

General Instructions

1. Take only your own observation book, calculator and pen to the worktable.
2. Keep extra books, purses, etc. away from the equipment.
3. Be tidy and systematic.

General Care of Equipment

1. Electronic equipment are expensive to acquire, maintain and repair. Help us in keeping all equipment in good condition so that they will be usable for many years to come.
2. Learn to use all equipment properly. It is inappropriate to be flicking knobs and switches without knowing the proper function and usage of each control. Know what you are doing.
3. Ensure that all cords, cables and leads are tidy and without twists, kinks and undue stress. Always plug and unplug cables and power cords by firmly grasping the plug. Never pull on the cord.
4. Always turn off the power switch on equipment before disconnecting or connecting to the AC power outlet.
5. Report malfunctioning of any equipment to the lab-in-charge immediately.
6. Do not move equipment from one work area to another.
7. Do not remove any equipment from the laboratory under any circumstances.

General Care of Equipment

1. Use only the breadboard assigned to you. Do not use another breadboard without permission.
2. Try to keep all wiring short and tidy, and avoid laying wires over the IC and other components, just in case you have to remove these.
3. Do not trim the leads of resistors and capacitors. Arrange them neatly on the breadboard, and connect using short wires.

Best Practices

1. Study the laboratory instruction manual thoroughly prior to each lab session.
2. Students shall be thorough with the experiment procedure and shall attend a viva-voce while doing their experiment.
3. The batch representative shall draw the required components and list the components in the register provided.
4. Students should check the instruments before proceeding to the practical work and report damages/nonfunctioning, if any, to the concerned Faculty in Charge/Laboratory Technician. The batch will be responsible for any loss or damage caused to the instruments after the issue.
5. All the students of a batch shall involve equally in performing the experiment and each one shall trace the circuit independently before calling the Faculty-in- Charge.
6. Return the components 10 minutes before end of the session, and get permission from the Faculty-in-Charge to leave the laboratory.

Preparation of Laboratory Record

- * Following instructions are to be followed for the preparation of Observation /Fair record.
 1. The Title of the experiment should be written in CAPITAL letters on top of the page.
 2. Experiment number and date should be written at the top left corner.
 3. For each experiment, Right side of the observation book should contain the following:
 - (a) Title of the experiment
 - (b) Experiment number and date
 - (c) Aim of the experiment
 - (d) Components & equipments required in tabular form
 - (e) Design
 - (f) Procedure
 - (g) Results
 - (h) Inference
- * The following instructions need to be followed for the Left Side Pages of the record,
 1. Neat Circuit Diagram
 2. Expected Waveform
 3. Observations Tabulated
 4. Specimen Calculation /Graph
 5. Waveforms Obtained
- * Observations shall be entered in the observation record in the lab itself with PEN ONLY. After doing the experiment, each student should get the observations counter signed by the concerned faculty.
- * After performing the experiment, the students should try to finish the calculations in the lab itself and get signature from the concerned faculty. If not, (permitted only in exceptional cases) he/she should get it signed the next day itself.
- * Students are expected to write fair record only after getting observation record signed by the concerned faculty.

- * Fair Record should be completed in all respects (graphs, waveforms, calculations & simulated graphs) and submitted in the next Laboratory Session. All entries should be made using Blue/Black pen only. RED ink pen is not permitted.
- * Bonafide Laboratory record is necessary for appearing in the University Practical Examination.
- * Internal Assessment Marks for the Laboratory Examination will be based on the following criteria:

Record	-	10
Examination	-	10
Attendance	-	10
Daily Performance	-	20
* Viva	-	10
* Observation record		
• Timely submission/Neatness	-	05
• Involvement in the lab session	-	05
Total	-	50

AI 010 307 ANALOG CIRCUITS LAB

Teaching scheme

Credits: 2

3 hours practical per week

- *To provide experience on design, testing, and analysis of few basic electronic circuits using BJT and MOSFET.*

- *To provide experience on electronic circuit simulation software like SPICE.*

1. Characteristics of Diodes & Zener diodes.
2. Characteristics of Transistors (CE & CB).
3. Characteristics of MOSFET.
4. Frequency responses of RC Low pass and high pass filters. RC Integrating and Differentiating circuits.
5. Rectifiers-half wave, full wave, Bridge with and without filter- ripple factor and regulation.
6. Clipping and clamping circuits.
7. Zener Regulator with & without emitter follower.
8. RC Coupled CE amplifier - frequency response characteristics.
9. MOSFET amplifier (CS) - frequency response characteristics.
10. Feedback amplifiers (current series, voltage series) - Gain and frequency response
11. Power amplifiers (transformer less), Class B and Class AB.

Introduction to SPICE

Models of resistor, capacitor, inductor, energy sources (VCVS, CCVS, Sinusoidal source, pulse, etc) and transformer.

Models of DIODE, BJT, FET, MOSFET, etc.

Simulation of following circuits using spice (Schematic entry of circuits using standard packages).

Analysis- (transient, AC, DC, etc.):

1. Potential divider.
2. Integrator & Differentiator (I/P PULSE) – Frequency response of RC circuits.
3. Diode Characteristics.
4. BJT Characteristics.
5. FET Characteristics.
6. MOS characteristics.
7. Full wave rectifiers (Transient analysis) including filter circuits.
8. Voltage Regulators.
9. Sweep Circuits.
10. RC Coupled amplifiers - Transient analysis and Frequency response.
11. FET & MOSFET amplifiers.

Internal Continuous Assessment (Maximum Marks-50)

- 50% Performance in Laboratory and Record
- 30% Internal Test(s)
- 20% Regularity in the Laboratory