BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

II Semester: ME

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AEEB08	Foundation	-	-	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 45				Total Classes: 48		

COURSE OBJECTIVES:

The **course should enable the students to:**

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.

COURSE OUTCOMES:

CO 1: Analyze the basic concepts of electricity, applications of Kirchhoff laws

CO 2: Study the performance characteristics of DC machines

CO 3: Analyze the performance characteristics of AC machines

CO 4: Demonstrate the working of rectifiers and study the performance characteristics of diodes

CO 5: Understand the working of transistor and analyze its characteristics

COURSE LEARNING OUTCOMES (CLOs):

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 AND KVL

Verification of Kirchhoff's current and voltage laws

Week-2	OHMS LAW

Verification of ohms law

Week-3	**MAGNITETIZATION CHARECTERISTICS**
Magnetization characteristics of DC shunt generator	
Week-4	**SWINBURNE'S TEST**
Swinburne's test on DC shunt machine	
Week-5	**OPEN CIRCUIT AND 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 IMPEDENCE 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 RECTEFIER**
Half wave rectifier circuit	
Week-11	**FULL WAVE RECTEFIER**
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:

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. Willianm 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 and Circuits", Tata McGraw Hill, 2nd Edition, 1998
5. R L Boylestad, Louis Nashelsky, "Electronic Devices and Circuits", PEI / PHI, 9th Edition,2006

References:
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.pdftextofvideo.npt el.iitm.ac.in 2. https://www.eleccompengineering.files.wordpress.com/2014/08/a-textbook-of-electrical-technologyvolume-ii-ac-and-dc-machines-b-l-thferaja.pdf