ELECTRONIC DEVICES AND AMPLIFIERCIRCUITS LABORATORY

Course Code	**19EC3352**	**Year**	II	**Semester**	I
Course Category	Program Core	**Branch**	ECE	**Course Type**	Lab
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	Nil
Continuous Internal Evaluation	25	**Semester End Evaluation**	50	**Total Marks**	75

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Measure the device small signal parameters of BJT and MOSFET
CO2	Design, simulate and implement BJT and MOSFET amplifiers for the given specifications.
CO3	Construct NMOS differential amplifier circuits for the given specifications.
CO4	Fabricate PCB for multivibrator circuits using BJT.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1:Low)

Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	**3**	**3**	**2**	**3**	**3**			**1**	**1**	**1**	**2**	**2**	**2**	**2**
CO2	**3**	**3**	**2**	**3**	**3**			**1**	**1**	**1**	**2**	**2**	**2**	**2**
CO3	**3**	**3**	**2**	**3**	**3**			**1**	**1**	**1**	**2**	**2**	**2**	**2**
CO4	**3**	**3**	**2**	**3**	**3**			**1**	**1**	**1**	**2**	**2**	**2**	**2**

Syllabus		
Expt. No.	**Contents**	**Mapped CO**
I	Voltage-Current Characteristics of BJT / Measurement of scale current & common emitter current gain	**CO1**
II	Measurement of small signal parameters (g_m, r_o, r_π, r_e) of BJT at a given operating (Q) point	**CO1**
III	Design, Simulate and Implement BJT amplifier and Inverter logic gate	**CO1**
IV	Voltage-Current Characteristics of MOSFET / Measurement of threshold voltage	**CO1**
V	Measurement of small signal parameters (g_m,r_o,g_{mb}) of MOSFET at a given operating point.	**CO1**
VI	Design and simulation of basic NMOS current mirror, cascode NMOS current mirror and current steering circuit	**CO2**
VII	Design and Simulation of Common Source Amplifier for Gain, Power dissipation requirements	**CO2**
VIII	Design and Simulation of Common Drain Amplifier (Voltage Buffer) for Gain, Output Impedance, Level Shift requirements	**CO2**
IX	Analysis and Verification of Basic NMOS Differential Pair for Gain, Input Common Mode Range, Maximum Input differential voltage requirements	**CO3**
X	Design and Simulation of Differential Amplifier with active current mirror load for gain, power dissipation CMRR requirements.	**CO3**
XI	Design, Simulation and PCB fabrication of a BJT Multivibrator Circuit	**CO4**

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. BehzadRazavi, 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

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