Of Days Per Week Class Alloted-5	SEMESTER FROM 10.03.2022 to 10.06.2022 NO OF WEEK – 16 WEEKS	
WEEK	CLASS DAY	THEORY	STATUS
1 ST WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	INTRODUCTION TO SWITCHGEAR 1.1 Essential Features of switchgear. 1.2 Switchgear Equipment. 1.3 Bus-Bar Arrangement. 1.4 Switchgear Accommodation. 1.5 Short Circuit.	<i>extended upto 30.6.2022</i> Complete
2 ND WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	1.6 Short circuit. 1.7 Faults in a power system FAULT CALCULATION 2.1 Symmetrical faults on 3-phase system. 2.2 Limitation of fault current. 2.3 Percentage Reactance.	Complete
3 RD WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	2.4 Percentage Reactance and Base KVA. 2.5 Short – circuit KVA. 2.6 Reactor control of short circuit currents.	Complete
4 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	2.7 Location of reactors. 2.8 Steps for symmetrical Fault calculations 2.9 Solve numerical problems on symmetrical fault FUSES 3.1 Desirable characteristics of fuse element. 3.2 Fuse Element materials. .	Complete
5 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	3.3 Types of Fuses and important terms used for fuses. 3.4 Low and High voltage fuses. 3.5 Current carrying capacity of fuse element. 3.6 Difference Between a Fuse and Circuit Breaker	Complete
6 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day	CIRCUIT BREAKERS 4.1 Definition and principle of Circuit Breaker. 4.2 Arc phenomenon and principle of Arc Extinction. 4.3 Methods of Arc Extinction.	Complete

	5 th day	4.4 Definitions of Arc voltage, Re-striking voltage and Recovery voltage. 4.5 Classification of circuit Breakers.	
7 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	4.6 Oil circuit Breaker and its classification. 4.7 Plain brake oil circuit breaker. 4.8 Arc control oil circuit breaker. 4.9 Low oil circuit breaker. 4.10 Maintenance of oil circuit breaker. 4.11 Air-Blast circuit breaker and its classification. 4.12 Sulphur Hexa-fluoride (SF6) circuit breaker.	Complete
8 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	4.13 Vacuum circuit breakers. 4.14 Switchgear component. 4.15 Problems of circuit interruption. 4.16 Resistance switching. 4.17 Circuit Breaker Rating Internal assessment 1	Complete
9 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	PROTECTIVE RELAYS 5.1 Definition of Protective Relay. 5.2 Fundamental requirement of protective relay. 5.3 Basic Relay operation 5.3.1. Electromagnetic Attraction type 5.3.2. Induction type 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.	Complete
10 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	5.6 Classification of functional relays 5.7 Induction type over current relay (Non-directional) 5.8 Induction type directional power relay. 5.9 Induction type directional over current relay 5.10 differential relay 5.10.1 current differential relay 5.10.2 voltage balance differential relay 5.11 types of protection	Complete
11 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES 6.1 Protection of alternator. 6.2 Differential protection of alternators. 6.3 Balanced earth fault protection.	Complete

	5 th day	6.4 Protection systems for transformer. 6.5 Buchholz relay. 6.6 Protection of Bus bar. 6.7 Protection of Transmission line.	
12 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	6.8 Different pilot wire protection (Merz-price voltage Balance system) 6.9 Explain protection of feeder by over current and earth fault relay PROTECTION AGAINST OVER VOLTAGE AND LIGHTING 7.1. Voltage surge and causes of over voltage. 7.2. Internal cause of over voltage	Complete
13 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	7.3. External cause of over voltage (lightning) 7.4. Mechanism of lightning discharge. 7.5. Types of lightning strokes. 7.6. Harmful effect of lightning.	Complete
14 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	7.7. Lightning arresters and Type of lightning Arresters. 7.7.1. Rod-gap lightning arrester. 7.7.2. Horn-gap arrester. 7.7.3. Valve type arrester. 7.8. Surge Absorber	Complete
15 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	STATIC RELAY: 8. 1 Advantage of static relay. 8. 2 Instantaneous over current relay. 8. 3 Principle of IDMT relay. Internal assessment 2	Complete
16 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Revision for semester exam	Complete

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WEEK		No Of Days Per Week Class Alloted-5 CLASS DAY	THEORY	STATUS
1 ST WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	MEASURING INSTRUMENTS 1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance. 1.2 Classification of measuring instruments. 1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments. 1.4 Calibration of instruments	complete	
2 ND WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	ANALOG AMMETERS AND VOLTMETERS 2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of: 2.1.1 Moving iron type instruments. 2.1.2 Permanent Magnet Moving coil type instruments.	complete	
3 RD WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	2.1.3 Dynamometer type instruments 2.1.4 Rectifier type instruments 2.1.5 Induction type instruments 2.2 Extend the range of instruments by use of shunts and Multipliers.	complete	
4 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	2.3 Solve Numerical WATTMETERS AND MEASUREMENT OF POWER 3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)	complete	
5 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	3.2 The Errors in Dynamometer type wattmeter and methods of their correction. 3.3 Discuss Induction type watt meters.	complete	
6 TH WEEK	1 ST day 2 nd day 3 rd day 4 th day	ENERGYMETERS AND MEASUREMENT OF ENERGY 4.1 Introduction 4.2 Single Phase Induction type Energy meters - construction, working principle and their compensation & adjustments.	complete	

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7 TH WEEK	5 th day 1 st day 2 nd day 3 rd day 4 th day 5 th day	4.3 Testing of Energy Meters. Internal assessment 1 MEASUREMENT OF SPEED, FREQUENCY & POWER FACTOR 5.1 Tachometers, types and working principles 5.2 Principle of operation and construction of Mechanical resonance Type frequency meters	Complete
8 TH WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	Electrical resonance Type frequency meters. 5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters MEASUREMENT OF RESISTANCE, INDUCTANCE & CAPACITANCE 6.1 Classification of resistance 6.1..1. Measurement of low resistance by potentiometer method. .	Complete
9 TH WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	6.1..2. Measurement of medium resistance by Wheat Stone bridge method. 6.1..3. Measurement of high resistance by loss of charge method. 6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and ear resistance measurement respectively. 6.3 Construction and principles of Multimeter (analog and Digital)	Complete
10 TH WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	6.4 Measurement of inductance by Maxwell Bridge method. 6.5 Measurement of capacitance by Scherbridge method SENSORS AND TRANSDUCER 7.1. Define Transducer, sensing element, detector element and transduction elements. 7.2. Classify transducer. Give examples of various class of transducer. 7.3. Resistive transducer 7.3.1 Linear and angular motion potentiometer. 7.5.3 Change in distance between plate capacitive transducer.	Complete
11 TH WEEK	1 st day 2 nd day 3 rd day 4 th day	7.6. Piezo electric Transducer and Hall effect Transducer with their applications. 7.3.2 Thermistor and Resistance thermistors. 7.3.3 Wire Resistance Strain Gauges	Complete

	5 th day	7.4. Inductive Transducer 7.4.1 Principle of linear variable differential Transformer (LVDT)	Complete
13 th WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	7.4.2 Uses of LVDT 7.5. Capacitive Transducer. 7.5.1 General principle of capacitive transducer. 7.5.2 Variable area capacitive transducer	Complete
13 th WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	OSCILLOSCOPE 8.1. Principle of operation of Cathode Ray Tube. 8.2. Principle of operation of Oscilloscope (with help of block diagram).	Complete
14 th WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	8.3. Measurement of DC Voltage & current. 8.4. Measurement of AC Voltage, current, phase & frequency Internal assessment 2	Complete
15 th WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	Revision for semester exam	Complete
16 th WEEK	1 st day 2 nd day 3 rd day 4 th day 5 th day	Revision for semester exam	Complete

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