

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

III Semester: AE ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AEE103	Foundation	L	T	P	C	CIA	SEE	Total
		-	-	3	2	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45			Total Classes: 48			
<p>OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> I. Analyze the basic concepts of electrical circuits. II. Study the performance of DC machines and AC machines. III. Understand the characteristics of electronic components. <p>COURSE LEARNING OUTCOMES (CLOs): The students should enable to:</p> <ol style="list-style-type: none"> 1. Understand the application of basic concept of electrical circuits KCL and KVL in series and parallel circuits. 2. Understand the basic concept of electrical circuits Ohm's law. 3. Draw the performance characteristics of DC shunt generator. 4. Calculate the performance analysis in DC shunt machine as both generator and motor by Swinburne's test. 5. Calculate the performance analysis in single phase transformer. 6. Draw and analysis of performance characteristics of three phase induction motor by brake test. 7. Determine the regulation of alternator using synchronous impedance method. 8. Draw and analysis of performance characteristics of PN junction diode. 9. Draw and analysis of performance characteristics of Zener diode. 10. Demonstrate practical understanding of Half wave rectifier. 11. Demonstrate practical understanding of Full wave rectifier. 12. Draw and analysis of performance characteristic curves of common emitter transistor. 13. Draw and analysis of performance characteristic curves of common base transistor. 14. Demonstrate practical understanding of CRO. 								
LIST OF EXPERIMENTS								
Week-1	KCL & KVL							
Verification of Kirchhoff's current and voltage laws.								
Week-2	OHMS LAW							
Verification of ohms law.								
Week-3	MAGNETIZATION CHARACTERISTICS							
Magnetization characteristics of DC shunt generator.								
Week-4	SWINBURNE'S TEST							
Swinburne's test on DC shunt machine.								

Week-5	OPEN CIRCUIT & SHORT CIRCUIT TEST
Open circuit and short circuit test on single phase transformer.	
Week-6	BRAKE TEST
Study the performance characteristics of three phase induction motor by brake test.	
Week-7	SYNCHRONOUS IMPEDANCE METHOD
Determine the regulation of alternator using synchronous impedance method.	
Week-8	PN JUNCTION DIODE
PN junction diode characteristics.	
Week-9	ZENER DIODE
Zener diode characteristics.	
Week-10	HALF WAVE RECTIFIER
Half wave rectifier circuit.	
Week-11	FULL WAVE RECTIFIER
Full wave rectifier circuit.	
Week-12	COMMON EMITTER
Transistor common emitter characteristics.	
Week-13	COMMON BASE
Transistor common base characteristics.	
Week-14	CRO
Study of CRO.	
Text Books:	
<ol style="list-style-type: none"> 1 A Chakrabarti, "Circuit Theory", Dhanpat Rai Publications, 6th Edition, 2004. 2 K S Suresh Kumar, "Electric Circuit Analysis", Pearson Education, 1st Edition, 2013. 3 Williamm Hayt, Jack E Kemmerly S M Durbin, "Engineering Circuit Analysis", Tata McGraw Hill, 7th Edition, 2010. 4 J P J Millman, C C Halkias, Satyabrata Jit, "Millman"s Electronic Devices andCircuits", Tata McGraw Hill, 2nd Edition, 1998. 5 R L Boylestad, Louis Nashelsky, "Electronic Devices and Circuits", PEI / PHI, 9th Edition, 2006. 6 R L Boylestad, Louis Nashelsky, "Electronic Devices and Circuits", PEI / PHI, 9th Edition, 2006. 	
Reference Books:	
<ol style="list-style-type: none"> 1. David A Bell, "Electric Circuits", Oxford University Press, 9th Edition, 2016 2. U A Bakshi, Atul P Godse "Basic Electrical and Electronics Engineering", Technical Publications, 9th Edition, 2016. 3. A Bruce Carlson, "Circuits", Cengage Learning, 1st Edition, 2008. 4. M Arshad, "Network Analysis and Circuits", Infinity Science Press, 9th Edition, 2016. 	

Web References:

1. <https://www.kuet.ac.bd/webportal/ppmv2/uploads/1364120248DC%20Machines2.pdf>textofvideo.nptel.iitm.ac.in
2. <https://www.eleccompengineering.files.wordpress.com/2014/08/a-textbook-of-electrical-technology-volume-ii-ac-and-dc-machines-b-l-thferaja.pdf>
3. https://www.geosci.uchicago.edu/~moyer/GEOS24705/Readings/Klempner_Ch1.pdf
4. <https://www.ibiblio.org/kuphaldt/electricCircuits/DC/DC.pdf>
5. <https://www.users.ece.cmu.edu/~dwg/personal/sample.pdf>.
6. https://www.djm.cc/library/Principles_of_Alternating_Current_Machinery_Lawrence_edited.pdf