

The Maharaja Sayajirao University of Baroda Polytechnic Higher Payment Program Diploma in Computer Engineering			ACADEMIC YEAR 2021-2022	
Year - I	BASIC ELECTRICAL AND ELECTRONICS(ELE3104)	Lecture Hrs per week	4	
Semester - I		Max marks	100	
Pre-Requisite: Basic Mathematics				
CO1	Understand the Fundamentals of Electrical Circuits.			
CO2	Comprehend the basics of semiconductor physics.			
CO3	Solve AC and DC Circuits.			
CO4	Comprehend the basics of semiconductor physics.			
CO5	Describe the Operation of Basic Electronic Components.			
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation			
COURSE CONTENT/SYLLABUS				
Unit	Unit Name	Hrs	Weightage	CO
1	Ohm’s Law, Temperature coefficient, series and parallel connections of resistors, star and delta connection of resistors. Related examples	6	14	CO1, CO3
2	Electromagnetism, terminologies related to Electromagnetic field, induction of EMF, Principles and Laws related to statically induced EMF, Dynamically induced EMF. Inductance, Inductor, Related examples.	8	16	CO1
3	Electrostatics, Coloumb’s Law, Terms related to Electrostatics, Capacitor, capacitance series and parallel connections of capacitors.	8	16	CO1, CO3
4	AC fundamentals, Related terms, single phase and three phase supply, related terms.	8	16	CO1, CO3
5	Semiconductor Physics: Atomic Energy Levels, The Energy Band Theory, Insulators, Semiconductors and Metals.	8	16	CO2, CO4
6	Electronic Devices: A) Diode Family: Construction, VI characteristics, V/I Characteristic, Diode Resistance, Forward and Reverse biased diode, Breakdown Diode, applications Various types of diode: Tunnel Diode, Semiconductor Photodiode, Photovoltaic Effect, Light –Emitting Diodes, Zener Diode. B) Transistor Family: Bipolar Junction Transistor, Transistor Current Components, Transistor Construction, Transistor Characteristics, Transistor Family: UJT, Junction FET, JFET Volt-Ampere Characteristics, FET Small-Signal Model, MOSFET	10	22	CO4, CO5
		48	100	
REFERENCE BOOKS:				
1.	A text book of Electrical Technology - B.L.Theraja Vol-1			
2.	Electronic Devices and Circuit Theory by Robert Boylestad and Louis Nashelsky [Ninth Edition]			
3.	Integrated Electronics By Jacob Millman and Christos C. Halkias, Tata McGraw Hill Publication			
4.	Fundamentals of Electrical and Electronic Engineering - B.L.Theraja.			
5.	Electronics Devices and Circuits By J.B.Gupta.			
6.	Electronics Devices by Floyd , Pearson Publication [Seventh edition]			
7.	A text book of Electrical and Electronic Engineering - B.L.Theraja Vol 4.			
8.	Electronic Principles - V.K.Mehta			