LESSON PLAN: ENERGY CONVERSION II WINTER 2022

Discipline: ELECTRICAL	Semester: WINTER 2022	Name of the teaching faculty: SHIBASHIS KAR
Subject: ENERGY CONVERSION II	No of days/per week class allotted: 04	Semester From Date: 15/09/2022 To Date: 22/12/2022 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

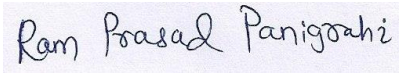
Shibashis Kar

LESSON PLAN: UEET WINTER 2022

Discipline: ELECTRICAL	Semester: WINTER 2022	Name of the teaching faculty: RAM PRASAD PANIGRAHI
Subject: Utilization of Electrical Energy and Traction	No of days/per week class allotted: 04	Semester From Date: 15/09/2022 To Date: 22/12/2022 No of weeks:14
Week:	Class day:	Theory/practical topics:
1st:	1ST	ELECTROLYTIC PROCESS: Electro Deposition Basic principle. Important terms regarding electrolysis.
	2ND	Faradays Laws of Electrolysis.
	3RD	Current efficiency and Energy efficiency.
	4TH	Principle of Electro Deposition.
2ND	1ST	Factors affecting amount of Electro Deposition. Factors governing electro deposition.
	2ND	Metal extraction and application of Electrolysis.
	3RD	ELECTRICAL HEATING: Advantages of electrical heating. Modes of heat transfer and Stephen's law.
	4TH	Direct resistance and indirect resistance heating.
3RD	1ST	Direct and Indirect arc furnace.
	2ND	Direct core type, vertical core type and indirect type induction furnace.
	3RD	Coreless induction furnace and skin effect. Dielectric heating.
	4TH	Microwave heating working principle and application.
4TH	1ST	PRINCIPLES OF ARC WELDING: Principles of arc welding.
	2ND	D.C and A.C Arc phenomena.
	3RD	Arc welding plants of single and multi operation type.
	4TH	Types of arc welding.
5th	1ST	Types of arc welding.
	2ND	Principles of resistance welding.
	3RD	Resistance welding methods.
	4TH	Resistance welding methods.
6th	1ST	ILLUMINATION: Nature of radiation and its spectrum.
	2ND	Terms used in illumination.
	3RD	Inverse square law, cosine law and polar curve.

	4TH	Light distribution and control. Maintenance factor and depreciation factor.
7th	1ST	Simple lighting schemes.
	2ND	Filament lamps construction and working.
	3RD	Discharge lamps. Excitation in gas discharge lamps.
	4TH	Fluorescent lamp construction and working.
8th	1ST	Sodium vapor lamps.
	2ND	HPMV lamps. Neon sign lamp.
	3RD	High lumen output and low consumption fluorescent lamps
	4TH	Class test.
9th	1ST	INDUSTRIAL DRIVES: Group and individual drive.
	2ND	Method of choice of electric drive.
	3RD	Starting and running characteristics of DC and AC traction motors.
	4TH	Starting and running characteristics of DC and AC traction motors
10th	1ST	Application of DC motor.
	2ND	Application of 3-phase induction motor.
	3RD	Application of synchronous motor and 1-phase induction motor.
	4TH	Application of series , universal and repulsion motor.
11th	1ST	ELECTRIC TRACTION: System of traction.
	2ND	System of Track electrification.
	3RD	Running characteristics of DC and AC motors.
	4TH	Tapped field control.
12th	1ST	Rheostatic control.
	2ND	Series parallel control.
	3RD	Multi unit control.
	4TH	Metadyne control.
13th	1ST	Regenerative braking.
	2ND	Braking with 1-phase series motor.
	3RD	Magnetic braking.
	4TH	Class test.
14th	1ST	Revision of topics

	2ND	Revision of topics
	3RD	Practice test of PYQ.
	4TH	Practice test of PYQ.

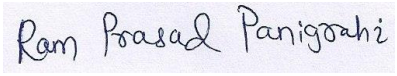


Signature of the faculty

LESSON PLAN: ELECTRICAL MACHINE LAB II WINTER 2022

Discipline: ELECTRICAL	Semester: WINTER 2022	Name of the teaching faculty: RAM PRASAD PANIGRAHI
Subject: ELECTRICAL MACHINE LAB II	No of days/per week class allotted: 06	Semester From Date: 15/09/2022 To Date: 22/12/2022 No of weeks:14
Week:	Class day:	Theory/practical topics:
1st	1st ,2nd ,3rd	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	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 of 3-phase transformer.
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	Measurement of power of a 3-phase Load using two wattmeter method and verification of the result using one 3-phase wattmeter.
9th	1st ,2nd ,3rd	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	Connection of 3-phase energy meter to a 3-phase load.
10th	1st ,2nd ,3rd	Connection of 3-phase energy meter to a 3-phase load.
	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.

	4^{th} ,5^{th},6^{th}	Study of Buchholz's relay.
13^{th}	1^{st},2^{nd} ,3^{rd}	Study of an earth fault relay.
	4^{th} ,5^{th},6^{th}	Lab Records checking.
14^{th}	1^{st},2^{nd} ,3^{rd}	Revision of experiments.
	4^{th} ,5^{th},6^{th}	Practicing questions related to experiments.



Signature of the faculty

LESSON PLAN: DIGITAL ELECTRONICSN & MICROPROCESSOR PRACTICAL WINTER 2022

Discipline: ELECTRICAL	Semester: 5th	Name of the teaching faculty: SIBA PRASAD SAMANTARAYA
Subject: Digital Electronics & Microprocessor	No of days/per week class allotted: 03	Semester From Date: 15/09/2022 to 22/12/2022 No of weeks:14
Week:	Class day:	Theory/practical topics:
1st:	1st, 2nd,3rd	Verify truth tables of AND, OR, NOT, NOR, NAND, XOR, XNOR gates. Implement various gates by using universal properties of NAND & NOR gates and verify truth table
2nd	1st, 2nd,3rd	Implement half subtractor and Full subtractor using logic gates.
3rd	1st, 2nd,3rd	Implement a 4-bit Binary to Gray code converter and Single bit digital comparator.
4th	1st, 2nd,3rd	Study Multiplexer and demultiplexer.
5th	1st, 2nd,3rd	Study of flip-flops. i)S-R flip flop ii) J-K flip flop iii) D flip flop iv) T flip flop
7th	1st, 2nd,3rd	Realize a 4-bit asynchronous UP/Down counter with a control for up/down counting Realize a 4-bit synchronous UP/Down counter with a control for up/down counting, Implement Mode-10 asynchronous counters.
8th	1st, 2nd,3rd	Study shift registers
9th	1st, 2nd,3rd	General Programming using 8085A development board a. 1'S Complement. b. 2'S Complement. c. Addition of 8-bit number. d. Subtraction of 8-bit number resulting 8/16 bit number.
10th	1st, 2nd,3rd	General Programming using 8085A development board: a. Decimal Addition 8-bit number. b. Decimal Subtraction 8-bit number.
11th	1st, 2nd,3rd	General Programming using 8085A development board: a. Compare between two numbers. b. Find the largest in an Array. c. Block Transfer
12th	1st, 2nd,3rd	Interfacing using 8085-Traffic light control using 8255.
13th	1st, 2nd,3rd	Interfacing using 8085-Generation of square wave using 8255
14th	1st, 2nd,3rd	Practice Session

Siba Prasad Samantaraya
Lect. In Electronics
GP Kalahandi

LESSON PLAN: DIGITAL ELECTRONICS AND MICROPROCESSOR WINTER 2022

Discipline: ELECTRICAL	Semester: 5th sem	Name of the teaching faculty: SIBA PRASAD SAMANTARAYA
Subject Digital Electronics and Microprocessor	No of days/per week class allotted: 05	Semester From Date: 15/09/2022 to 22/12/2022 No of weeks:14
Week:	Class day:	Topics:
1st: Basics Of Digital Electronics	1st , 2nd ,3rd	Binary, Octal, Hexadecimal number systems and compare with Decimal system.
	4th , 5th	Binary addition, subtraction, Multiplication and Division
2nd Basics Of Digital Electronics	1st	1's complement and 2's complement numbers, binary number Subtraction in 1's complement & 2's complement method.
	2nd ,3rd ,	Use of weighted and Un-weighted codes & write Binary equivalent number for a number in 8421, Excess-3 and Gray Code and vice-versa. Importance of parity Bit
	4th ,5th	Logic Gates: AND, OR, NOT, NAND, NOR and EX-OR gates with truth table.
3rd Basics Of Digital Electronics	1st	Realize AND, OR, NOT operations using NAND, NOR gates
	2nd ,3rd ,4th	Different postulates and De-Morgan's theorems in Boolean algebra. Use Of Boolean Algebra For Simplification Of Logic Expression
	5th	Karnaugh Map For 2,3,4 Variable, Simplification Of SOP And POS Logic Expression Using K-Map
4th Combinational Logic Circuits	1st	Karnaugh Map For 2,3,4 Variable, Simplification Of SOP And POS Logic Expression Using K-Map
	2nd	Give the concept of combinational logic circuits. Half adder circuit and verify its functionality using truth table. Realize a Half-adder using NAND gates only and NOR gates only.
	3rd	Full adder circuit and explain its operation with truth table. Realize full-adder using two Half-adders and an OR – gate and write truth table.
	4th ,5th	Full subtractor circuit and explain its operation with truth table
5th Combinational Logic Circuits	1st	Operation of 4 X 1 Multiplexers and 1 X 4 demultiplexer
	2nd	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
	3rd	Working of Two bit magnitude comparator, Revision
	4th	**CLASS TEST**
	5th	Give the idea of Sequential logic circuits. State the necessity of clock and give the concept of level clocking and edge triggering

6th Sequential Logic Circuits	1st	Clocked SR flip flop with preset and clear inputs.
	2nd , 3rd	Construct level clocked JK flip flop using S-R flip-flop and explain with truth table, Concept of race around condition and study of master slave JK flip flop.
	4th	Give the truth tables of edge triggered D and T flip flops and draw their symbols.
	5th	Applications of flip flops. Revision
7th Sequential Logic Circuits	1st2nd	Define modulus of a counter 4-bit asynchronous counter and its timing diagram.
	3rd4th	Asynchronous decade counter. Distinguish between synchronous and asynchronous counters 4-bit synchronous counter.
	5th	State the need for a Register and list the four types of registers
8th Sequential Logic Circuits	1st	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop.
	2nd3rd	**Revision & Class Test**
	4th	Introduction to Microprocessors, Microcomputers
	5th	Architecture of Intel 8085A Microprocessor and description of each block
9th8085 Microprocessor	1st2nd	Architecture of Intel 8085A Microprocessor and description of each block
	3rd4th	Pin diagram and description.
	5th	Stack, Stack pointer & stack top, Interrupts
10th8085 Microprocessor	1st	Fetch Cycle, Machine Cycle, Instruction Cycle, T-State
	2nd3rd	Timing Diagram for memory read, memory write, I/O read, I/O write & Timing Diagram for 8085 instruction
	4th	Opcode & Operand, Differentiate between one byte, two byte & three byte instruction with example
	5th	Instruction set of 8085 example. Addressing mode.
11th8085 Microprocessor	1st	Instruction set of 8085 example. Addressing mode.
	2nd	Instruction set of 8085 example. Addressing mode.
	3rd	Instruction set of 8085 example. Addressing mode.
	4th	Instruction set of 8085 example. Addressing mode.
	5th	Simple assembly language programming of 8085.
12th 8085 Microprocessor	1st	Simple assembly language programming of 8085.
	2nd	Simple assembly language programming of 8085.
	3rd	Simple assembly language programming of 8085.
	4th	Counter and time delay
	5th	Counter and time delay
13th Interfacing And Support Chips	1st2nd	Basic Interfacing Concepts, Memory mapping & I/O mapping

	3rd	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255
14th Interfacing And Support Chips	1st2nd3rd	Application using 8255: Seven segment LED display, Square wave generator, Traffic light Controller
	4th 5th	**Revision & Class Test**

Siba Prasad Samantaraya
Lect. In Electronics
GP Kalahandi

LESSON PLAN: POWER ELECTRONICS & PLC PRACTICAL WINTER 2022

Discipline: ELECTRICAL	Semester: 5th	Name of the teaching faculty: SIBA PRASAD SAMANTARAYA
Subject: POWER ELECTRONICS & PLC	No of days/per week class allotted: 03	Semester From Date: 15/09/2022 TO 22/12/2022 No of weeks: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. Study of V-I characteristics of 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 using timers & counters
10th	1st, 2nd, 3rd	Execute the Ladder Diagrams with model applications (i) DOL starter
11th	1st, 2nd, 3rd	Execute the Ladder Diagrams with model applications (ii)Star- Delta starter
12th	1st, 2nd, 3rd	Execute Ladder diagrams with model applications Stair case lighting
13th	1st, 2nd, 3rd	Execute Ladder diagrams with model applications Traffic light controller
14th	1st, 2nd, 3rd	Practice Session

Siba Prasad Samantaraya
Lect. In Electronics
GP Kalahandi

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: **SATYAJIT MOHANTY** ***BRANCH*:** **ELECTRICAL** ***SEM*:** **5TH** ***SESSION*:2022-23**

SUBJECT: Project Work	**No. of days/ week** **Class allotted:** 3 **Total Periods**: 45	**w.e.f.** 15.09.22 **to** 22.12.22
Week	Class Day	Theory
1st	1st	1. Selection of project assignment
	2nd	-do-
	3rd	-do-
2nd	1st	-do-
	2nd	-do-
	3rd	2. Planning and execution of considerations
3rd	1st	-do-
	2nd	-do-
	3rd	-do-
4th	1st	-do-
	2nd	3. Quality of performance
	3rd	-do-
5th	1st	-do-
	2nd	-do-
	3rd	-do-
6th	1st	4. Providing solution of the problems or production of final product
	2nd	-do-
	3rd	-do-
7th	1st	-do-
	2nd	-do-
	3rd	5. Sense of responsibility
8th	1st	-do-
	2nd	-do-
	3rd	-do-
9th	1st	-do-
	2nd	6. Self-expression/ communication/ Presentation skills
	3rd	-do-
10th	1st	-do-
	2nd	-do-
	3rd	-do-
11th	1st	7. Interpersonal skills/human relations
	2nd	-do-
	3rd	-do-
12th	1st	-do-
	2nd	-do-
	3rd	8. Report writing skills
13th	1st	-do-
	2nd	-do-
	3rd	-do-
14th	1st	-do-
	2nd	9. Viva voce

	3rd	-do-
15th	1st	-do-
	2nd	-do-
	3rd	-do-

LESSON PLAN

GOVT POLYTECHNIC KALAHANDI, BHAWANIPATNA

Faculty Name: SATYAJIT MOHANTY ***BRANCH*: ELECTRICAL** ***SEM*: 5TH** ***SESSION*:2022-23**

SUBJECT: PE & PLC	**No. of days/ week Class allotted:** 4 **Total Periods**: 60	**w.e.f.** 15.09.22 **to** 22.12.22
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	1.2 Two transistor analogy of SCR.
	3rd	1.3 Gate characteristics of SCR.
	4th	1.4 Switching characteristic of SCR during turn on and turn off.
2nd	1st	1.5 Turn on methods of SCR.
	2nd	1.6 Turn off methods of SCR (Line commutation and Forced commutation)
	3rd	-do-
	4th	-do-
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	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)
	4th	Doubt Clearing

LESSON PLAN

GOVT. POLYTECHNIC KALAHANDI, BHAWANIPATNA

FACULTY NAME: HIRENDRA KUMBHAR BRANCH:ELECTRICAL SEM: 5th SESSION:2022-23

SUB: EMST (TH1)	**No. of days/ week Class allotted: 4 Total Periods**: 60	**w.e.f.15.09.2022 to 22.12.22**
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**