ELECTRONIC DEVICES AND AMPLIFIER CIRCUITS LAB

Course Code	20EE3351	Year	II	Semester	I
Course Category	Program Core	**Branch**	EEE	**Course Type**	Lab
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	Nil
Continuous Internal Evaluation:	15	**Semester End Evaluation:**	35	**Total Marks:**	50

CO1	**Analyze** the devices BJT and MOSFET to model their small signal behavior. (L4)
CO2	**Apply** the network analysis techniques to find the parameters of BJT and MOSFET based amplifiers. (L3)
CO3	**Analyze** NMOS differential amplifiers for gain, input common mode range, power dissipation and CMRR. (L4)
CO4	**Evaluate** the performance of NMOS Current Mirror and to develop PCB Layout for Astable Multivibrator.(L5)
CO5	Make an effective report based on experiments.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		3							3				3	
CO2	3								3				3	
CO3		2							2				2	
CO4			2						2				2	
CO5										3				
Overall	3	3	2						3	3			3	

SYLLABUS

Any Ten Experiments (H/W or Simulation)		
Expt. No.	**Contents**	**Mapped CO**
1	Voltage-Current Characteristics of BJT / Measurement of scale current & common emitter current gain	**CO1, CO5**
2	Measurement of small signal parameters (g_m, r_o, r_π, r_e) of BJT at a given operating (Q) point.	**CO1 CO5**
3	Implement BJT amplifier and Inverter logic gate	**CO2, CO5**
4	Voltage-Current Characteristics of MOSFET / Measurement of threshold voltage	**CO1, CO5**
5	Measurement of small signal parameters (g_m, r_o, g_{mb}) of MOSFET at a given operating point.	**CO1, CO5**
6	Analyze Common Source Amplifier for Gain, Power dissipation requirements	**CO2, CO5**

7	Design and Simulation of Common Drain Amplifier (Voltage Buffer) for Gain, Output Impedance, Level Shift requirements	**CO2, CO5**
8	Analyze the necessary parameters for Basic NMOS Differential Pair.	**CO3, CO5**
9	Design and Simulation of Differential Amplifier with active current mirror load for gain, power dissipation CMRR requirements.	**CO3, CO5**
10	Analyze the basic NMOS current mirror and current steering circuit	**CO4, CO5**
11	Simulate the PCB fabrication of a BJT Multivibrator Circuit	**CO4, CO5**

Learning Resources
Text Books
1.Adel S. Sedra, Kenneth C. Smith, Arun N. Chandorkar, Microelectronic Circuits, 6/e, Oxford University Press, 2013.
Reference Books
1. Behzad Razavi, Fundamentals of Microelectronics, 2/e, Wiley Student Edition, 2013.   2. Robert L. Boylestad, Louis Nashelsky, Electronic Devices and Circuits Theory, 10/e, Pearson Education, 2009.   3. Dharma Raj Cheruku, B T Krishna, Electronic Devices and Circuits, 2/e, Pearson Education, 2008.
e- Resources & other digital material
https://www.researchgate.net/publication/314154179_Electronics_Lab_Manual   http://abexp.aiaiai.dk/electronic_devices_and_circuits_lab_manual_bgpltd.pdf