

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES)									
Programme		Diploma Engineering			Branch/Spec.		Computer Engineering / Information & Technology		
Semester		I			Version		1.0.0.0		
Effective from Academic Year			2018-19		Effective for the batch Admitted in			June 2018	
Subject code		1ES108	Subject Name		BASIC ELECTRICAL & ELECTRONICS ENGINEERING				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50
Pre-requisites:									
None									
Learning Outcome:									
I. To apply the basic electronic skills as required in the field of computers									
II. To implement basic electronic components for circuit design									
III. To understand function of optoelectronic devices and measuring instruments									
IV. To understand cables and connectors used for computers									
Theory syllabus									
Unit	Content								Hrs
1	Fundamentals of Electric and Magnetic Circuits Definitions of EMF, Current, Potential Difference, Power and Energy. Ohm's law, Study of terms: - M.M.F, magnetic force, magnetic field strength, permeability, reluctance, leakage factor etc. Comparison of magnetic and electric circuit. Study of AC terms; cycle, instantaneous value, amplitude, frequency, time period, R.M.S. value, average value, Resistors & its colour coding								10
2	TRANSFORMER AND INSTRUMENTS Transformer: Basic principle, types, construction, transformation ratio, EMF equation, losses & efficiency. Types of electrical instruments; voltmeter, ammeter, multimeter, clip-on meter, cathode ray oscilloscope (CRO); connection diagram and applications.								10
3	DIODE AND RECTIFIER Comparison between Conductor, Insulator and Semiconductor, P-type and N-type semiconductor, PN junction diode, Formation of Depletion Region, Forward Bias, Reverse Bias, V-I characteristics of PN junction diode, Zener Diode, Rectifier, Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, Filter Circuit								09
4	TRANSISTOR Symbols and Basics of Transistor, Working of NPN transistor, Operating Regions for Transistor, Transistor Configurations, Comparison of CB, CE and CC Configurations, Transistor as a switch, Transistor as an amplifier								08
5	OPTO ELECTRONIC DEVICES Photo diode, Light Emitting Diode (LED), Seven Segment Display, Liquid Crystal Display (LCD), Opto Coupler, Light Dependent Resistor (LDR)								08

List of Practical	
1	Verify ohm's law.
2	Demonstrate difference between AC and DC.
3	Identify the different parts of transformer.
4	Measurement of various electrical parameters using voltmeter, ammeter and multimeter.
5	Measurement of various electrical parameters using CRO.
6	Perform V-I characteristics of PN Junction Diode.
7	Perform Zener Diode as Voltage Regulator.
8	Perform Half Wave Rectifier Circuit.
9	Perform Full Wave Rectifier Circuit.
10	Perform Bridge Rectifier Circuit.
11	Perform Capacitor Filter Circuit.
12	Test Optoelectronic components.
13	Perform Transistor as a switch and amplifier
14	Observe types of cables and connectors.
Text Books	
1	A text book of Electrical Technology vol. I & II, B. L. Theraja, S.Chand Publication, New Delhi
Reference Books	
1	Principle of Electronics, V.K.Mehta, S.Chand & Co.
2	Cables and Connectors, John Kadick, AVO International
3	Electronic Instrumentation, H. S. Kalsi, TMH
4	Electronics Principles, Albert Paul Malvino, TMH