LESSON PLAN: ENERGY CONVERSION II WINTER 2023

Discipline: ELECTRICAL	Semester: 5th WINTER 2023	Name of the teaching faculty: SHIBASHIS KAR
Subject: ENERGY CONVERSION II	No of days/per week class allotted: 04	Semester From Date: 01/08/2023 To Date: 30/11/2023 No of weeks:14
Week:	Class day:	Theory/practical topics:
1st:	1ST	ALTERNATOR: Types of alternator and their constructional features.
	2ND	Basic working principle of alternator and the relation between speed and frequency.
	3RD	Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).
	4TH	Explain harmonics, its causes and impact on winding factor E.M.F equation of alternator. (Solve numerical problems).
2ND	1ST	Explain Armature reaction and its effect on emf at different power factor of load.. (Solve numerical problems)Testing of alternator Open circuit test. Short circuit test.
	2ND	The vector diagram of loaded alternator. (Solve numerical problems)
	3RD	Testing of alternator Open circuit test. Short circuit test.
	4TH	Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)
3RD	1ST	Solving numerical problems of all types.
	2ND	Parallel operation of alternator using synchroscope and dark & bright lamp method. Explain distribution of load by parallel connected alternators.
	3RD	SYNCHRONOUS MOTOR: Constructional feature of Synchronous Motor Principles of operation, concept of load angle.
	4TH	Derive torque, power developed in synchronous motor
4TH	1ST	Effect of varying load with constant excitation.
	2ND	Effect of varying excitation with constant load
	3RD	Power angle characteristics of cylindrical rotor motor.
	4TH	Explain effect of excitation on Armature current and power factor.
5th	1ST	Hunting in Synchronous Motor. Function of Damper Bars in synchronous motor and generator
	2ND	Describe method of starting of Synchronous motor.State application of synchronous motor.

	3RD	THREE PHASE INDUCTION MOTOR: Production of rotating magnetic field. Constructional feature of Squirrel cage and Slip ring induction motors.
	4TH	Working principles of operation of 3-phase Induction motor.
6th	1ST	Define slip speed, slip and establish the relation of slip with rotor quantities.
	2ND	Derive expression for torque during starting conditions and derive conditions for maximum torque. (solve numerical problems)Torque-slip characteristics.
	3RD	Derive expression for torque during running conditions and derive conditions for maximum torque. (solve numerical problems)Torque-slip characteristics.
	4TH	Derive relation between full load torque and starting torque etc. (solve numerical problems)
7th	1ST	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)
	2ND	Methods of starting and different types of starters used for three phase Induction motor.
	3RD	Methods of starting and different types of starters used for three phase Induction motor.
	4TH	Explain speed control by Voltage Control, Rotor resistance control method
8th	1ST	Explain speed control by Pole changing, frequency control methods.
	2ND	Plugging as applicable to three phase induction motor.
	3RD	Describe different types of motor enclosures.
	4TH	Explain principle of Induction Generator and state its applications
9th	1ST	Class test.
	2ND	SINGLE PHASE INDUCTION MOTOR: Explain Ferrari's principle.
	3RD	Explain double revolving field theory to analyze starting torque of 1-phase induction motor.
	4TH	Cross-field theory to analyze starting torque of 1-phase induction motor.
10th	1ST	Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors. 1. Split phase motor.
	2ND	Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors. 2. Capacitor Start motor.

	3RD	Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors. 3. Capacitor start, capacitor run motor.
	4TH	Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors. 4. Permanent capacitor type motor
11th	1ST	Shaded pole motor.
	2ND	Explain the method to change the direction of rotation of above motors.
	3RD	COMMUTATOR MOTORS: Construction, working principle, running characteristic and application of single phase series motor .
	4TH	Construction, working principle and application of Universal motors.
12th	1ST	Working principle and applications of Repulsion start Motor,
	2ND	Working principle and applications of Repulsion start Induction run motor.
	3RD	Working principle of Repulsion Induction motor.
	4TH	SPECIAL ELECTRICAL MACHINE: Principle of Stepper motor.
13th	1ST	Classification of Stepper motor. Principle of variable reluctant stepper motor.
	2ND	Principle of Permanent magnet stepper motor.
	3RD	Class test
	4TH	THREE PHASE TRANSFORMERS: Explain Grouping of winding, Advantages.
14th	1ST	Explain parallel operation of the three phase transformers.
	2ND	Explain tap changer (On/Off load tap changing).
	3RD	Maintenance Schedule of Power Transformers.
	4TH	Revision of topics

Shibashis Kar

LESSON PLAN

GOVT. POLYTECHNIC KALAHANDI, BHAWANIPATNA

FACULTY NAME: BHUBANTA KAND BRANCH:ELECTRICAL SEM: 5th SESSION:2023(W)-24

SUB: EM&ST (TH1)	**No. of days/ week Class allotted: 4 Total Periods**: 60	**w.e.f.01.08.2023 to 30.11.23**
Week	Class Day	Theory
1st	**1st**	**1. Entrepreneurship** 1.1 Concept /Meaning of Entrepreneurship 1.2 Need of Entrepreneurship
	2nd	1.3 Characteristics, Qualities and Types of entrepreneur, Functions
	3rd	1.4 Barriers in entrepreneurship
	4th	1.5 Entrepreneurs vrs. Manager
2nd	**1st**	1.6 Forms of Business Ownership: Sole proprietorship, partnership forms and others.
	2nd	-DO-
	3rd	1.7 Types of Industries, Concept of Start-ups.
	4th	1.8 Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
3rd	**1st**	-DO-
	2nd	1.9 Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks
	3rd	**2. Market Survey and Opportunity Identification (Business Planning)** 2.1 Business Planning
	4th	2.2 SSI, Ancillary Units, Tiny Units, Service sector Units
4th	**1st**	-DO-
	2nd	2.3 Time schedule Plan, Agencies to be contacted for Project Implementation
	3rd	-DO-
	4th	2.4 Assessment of Demand and supply and Potential areas of Growth
5th	**1st**	2.5 Identifying Business Opportunity
	2nd	2.6 Final Product selection
	3rd	**3. Project report Preparation** 3.1 Preliminary project report
	4th	3.2 Detailed project report, Techno economic Feasibility
6th	**1st**	-DO-
	2nd	3.3 Project Viability
	3rd	**4. Management Principles** 4.1 Definitions of management
	4th	4.2 Principles of management
7th	**1st**	4.3 Functions of management (planning, organising, staffing, directing and controlling etc.)
	2nd	-DO-
	3rd	4.4 Level of Management in an Organisation
	4th	**INTERNAL EXAMINATION**
8th	**1st**	**5. Functional Areas of Management** 5.1 a) Production management - Functions, Activities, Productivity, Quality control, Production Planning and control
	2nd	-do-
	3rd	5.2 b) Inventory Management -Need for Inventory management, Models/Techniques of Inventory management
	4th	-do-

9th	1st	5.3 c) Financial Management - Functions of Financial management,Management of Working capital, Costing (only concept),reak even Analysis. Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash book, P&L Accounts, Balance Sheets(only Concepts)
	2nd	-do-
	3rd	-do-
	4th	5.4 d) Marketing Management- Concept of Marketing and Marketing Management, Marketing Techniques (only concepts), Concept of 4P s (Price, Place, Product, Promotion).
10th	1st	-do-
	2nd	5.5 e) Human Resource Management - Functions of Personnel Management, Manpower Planning, Recruitment, Sources of manpower, Selection process, Method, of Testing, Methods of Training & Development, Payment of Wages
	3rd	**6. Leadership and Motivation** 6.1 a) Leadership - Definition and Need/Importance, Qualities and functions of a leader, Manager Vs Leader-Style of Leadership (Autocratic, Democratic, Participative).
	4th	-do-
11th	1st	-do-
	2nd	6.2 b) Motivation- Definition and characteristics, Importance of motivation, Factors affecting motivation, Theories of motivation (Maslow), Methods of Improving Motivation, Importance of Communication in Business, Types and Barriers of Communication.
	3rd	-do-
	4th	-do-
12th	1st	**7. Work Culture, TQM & Safety** 7.1 Human relationship and Performance in Organization.
	2nd	7.2 Relations with Peers, Superiors and Subordinates.
	3rd	7.3 TQM concepts: Quality Policy, Quality Management, Quality system.
	4th	7.4 Accidents and Safety, Cause, preventive measures, General Safety Rules , Personal Protection Equipment(PPE).
13th	1st	-do-
	2nd	**8. Legislation** 8.1 a) Intellectual Property Rights(IPR), Patents, Trademarks, Copyrights.
	3rd	8.2 b) Features of Factories Act 1948 with Amendment (only salient points).
	4th	-do-
14th	1st	8.3 c) Features of Payment of Wages Act 1936 (only salient points)
	2nd	-do-
	3rd	**9. Smart Technology** 9.1 Concept of IOT, How IOT works
	4th	9.2 Components of IOT, Characteristics of IOT, Categories of IOT
15th	1st	-do-
	2nd	9.3Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc.
	3rd	-DO-
	4th	**CLASS TEST**

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

FACULTY NAME: BHUBANTAKAND BRANCH: Electrical SEM: 3rd SESSION:2023-24(w)

SUBJECT: Circuit and Simulation Lab	**No. of days/ week** **Class allotted: 6** **Total Periods**: 90	**w.e.f. 01-08-2023 to30-11-23**
Week	**Class Period**	**Theory**
1st	**4th** **5th** **6th**	Measurement of equivalent resistance in series and parallel circuit
	4th **5th** **6th**	Measurement of equivalent resistance in series and parallel circuit
2nd	**4th** **5th** **6th**	Measurement of power and power factor using series R-L-C Load.
	4th **5th** **6th**	Measurement of power and power factor using series R-L-C Load.
3rd	**4th** **5th** **6th**	Verification of KCL and KVL.
	4th **5th** **6th**	Verification of KCL and KVL.
4th	**4th** **5th** **6th**	Verification of Super position theorem
	4th **5th** **6th**	Verification of Super position theorem
5th	**4th** **5th** **6th**	Verification of Thevenin's Theorem
	4th **5th** **6th**	Verification of Thevenin's Theorem
6th	**4th** **5th** **6th**	Verification of Norton's Theorem
	4th **5th** **6th**	Verification of Norton's Theorem
7th	**4th** **5th** **6th**	Verification of Maximum power transfer Theorem

	4th **5th** **6th**	Verification of Maximum power transfer Theorem
8th	**4th** **5th** **6th**	Determine resonant frequency of series R-L-C circuit.
	4th **5th** **6th**	Determine resonant frequency of series R-L-C circuit.
9th	**4th** **5th** **6th**	Determine resonant frequency of series R-L-C circuit.
	4th **5th** **6th**	Study of Low pass filter & determination of cut-off frequency
10th	**4th** **5th** **6th**	Study of Low pass filter & determination of cut-off frequency
	4th **5th** **6th**	Study of High pass filter & determination of cut-off frequency
11th	**4th** **5th** **6th**	Study of High pass filter & determination of cut-off frequency
	4th **5th** **6th**	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
12th	**4th** **5th** **6th**	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
	4th **5th** **6th**	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
13th	**4th** **5th** **6th**	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
	4th **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
14th	**4th** **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
	4th **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit

		iii. Transient Response in R - L -C series circuit
15th	**4th** **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
	4th **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
16th	**4th** **5th** **6th**	REVISION
	4th **5th** **6th**	REVISION
17th	**4th** **5th** **6th**	REVISION
	4th **5th** **6th**	REVISION

LESSON PLAN

GOVT. POLYTECHNIC KALAHANDI, BHAWANIPATNA

FACULTY NAME: BHUBANTA KAND BRANCH:ELECTRICAL SEM: 3rd SESSION:2023-24(w)

SUB: EEM(TH4)	**No. of days/ week Class allotted: 4 Total Periods**: 60	**w.e.f.**01.08.2023**to**30.11.23
Week	Class Day	Theory
1st	**1st**	**1.Conducting Materials:** 1 . 1 Introduction
	2nd	1 . 2 Resistivity, factors affecting resistivity
	3rd	-DO-
	4th	-DO-
2nd	**1st**	1 . 3 Classification of conducting materials into low-resistivity and high resistivity materials
	2nd	-DO-
	3rd	1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	4th	-DO-
3rd	**1st**	1 . 5 Stranded conductors
	2nd	1 . 6 Bundled conductors
	3rd	1 . 7 Low resistivity copper alloys
	4th	1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
4th	**1st**	-DO-
	2nd	1 . 9 Superconductivity
	3rd	1 . 10 Superconducting materials
	4th	1 . 11 Application of superconductor materials
5th	**1st**	**2.Semiconducting Materials**: 2 . 1 Introduction 2 . 2 Semiconductors
	2nd	2 . 3 Electron Energy and Energy Band Theory
	3rd	2 . 4 Excitation of Atoms
	4th	2 . 5 Insulators, Semiconductors and Conductors
6th	**1st**	2 . 6 Semiconductor Materials 2 . 7 Covalent Bonds
	2nd	2 . 8 Intrinsic Semiconductors 2 . 9 Extrinsic Semiconductors 2 . 10 N-Type Materials 2 . 11 P-Type Materials
	3rd	2 . 12 Minority and Majority Carriers 2 . 13 Semi-Conductor Materials
	4th	2 . 14 Applications of Semiconductor materials 2.14.1 Rectifiers 2.14.2 Temperature-sensitive resisters or thermistors
7th	**1st**	2.14.3 Photoconductive cells 2.14.4 Photovoltaic cell. 2.14.5 Varisters
	2nd	2.14.6 Transistors 2.14.7 Hall effect generators 2.14.8 Solar power
	3rd	**3.Insulating Materials:**

		3 . 1 Introduction 3 . 2 General properties of Insulating Materials.
	4th	3.2.1 Electrical properties 3.2.2 Visual properties 3.2.3 Mechanical properties
8th	**1st**	-DO-
	2nd	3.2.4 Thermal properties 3.2.5 Chemical properties 3.2.6 Ageing
	3rd	3.3 Insulating Materials – Classification, properties, applications
	4th	3.3.1 Introduction 3.3.2 Classification of insulating materials on the basis physical and chemical structure.
9th	**1st**	3.4 Insulating Gases
	2nd	3.4.1 Introduction. 3.4.2 Commonly used insulating gases
	3rd	**CLASS TEST**
	4th	**INTERNAL ASSESSMENT**
10th	**1st**	**4. Dielectric Materials:** 4.1 Introduction
	2nd	4.2 Dielectric Constant of Permittivity
	3rd	4.3 Polarization
	4th	4.4 Dielectric Loss
11th	**1st**	4.5 Electric Conductivity of Dielectrics and their Break Down
	2nd	4.6 Properties of Dielectrics.
	3rd	4.7 Applications of Dielectrics.
	4th	**5. Magnetic Materials:** 5.1 Introduction 5.2 Classification
12th	**1st**	5.2.1 Diamagnetism 5.2.2 Para magnetism
	2nd	5.2.3 Ferromagnetism 5.3 Magnetization Curve
	3rd	5.4 Hysteresis
	4th	5.5 Eddy Currents 5.6 Curie Point
13th	**1st**	5.7 Magneto-striction 5.8 Soft and Hard magnetic Materials
	2nd	5.8.1 Soft magnetic materials 5.8.2 Hard magnetic materials
	3rd	**6. Materials for Special Purposes** 6.1 Introduction 6.2 Structural Materials
	4th	6.3 Protective Materials. 6.3.1 Lead
14th	**1st**	6.3.2 Steel tapes, wires and strips 6.4 Other Materials
	2nd	6.4.1 Thermocouple materials 6.4.2 Bimetals
	3rd	6.4.3 Soldering Materials
	4th	6.4.4 Fuse and Fuse materials.
15th	**1st**	6.4.5 Dehydrating material.
	2nd	**CLASS TEST**
	3rd	**DOUBT CLEARING CLASS**
	4th	**DOUBT CLEARING CLASS**

LESSON PLAN		
Discipline: Electrical Engg. Dept , Semester: 2nd, Name of Faculty :Bhubanta Kand		
Subject: **BASIC ELECTRICAL ENGINEERING**	**No. of days/ week Class allotted: 02**	**Semester start From Date: 16.08.2023 To date : 11.12.2023Session: 2023-24(S)**
Week	**Class Day**	**Theory**
1st	1st	1.1 Concept of current flow. 1.2 Concept of source and load.
	2nd	1.3 State Ohm's law and concept of resistance. 1.4 Relation of V, I & R in series circuit.
2nd	1st	1.5 Relation of V, I & R in parallel circuit. 1.6 Division of current in parallel circuit.
	2nd	1.7 Effect of power in series & parallel circuit. 1.8 Kirchhoff's Law.
3rd	1st	1.9 Simple problems on Kirchhoff's law.
	2nd	2.1 Generation of alternating emf. 2.2 Difference between D.C. & A.C.
4th	1st	2.3 Define Amplitude, instantaneous value, cycle, Time period, frequency, phase angle,phase difference.
	2nd	2.4 State & Explain RMS value, Average value, Amplitude factor & Form factor withSimple problems
5th	1st	-DO-
	2nd	2.5 Represent AC values in phasor diagrams. 2.6 AC through pure resistance, inductance & capacitance
6th	1st	2.7 AC though RL, RC, RLC series circuits. 2.8 Simple problems on RL, RC & RLC series circuits.
	2nd	2.9 Concept of Power and Power factor 2.10 Impedance triangle and power triangle.
7th	1st	3.1 Give elementary idea on generation of electricity from thermal ,hydro & nuclear.
	2nd	-DO-
8th	1st	-DO-
	2nd	-DO-

LESSON PLAN
GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: Kambhudeep Bag*BRANCH*: ELECTRICAL *SEM*: 6TH *SESSION*:2022-23(S)

SUBJECT: Electrical Machine lab-II	**No. of days/ week Class allotted: 6 Total Periods**: 90	**w.e.f. 01-08-2023 to 30-11-23**
Week	**Class Period**	**Theory**
1st	**4th 5th 6th**	Study of (Manual and Semi automatic) Direct on Line starter, Star-Delta starter, connection and running a 3-phase Induction motor and measurement of starting current
	4th 5th 6th	Study of (Manual and Semi automatic) Direct on Line starter, Star-Delta starter, connection and running a 3-phase Induction motor and measurement of starting current
2nd	**4th 5th 6th**	Study of (Manual and Semi automatic) Direct on Line starter, Star-Delta starter, connection and running a 3-phase Induction motor and measurement of starting current
	4th 5th 6th	Study of (Manual and Semi automatic) Direct on Line starter, Star-Delta starter, connection and running a 3-phase Induction motor and measurement of starting current
3rd	**4th 5th 6th**	Study of (Manual and Semi automatic) Direct on Line starter, Star-Delta starter, connection and running a 3-phase Induction motor and measurement of starting current
	4th 5th 6th	Study and Practice of connection & Reverse the direction of rotation of Three Phase Induction motor.
4th	**4th 5th 6th**	Study and Practice of connection & Reverse the direction of rotation of Three Phase Induction motor.
	4th 5th 6th	Heat run test of 3-phase transformer.
5th	**4th 5th 6th**	Heat run test of 3-phase transformer.
	4th 5th 6th	OC and SC test of alternator and determination of regulation by synchronous impedance method.
6th	**4th 5th 6th**	OC and SC test of alternator and determination of regulation by synchronous impedance method.
	4th 5th 6th	OC and SC test of alternator and determination of regulation by synchronous impedance method.
7th	**4th 5th 6th**	Determination of regulation of alternator by direct loading.

	4th **5th** **6th**	Determination of regulation of alternator by direct loading.
8th	**4th** **5th** **6th**	Parallel operation of two alternators and study load sharing.
	4th **5th** **6th**	Parallel operation of two alternators and study load sharing.
9th	**4th** **5th** **6th**	Parallel operation of two alternators and study load sharing.
	4th **5th** **6th**	Measurement of power of a 3-phase Load using two wattmeter method and verification of the result using one 3- phase wattmeter.
10th	**4th** **5th** **6th**	Measurement of power of a 3-phase Load using two wattmeter method and verification of the result using one 3- phase wattmeter.
	4th **5th** **6th**	Measurement of power of a 3-phase Load using two wattmeter method and verification of the result using one 3- phase wattmeter.
11th	**4th** **5th** **6th**	Connection of 3-phase energy meter to a 3-phase load.
	4th **5th** **6th**	Connection of 3-phase energy meter to a 3-phase load.
12th	**4th** **5th** **6th**	Study of an O.C.B.
	4th **5th** **6th**	Study of an O.C.B.
13th	**4th** **5th** **6th**	Study of induction type over current / reverse power relay.
	4th **5th** **6th**	Study of induction type over current / reverse power relay.
14th	**4th** **5th** **6th**	Study of Buchholz's relay
	4th **5th** **6th**	Study of Buchholz's relay
15th	**4th** **5th** **6th**	Study of an earth fault relay.

	4th **5th** **6th**	Study of an earth fault relay.
16th	**4th** **5th** **6th**	-DOUT CLEAR-
	4th **5th** **6th**	-DOUT CLEAR-
17th	**4th** **5th** **6th**	-DOUT CLEAR-
	4th **5th** **6th**	-DOUT CLEAR-

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: KAMBHUDEEP BAG *BRANCH*: ELECTRICAL*SEM*: 5TH *SESSION*:2023-24(W)

SUBJECT: PE & PLC	**No. of days/ week Class allotted:** 4 **Total Periods**: 60	**w.e.f.01-08-2023to30-11-2023**
Week	Class Day	Theory
1st	1st	1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT
	2nd	-DO-
	3rd	-DO-
	4th	1.2 Two transistor analogy of SCR.
2nd	1st	1.3 Gate characteristics of SCR.
	2nd	1.4 Switching characteristic of SCR during turn on and turn off.
	3rd	1.5 Turn on methods of SCR.
	4th	1.6 Turn off methods of SCR (Line commutation and Forced commutation)
3rd	1st	1.7 Voltage and Current ratings of SCR.
	2nd	1.8.1 Over voltage protection
	3rd	1.8.2 Over current protection
	4th	1.8.3 Gate protection
4th	1st	1.9.1 General layout diagram of firing circuit
	2nd	1.9.2 R firing circuits
	3rd	1.9.3 R-C firing circuit
	4th	1.9.4 UJT pulse trigger circuit
5th	1st	1.9.5 Synchronous triggering (Ramp Triggering)
	2nd	1.10 Design of Snubber Circuits
	3rd	2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single
	4th	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads.
6th	1st	2.3 Understand need of freewheeling diode.
	2nd	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
	3rd	2.5 Working of three-phase half wave controlled converter with Resistive load
	4th	2.6 Working of three phase fully controlled converter with resistive load.
7th	1st	-DO-
	2nd	2.7 Working of single phase AC regulator.
	3rd	2.8 Working principle of step up &step down chopper.
	4th	-DO-
8th	1st	2.9 Control modes of chopper
	2nd	2.10 Operation of chopper in all four quadrants.
	3rd	3.1 Classify inverters.
	4th	3.2 Explain the working of series inverter.
9th	1st	3.3 Explain the working of parallel inverter
	2nd	3.4 Explain the working of single-phase bridge inverter
	3rd	3.5 Explain the basic principle of Cyclo-converter.
	4th	3.6 Explain the working of single-phase step up & step down Cyclo-converter.

10th	1st	-DO-
	2nd	3.7 Applications of Cyclo-converter.
	3rd	4.1 List applications of power electronic circuits.
	4th	4.2 List the factors affecting the speed of DC Motors.
11th	1st	4.3 Speed control for DC Shunt motor using converter.
	2nd	4.4 Speed control for DC Shunt motor using chopper.
	3rd	4.5 List the factors affecting speed of the AC Motors.
	4th	4.6 Speed control of Induction Motor by using AC voltage regulator.
12th	1st	4.7 Speed control of induction motor by using converters and inverters (V/F control).
	2nd	4.8 Working of UPS with block diagram.
	3rd	4.9 Battery charger circuit using SCR with the help of a diagram.
	4th	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
13th	1st	5.1 Introduction of Programmable Logic Controller(PLC) 5.2 Advantages of PLC
	2nd	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC. 5.4 Applications of PLC
	3rd	5.5 Ladder diagram
	4th	5.6 Description of contacts and coils in the following states i) Normally open ii) Normally closed iii) Energized output iv) latched Output v) branching
14th	1st	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
	2nd	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
	3rd	5.9 Timers- i) T ON ii) T OFF and iii)Retentive timer 5.10 Counters-CTU, CTD
	4th	5.11 Ladder diagrams using Timers and counters 5.12 PLC Instruction set
15th	1st	5.13 Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller
	2nd	5.14 Special control systems- Basics DCS & SCADA systems
	3rd	-DO-
	4th	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)
16TH	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

17TH	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: Kambhudeep Bag*BRANCH*: ELECTRICAL *SEM*: 6TH *SESSION*:2022-23(S)

SUBJECT: Circuit and Simulation Lab	**No. of days/ week Class allotted: 6 Total Periods**: 90	**w.e.f. 01-08-2023 to 30-11-23**
Week	**Class Period**	**Theory**
1st	**4th 5th 6th**	Measurement of equivalent resistance in series and parallel circuit
	4th 5th 6th	Measurement of equivalent resistance in series and parallel circuit
2nd	**4th 5th 6th**	Measurement of power and power factor using series R-L-C Load.
	4th 5th 6th	Measurement of power and power factor using series R-L-C Load.
3rd	**4th 5th 6th**	Verification of KCL and KVL.
	4th 5th 6th	Verification of KCL and KVL.
4th	**4th 5th 6th**	Verification of Super position theorem
	4th 5th 6th	Verification of Super position theorem
5th	**4th 5th 6th**	Verification of Thevenin's Theorem
	4th 5th 6th	Verification of Thevenin's Theorem
6th	**4th 5th 6th**	Verification of Norton's Theorem
	4th 5th 6th	Verification of Norton's Theorem

7th	4th 5th 6th	Verification of Maximum power transfer Theorem
	4th 5th 6th	Verification of Maximum power transfer Theorem
8th	4th 5th 6th	Determine resonant frequency of series R-L-C circuit.
	4th 5th 6th	Determine resonant frequency of series R-L-C circuit.
9th	4th 5th 6th	Determine resonant frequency of series R-L-C circuit.
	4th 5th 6th	Study of Low pass filter & determination of cut-off frequency
10th	4th 5th 6th	Study of Low pass filter & determination of cut-off frequency
	4th 5th 6th	Study of High pass filter & determination of cut-off frequency
11th	4th 5th 6th	Study of High pass filter & determination of cut-off frequency
	4th 5th 6th	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
12th	4th 5th 6th	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
	4th 5th 6th	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
13th	4th 5th 6th	Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
	4th 5th 6th	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
14th	4th 5th 6th	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit

	4th **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit
		iii. Transient Response in R - L -C series circuit
15th	**4th** **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
	4th **5th** **6th**	Construct the following circuits using P -Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem ii. Series Resonant Circuit iii. Transient Response in R - L -C series circuit
16th	**4th** **5th** **6th**	REVISION
	4th **5th** **6th**	REVISION

17th	**4th** **5th** **6th**	REVISION
	4th **5th** **6th**	REVISION

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: KAMBHUDEEP BAG*BRANCH*: ELECTRICAL*SEM*: 3RD*SESSION*:2023-24(W)

SUBJECT: CNT	**No. of days/ week Class allotted: 5 Total Periods: 75**	**w.e.f.01-08-2023to30-11-23**
Week	Class Day	Theory
1st	1st	**1. MAGNETIC CIRCUITS:** 1 . 1 Introduction
	2nd	1 . 2 Magnetizing force, Intensity, MMF, flux and their relations
	3rd	1 . 3 Permeability, reluctance and permeance
	4th	1 . 4 Analogy between electric and Magnetic Circuits
	5th	-TUTORIAL CLASS-
2nd	1st	1 . 5 B-H Curve
	2nd	1 . 6 Series & parallel magnetic circuit.
	3rd	1 . 7 Hysteresis loop
	4th	**2. COUPLED CIRCUITS:** 2 . 1 Self Inductance and Mutual Inductance 2 . 2 Conductively coupled circuit and mutual impedance
	5th	-TUTORIAL CLASS-
3rd	1st	2 . 3 Dot convention
	2nd	2 . 4 Coefficient of coupling
	3rd	2 . 5 Series and parallel connection of coupled inductors.
	4th	2 . 6 Solve numerical problems
	5th	-TUTORIAL CLASS-
4th	1st	**3.CIRCUIT ELEMENTS AND ANALYSIS:** 3 . 1 Active, Passive, Unilateral & bilateral, Linear &Non linear elements
	2nd	3 . 2 Mesh Analysis, Mesh Equations by inspection 3 . 3 Super mesh Analysis
	3rd	3 . 4 Nodal Analysis, Nodal Equations by inspection
	4th	3 . 5 Super node Analysis.
	5th	-TUTORIAL CLASS-
5th	1st	3 . 6 Source Transformation Technique
	2nd	3 . 7 Solve numerical problems (With Independent Sources Only)
	3rd	**4.NETWORK THEOREMS:** 4.1 Star to delta and delta to star transformation
	4th	4.2 Super position Theorem
	5th	-TUTORIAL CLASS-
6th	1st	4.3 Thevenin's Theorem
	2nd	4.4 Norton's Theorem
	3rd	4.5 Maximum power Transfer Theorem.
	4th	4.6 Solve numerical problems (With Independent Sources Only)
	5th	-TUTORIAL CLASS-
7th	1st	4.6 Solve numerical problems (With Independent Sources Only)
	2nd	-DO-
	3rd	-DO-
	4th	**5.AC CIRCUIT AND RESONANCE:** 5.1 A.C. through R-L, R-C & R-L-C Circuit

	5th	-TUTORIAL CLASS-
8th	1st	5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	2nd	5.3 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits
	3rd	5.4 Power factor & power triangle.
	4th	5.5 Deduce expression for active, reactive, apparent power.
	5th	-TUTORIAL CLASS-
9th	1st	5.6 Derive the resonant frequency of series resonance and parallel resonance circuit
	2nd	5.7 Define Bandwidth, Selectivity & Q-factor in series circuit.
	3rd	5.8 Solve numerical problems
	4th	**6. POLYPHASE CIRCUIT:** 6.1 Concept of poly-phase system and phase sequence
	5th	-TUTORIAL CLASS-
10th	1st	6.2 Relation between phase and line quantities in star & delta connection
	2nd	6.3 Power equation in 3-phase balanced circuit.
	3rd	6.4 Solve numerical problems
	4th	6.5 Measurement of 3-phase power by two wattmeter method.
	5th	-TUTORIAL CLASS-
11th	1st	6.6 Solve numerical problems
	2nd	-DO-
	3rd	**7. TRANSIENTS:** 7.1 Steady state & transient state response.
	4th	7.2 Response to R-L, R-C & RLC circuit under DC condition.
	5th	-TUTORIAL CLASS-
12th	1st	7.3 Solve numerical problems
	2nd	-DO-
	3rd	**8. TWO-PORT NETWORK:** 8.1 Open circuit impedance (z) parameters
	4th	8.2 Short circuit admittance (y) parameters
	5th	-TUTORIAL CLASS-
13th	1st	8.3 Transmission (ABCD) parameters
	2nd	8.4 Hybrid (h) parameters.
	3rd	8.5 Inter relationships of different parameters.
	4th	8.6 T and π representation.
	5th	-TUTORIAL CLASS-
14th	1st	8.7 Solve numerical problems
	2nd	-DO-
	3rd	**9. FILTERS:** 9.1 Define filter 9.2 Classification of pass Band, stop Band and cut-off frequency.
	4th	9.3 Classification of filters
	5th	-TUTORIAL CLASS-
15th	1st	9.4 Constant – K low pass filter.
	2nd	9.5 Constant – K high pass filter. 9.6 Constant – K Band pass filter.
	3rd	9.7 Constant – K Band elimination filter.
	4th	9.8 Solve Numerical problems
	5th	-TUTORIAL CLASS-

16th	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
	5th	REVISION
17th	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
	5th	REVISION

LESSONPLAN:ELECTRICALMACHINE LAB II WINTER2023

Discipline: ELECTRICAL	Semester: WINTER2023	Name of the teaching faculty: SATYAPRAKASH OJHA
Subject: ELECTRICAL MACHINELAB II	No of days /per week class allotted: 06	Semester FromDate:**01-08-2023** To Date:**30-11-2023** No of weeks:14
Week:	Class day:	Theory/practical topics:
1st	1st,2nd,3rd	Study of (Manual and Semi automatic) Auto transformer starter and rotor resistance starter connection and running a 3-phase induction motor and measurement of starting current.
	4th,5th,6th	Study of (Manual and Semi automatic) Auto transformer starter and rotor resistance starter connection and running a 3-phase induction motor and measurement of starting current.
2nd	1st,2nd,3rd	Study of (Manual and Semi automatic) Auto transformer starter and rotor resistance starter connection and running a 3-phase induction motor and measurement of starting current.
	4th,5th,6th	Study of (Manual and Semi automatic) Auto transformer starter and rotor resistance starter connection and running a 3-phase induction motor and measurement of starting current.
3rd	1st,2nd,3rd	Study and Practice of connection& Reverse the direction of Rotation of Three Phase Induction motor.
	4th,5th,6th	Study and Practice of connection& Reverse the direction of Rotation of Single Phase Induction motor.
4th	1st,2nd,3rd	Lab Records checking
	4th,5th,6th	Heat run test of3-phasetransformer.
5th	1st,2nd,3rd	OC and SC test of alternator and determination of regulation By synchronous impedance method.
	4th,5th,6th	OC and SC test of alternator and determination of regulation By synchronous impedance method.
6th	1st,2nd,3rd	Determination of regulation of alternator by direct loading.
	4th,5th,6th	Determination of regulation of alternator by direct loading.
7th	1st,2nd,3rd	Parallel operation of two alternators and study load sharing
	4th,5th,6th	Parallel operation of two alternators and study load sharing
8th	1st,2nd,3rd	Lab Records checking
	4th,5th,6th	Measurementofpowerofa3-phaseLoadusingtwo wattmeter methodandverificationoftheresultusingone3- phase wattmeter.
9th	1st,2nd,3rd	Measurement of power of a 3-phase Load using two wattmeter methodandverificationoftheresultusingone3- Phase wattmeter.
	4th,5th,6th	Connectionof3-phaseenergymetertoa 3-phaseload.
10th	1st,2nd,3rd	Connectionof3-phaseenergymetertoa 3-phaseload.
	4th,5th,6th	Study of an O.C.B.
11th	1st,2nd,3rd	Study of induction type over current/reverse power relay.

	4th,5th,6th	Study of induction type over current/reverse power relay.
12th	1st,2nd,3rd	Lab Records checking
	4th,5th,6th	Study of Buchholz's relay.
13th	1st,2nd,3rd	Study of an earth fault relay.
	4th,5th,6th	Lab Records checking
14th	1st,2nd,3rd	Revision of experiments
	4th,5th,6th	Practicing questions related to experiments

LESSONPLAN: POWER ELECTRONICS & PLCPRACTICAL WINTER 2023

Discipline: ELECTRICAL	Semester:5th	Name of the teaching faculty: SATYAPRAKASH OJHA
Subject: POWERELECTRONICS&PLC	No of days/per weekclassallotted:03	Semester From Date: **01-08-2023**TO :**30-11-2023** Noofweeks:14
Week:	Class day:	Theory/practical topics:
1st:	1st,2nd,3rd	Study of switching characteristics of a power transistor.
2nd	1st,2nd,3rd	Study of V-I characteristics of SCR. Study of V-I characteristics of TRIAC. DIAC
3rd	1st,2nd,3rd	Study of drive circuit for SCR & TRIAC using DIAC. Study of drive circuit for SCR& TRIAC using UJT.
4th	1st,2nd,3rd	To study phase controlled bridge rectifier using resistive load.
5th	1st,2nd,3rd	To study series Inverter. Study of voltage source Inverter To perform the speed control of DC motor using Chopper To study single-phase Cyclo-converter
7th	1st,2nd,3rd	PLC Programming Introduction/Familiarization PLC Trainer & its Installation with PC (a) Learn the basics and hardware components of PLC (b) Understand configuration of PLC system (c) Study various building blocks of PLC (d) Determine the No. of digital I/O & Analog I/O
8th	1st,2nd,3rd	Execute the different Ladder Diagrams (a) Demonstrate PLC and Ladder diagram-Preparation downloading and running (b) Execute Ladder diagrams for different Logical Gates
9th	1st,2nd,3rd	Execute Ladder diagrams with model applications
10th	1st,2nd,3rd	Execute Ladder diagrams with model applications (i)DOL starter
11th	1st,2nd,3rd	Execute Ladder diagrams with model applications (ii)Star-Delta starter
12th	1st,2nd,3rd	Execute Ladder diagrams with model applications Traffic light controller
13th	1st,2nd,3rd	Execute Ladder diagrams with model applications Traffic light controller
14th	1st,2nd,3rd	Practice Session

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: SATYAPRAKASH OJHA ***BRANCH*: ELECTRICAL** ***SEM*: 3RD** ***SESSION*:2023-24(W)**

SUBJECT: EVS	**No. of days/ week Class allotted:** 4 **Total Periods**: 60	**w.e.f.01-08-2023 to 30-11-2023**
Week	Class Day	Theory
1st	1st	1. The Multidisciplinary nature of environmental studies: 1.1 Definition, scope and importance.
	2nd	-DO-
	3rd	1.2 Need for public awareness.
	4th	-DO-
2nd	1st	**2. Natural Resources:** Renewable and non renewable resources: 2.1 Natural resources and associated problems. 2.1.1. Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people.
	2nd	-DO-
	3rd	2.1.2. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.
	4th	2.1.3. Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.
3rd	1st	2.1.4. Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers-pesticides problems, water logging, salinity,.
	2nd	2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
	3rd	2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
	4th	2.2 Role of individual in conservation of natural resources.
4th	1st	-DO-
	2nd	2.3 Equitable use of resources for sustainable life styles.
	3rd	**3. Systems:** 3.1. Concept of an eco system. 3.2. Structure and function of an eco system.
	4th	3.3. Producers, consumers, decomposers.
5th	1st	3.4. Energy flow in the eco systems.
	2nd	3.5. Ecological succession.
	3rd	3.6. Food chains, food webs and ecological pyramids.
	4th	3.7. Introduction, types, characteristic features, structure and function of the following eco system:
6th	1st	3.8. Forest ecosystem:
	2nd	3.9. Aquatic eco systems (ponds, streams, lakes, rivers, ocean,estuaries).
	3rd	**4. Biodiversity and it's Conservation:** 4.1. Introduction-Definition: genetics, species and ecosystem diversity.
	4th	-DO-

7th	1st	4.2. Biogeographically classification of India.
	2nd	-DO-
	3rd	4.3. Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optin values.
	4th	-DO-
8th	1st	4.4. Biodiversity at global, national and local level.
	2nd	4.5. Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
	3rd	5. Environmental Pollution: 5.1. Definition Causes, effects and control measures of: 5.1.1 Air pollution.
	4th	-DO-
9th	1st	5.1.2 Water pollution.
	2nd	5.1.3 Soil pollution
	3rd	5.1.4 Marine pollution
	4th	5.1.5 Noise pollution.
10th	1st	5.1.6 Thermal pollution
	2nd	5.1.7 Nuclear hazards.
	3rd	5.2. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
	4th	-DO-
11th	1st	5.3. Role of an individual in prevention of pollution.
	2nd	5.4. Disaster management: Floods, earth quake, cyclone and landslides
	3rd	**6. Social issues and the Environment:** 6.1. Form unsustainable to sustainable development.
	4th	6.2. Urban problems related to energy.
12th	1st	6.3. Water conservation, rain water harvesting, water shed management.
	2nd	-DO-
	3rd	6.4. Resettlement and rehabilitation of people; its problems and concern.
	4th	6.5. Environmental ethics: issue and possible solutions.
13th	1st	6.6. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
	2nd	6.7. Air (prevention and control of pollution) Act.
	3rd	6.8. Water (prevention and control of pollution) Act.
	4th	6.9. Public awareness.
14th	1st	**7. Human population and the environment:** 7.1. Population growth and variation among nations.
	2nd	7.2. Population explosion- family welfare program.
	3rd	7.3. Environment and human health.
	4th	7.4. Human rights.
15th	1st	7.5. Value education
	2nd	7.6. Role of information technology in environment and human health.
	3rd	DOUBT CLEARING CLASS
	4th	DOUBT CLEARING CLASS

LESSON PLAN: BASIC ELECTRONICS WINTER 2023

Discipline:ELECTRICAL	Semester: 1st SEMESTER	Name of the teaching faculty:SATYAPRAKASH OJHA
Subject: BASIC ELECTRONICS	No of days/per week class allotted: 02	Semester From Date: 16.08.2023 To Date: 11.12.2023 No of weeks:14
Week:	Class day:	Theory/practical topics:
1st:	1st	Basic Concept of Electron Emission & itstypes.
	2nd	
2nd	1st	Classification of material according to electrical conductivity (Conductor, Semiconductor & Insulator) with respect to energy band diagramonly.
	2nd	Difference between vacuum tube &semiconductor
3rd	1st	Difference between Intrinsic & ExtrinsicSemiconductor.
	2nd	Principle of working and use of PN junction diode
4th	1st	Principle of working Zener diode and LightEmitting Diode.
	2nd	Rectifier & itsuses. Principles of working of different types of Rectifiers with their merits anddemerits
5th	1st	Functions of filters and classification of simple Filter circuit (Capacitor, choke input andπ).
	2nd	Working of D.C power supply system (unregulated) with help of block diagramsonly
6th	1st	Transistor, Different types of Transistor Configuration and state output and input currentgain relationship in CE,CB and CC configuration(No mathematical derivation)
	2nd	Transistor, Different types of Transistor Configuration and state output and input currentgain relationship in CE,CB and CC configuration(No mathematical derivation)
7th	1st	Need of biasing and explain different types of biasing with circuit diagram.(only CE configuration)
	2nd	
8th	1st	Amplifiers(concept) , working principles of single phase CEamplifier.
	2nd	Electronic Oscillator and itsclassification. Working of Basic Oscillator with different elements through simple BlockDiagram
9th	1st	**CLASS TEST-I**
	2nd	Basic communication system (concept & explanation with help of Blockdiagram)
10th	1st	Concept of Modulation and Demodulation Different types of Modulation (AM, FM & PM) based on signal, carrier waveand modulated wave.
	2nd	
11th	1st	Concept of Transducer and sensor with theirdifferences. Different type of Transducers & concept of active and passivetransducer.
	2nd	Working principle of photo emissive, photoconductive, photovoltaic transducer and its application.
12th	1st	
	2nd	Multimeter and itsapplications Analog and Digital Multimeter and theirdifferences
13th	1st	Working principle of Multimeter with Basic Blockdiagram.
	2nd	CRO, working principle of CRO with simple Blockdiagram
14th	1st	
	2nd	**CLASS TEST II**

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: SATYAPRAKASH OJHA ***BRANCH*: ELECTRICAL** ***SEM*: 5TH** ***SESSION*:2023-24(W)**

SUBJECT: UEET	**No. of days/ week Class allotted:** 4 **Total Periods**: 60	**w.e.f.01-08-2023 to 30-11-23**
Week	Class Day	Theory
1st	1st	1. ELECTROLYTIC PROCESS: 1.1. Definition and Basic principle of Electro Deposition.
	2nd	1.2. Important terms regarding electrolysis. 1.3. Faradays Laws of Electrolysis.
	3rd	1.4. Definitions of current efficiency, Energy efficiency.
	4th	1.5. Principle of Electro Deposition
2nd	1st	1.6. Factors affecting the amount of Electro Deposition.
	2nd	1.7. Factors governing the electro deposition.
	3rd	1.8. State simple example of extraction of metals.
	4th	1.9. Application of Electrolysis.
3rd	1st	**2. ELECTRICAL HEATING:** 2.1. Advantages of electrical heating.
	2nd	2.2. Mode of heat transfer and Stephen's Law.
	3rd	2.3. Principle of Resistance heating. (Direct resistance and indirect resistance heating.)
	4th	2.4. Discuss working principle of direct arc furnace and indirect arc furnace.
4th	1st	2.5. Principle of Induction heating. 2.5.1. Working principle of direct core type, vertical core type and indirect core type Induction furnace.
	2nd	2.5.2. Principle of coreless induction furnace and skin effect.
	3rd	2.6. Principle of dielectric heating and its application
	4th	2.7. Principle of Microwave heating and its application.
5th	1st	3. PRINCIPLES OF ARC WELDING: 3.1. Explain principle of arc welding.
	2nd	-DO-
	3rd	3.2. Discuss D. C. & A. C. Arc phenomena.
	4th	3.3. D.C. & A. C. arc welding plants of single and multi-operation type.
6th	1st	3.4. Types of arc welding.
	2nd	3.5. Explain principles of resistance welding.
	3rd	3.6. Descriptive study of different resistance welding methods.
	4th	-DO-
7th	1st	4. ILLUMINATION: 4.1. Nature of Radiation and its spectrum. 4.2. Terms used in Illuminations. [Lumen, Luminous intensity, Intensity of illumination, MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.]
	2nd	4.3. Explain the inverse square law and the cosine law.
	3rd	4.4. Explain polar curves.
	4th	4.5. Describe light distribution and control. Explain related definitions like

		maintenance factor and depreciation factors.
8th	1st	4.6. Design simple lighting schemes and depreciation factor.
	2nd	4.7. Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.
	3rd	4.8. Explain Discharge lamps. 4.9. State Basic idea about excitation in gas discharge lamps.
	4th	4.10. State constructional factures and operation of Fluoroscent lamp. (PL and PLL Lamps)
9th	1st	4.11. Sodium vapor lamps.
	2nd	4.12. High pressure mercury vapor lamps.
	3rd	4.13. Neon sign lamps.
	4th	4.14. High lumen output & low consumption fluorescent lamps.
10th	1st	5. INDUSTRIAL DRIVES: 5.1. State group and individual drive.
	2nd	-DO-
	3rd	5.2. Method of choice of electric drives.
	4th	5.3. Explain starting and running characteristics of DC and AC motor.
11th	1st	5.4. State Application of: 5.4.1. DC motor.
	2nd	5.4.2. 3-phase induction motor.
	3rd	-DO-
	4th	5.4.3. 3 phase synchronous motors.
12th	1st	5.4.4. Single phase induction, series motor, universal motor and repulsion motor.
	2nd	-DO-
	3rd	**6. ELECTRIC TRACTION:** 6.1. Explain system of traction
	4th	6.2. System of Track electrification.
13th	1st	6.3. Running Characteristics of DC and AC traction motor.
	2nd	6.4. Explain control of motor: 6.4.1. Tapped field control.
	3rd	6.4.2. Rheostatic control.
	4th	6.4.3. Series parallel control.
14th	1st	6.4.4. Multi-unit control.
	2nd	6.4.5. Metadyne control.
	3rd	6.5. Explain Braking of the following types: 6.5.1. Regenerative Braking.
	4th	-DO-
15th	1st	6.5.2. Braking with 1-phase series motor.
	2nd	6.5.3. Magnetic Braking.
	3rd	DOUBT CLEARING CLASS
	4th	DOUBT CLEARING CLASS