



GOVERNMENT POLYTECHNIC KORAPUT

Th.4(ab). BASIC ELECTRICAL/ ELECTRONIC ENGINEERING

Name of the Course: Diploma in Electrical Engineering			
Faculty: Mahesh Kumar Biswal, Lect EE		from 16.8.2023 to 11.12.2023(1 st Semester)	
Course code:	Th4(ab)	Semester	1 st and 2 nd
Total Period:	60	Examination	3hrs
Theory periods:	4P/week	Internal Assessment :	20
Maximum marks:	100	End Semester Examination:	80

DEPARTMENT OF ELECTRICAL

Vision:-

To create competent and industry ready Electrical diploma engineers with professional and social values to meet future challenges.

Mission:-

- To prepare diploma holders through “qualitative competency based education system” to compete with national requirement along with core values
- To produce dynamic Electrical Engineers to serve the society and industry .
- To develop leadership qualities, communication skills, critical thinking and attitude for Lifelong learning.

Program educational objectives:-

PEO1:	Apply technical knowledge and skills learned in the field of Electrical Engineering to professional and/or higher education.
PEO2:	to provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3:	To engage in lifelong learning, career enhancement to adopt emerging technologies

Course outcomes:-

Co1	Apply the knowledge of basics mathematics and science to solve electrical & electronics engineering problems
Co2	Use of relevant technologies to be familiar with electronic circuits, AC theory and generation of electrical power
Co3	Clarify the basic knowledge of various electrical and electronics transducers.
Co4	Discuss the basic communication system and calculation of commercial billing of electrical power and energy



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TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods
BASIC ELECTRICAL ENGINEERING		
1.	Fundamentals	5
2.	A C Theory	8
3.	Generation of Elect. Power	3
4.	Conversion of Electrical Energy	7
5.	Wiring and Power Billing	4
6.	Measuring Instrument	3
BASIC ELECTRONICS ENGINEERING		
1.	Electronic Devices	8
2.	Electronic circuits	9
3.	Communication System	3
4.	Transducers & Measuring instruments	10
TOTAL		60

LESSON PLAN

Week	Day	Theory topic
1 st	1 st	FUNDAMENTALS: Concept of current flow, Concept of source and load.
	2 nd	State Ohm's law and concept of resistance, Relation of V, I & R in series circuit. Relation of V, I & R in parallel circuit
	3 rd	. Division of current in parallel circuit. Effect of power in series & parallel circuit.
	4 th	Kirchhoff's Law., Simple problems on Kirchhoff's law
2 nd	1 st	A.C. THEORY: Generation of alternating emf, Difference between D.C. & A.C
	2 nd	Define Amplitude, instantaneous value, cycle, Time period, frequency, phase angle, phase difference.
	3 rd	State & Explain RMS value, Average value, Amplitude factor & Form factor with Simple problems
	4 th	Represent AC values in pharos diagrams
3 rd	1 st	AC through pure resistance, inductance & capacitance
	2 nd	AC though RL, RC, RLC series circuits. Simple problems on RL, RC & RLC series circuits
	3 rd	Concept of Power and Power factor, Impedance triangle and power triangle.
	4 th	ELECTRONIC DEVICES: Basic Concept of Electronics and its application.
4 th	1 st	Basic Concept of Electron Emission & its types.
	2 nd	Classification of material according to electrical conductivity (Conductor, Semiconductor & Insulator) with respect to energy band diagram only.

GOVERNMENT POLYTECHNIC KORAPUT

	3 rd	Difference between Intrinsic & Extrinsic Semiconductor. Difference between vacuum tube & semiconductor
	4 th	Principle of working and use of PN junction diode, Zener diode
5 th	1 st	Light Emitting Diode (LED), Integrated circuits (I.C) & its advantages.
	2 nd	BJT,
	3 rd	ELECTRONIC CIRCUITS: Rectifier & its uses.
	4 th	Principles of working of different types of Rectifiers with their merits and demerits and Functions of filters
6 th	1 st	classification of simple Filter circuit (Capacitor, choke input and π)
	2 nd	Working of D.C power supply system (unregulated) with help of block diagrams
	3 rd	Transistor, Different types of Transistor Configuration and state output and input current gain and relationship in CE, CB and CC configuration.
	4 th	Need of biasing and explain different types of biasing with circuit diagram. (on
7 th	1 st	Amplifiers (concept) , working principles of single phase CE amplifier
	2 nd	Electronic Oscillator and its classification
	3 rd	Working of Basic Oscillator with different elements through simple Block Diagram
	4 th	GENERATION OF ELECTRICAL POWER: Elementary idea on generation of electricity from thermal power station with block diagram
8 th	1 st	Elementary idea on generation of electricity from, hydro power station with block diagram
	2 nd	Elementary idea on generation of electricity from nuclear power station with block diagram
	3 rd	Previous year question discussion on basic electrical
	4 th	Previous year question discussion on basic electronics
9 th	1 st	CONVERSION OF ELECTRICAL ENERGY: Introduction of DC machines. Main parts machines.
	2 nd	Classification of DC generator Classification of DC motor
	3 rd	Uses of different types of DC generators & motors. Types and uses of single phase induction motors
	4 th	Concept of Lumen Different types of Lamps (Filament, Fluorescent, LED bulb) its Construction and Principle.
10 th	1 st	Star rating of home appliances (Terminology, Energy efficiency, Star rating Concept).
	2 nd	COMMUNICATION SYSTEM: Basic communication system (concept & explanation with help of Block diagram)
	3 rd	Concept of Modulation and Demodulation, Difference between them
	4 th	Different types of Modulation (AM, FM & PM) based on signal, carrier wave and modulated wave
11 th	1 st	TRANSDUCERS AND MEASURING INSTRUMENTS: Concept of Transducer and sensor with their differences.
	2 nd	Different type of Transducers & concept of active and passive transducer
	3 rd	Working principle of photo emissive, photoconductive, photovoltaic transducer and its application.
	4 th	Multimeter and its applications
12 th	1 st	Analog and Digital Multimeter and their differences Working principle of Multimeter with Basic Block diagram