

GANPAT UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES)

Programme	Diploma Engineering				Branch/Spec.	Electrical Engineering			
Semester	II				Version	1.0.0.0			
Effective from Academic Year	2018-19				Effective for the batch Admitted in	June 2018			
Subject code	1ES211		Subject Name		DC CIRCUITS				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4	0	2	0	6	Theory	40	60	100
Hours	4	0	4	0	8	Practical	60	40	100
Pre-requisites:									
None									
Learning Outcome:									
<p>After successful completion of the course, student will be able to</p> <ul style="list-style-type: none"> ▪ Identify electrical parameters with its characteristics. ▪ Identify various network and also able to solve it using different network theorem ▪ Connect various basics circuits for measurement of different parameters like current, voltage, power, etc. ▪ Understand concept of Electrical and Magnetic circuits. 									
Theory syllabus									
Unit	Content								Hrs
1	BASICS OF ELECTRICAL ENGINEERING Charge, Current, Potential, potential difference, Voltage, EMF, Resistance, Resistivity, Conductance, Conductivity, RTC and its unit. Parameters affecting resistance, Effect of temperature on resistance, conductors, semi-conductors and insulators with energy band diagram. Definitions of Work, Power, energy, Ohm's law with limitations, joule's law .Simple numerical based on Ohm's law.								12
2	ELECTRICAL CIRCUITS Series and parallel circuits with simple numerical, Applications of Series and Parallel circuits, Concept of open circuit, closed circuit, short circuit, Definitions of node, loop, branch, mesh, Kirchhoff's current and voltage law.								10
3	NETWORK THEOREMS Types of network, Mesh analysis and Nodal analysis, Principle of duality, Super position theorem, Star – delta transformations. Simple numerical of theorem.								10
4	ELECTROSTATICS AND CAPACITORS Concept of charge, Laws of electrostatics, Definition of Electric field, flux, flux density, Electric field intensity, Permittivity. Capacitance, Factors affecting capacitance, types of capacitors, Equation of capacitance, capacitors in series and parallel, energy stored in capacitor.								12
5	ELECTROMAGNETIC INDUCTION AND INDUCTORS Concept of electromagnetic induction, Faraday's law, Cork screw rule, Right hand rule, Lenz's law, Fleming's right hand and left hand rule, Statically and mutually induced EMF, Self and Mutual inductance, Types of inductors, Energy stored in magnetic field, Comparison between Electrical and Magnetic Circuit, Hysteresis loop.								12

List of Practical	
No.	Topics
1	Measure current and voltage in a given linear electrical circuit.
2	Calculate temperature co-efficient of a given resistor.
3	Connect resistances in series to get required effective resistance and verify.
4	Connect resistances in parallel to get required effective resistance and verify.
5	Connect resistances in parallel and series to get required effective resistance and verify.
6	Measure current in a particular branch of the given electrical circuit using Kirchhoff's Current Law.
7	Measure voltage drop in a closed loop of the given electrical circuit using Kirchhoff's Voltage Law.
8	Measure current in a particular branch of the given electrical circuit having two input sources using Superposition theorem.
9	Convert star connected resistances to its equivalent delta connected resistances.
10	Convert delta connected resistances to its equivalent star connected resistances.
11	Verify equivalent capacitance by connecting given capacitors in series and parallel.
12	To study about Hysteresis Loop.
Text Books	
1	Electrical technology volume –I by B.L.Theraja, S.chand & Co.Ltd.
Reference Books	
1	Fundamentals of Electrical Engineering by Singh Tarlok, S.K.Kataria.
2	Principles of Electrical Engineering, B.R.Gupta - S. K. Kataria