

2 / 4 B.Tech. THIRD SEMESTER

EM3L1 ELECTRONIC DEVICES AND CIRCUITS LAB Credits: 2

Lecture: - periods/week

Internal assessment: 25 marks

Lab Practice: 3hrs/week

Semester end examination: 50 marks

Course Objectives:

- To study basic electronic components and observe characteristics of electronic devices to provide skill in tracing out circuit.

Course Outcomes:

The student will be able to connect the circuit

- To apply the concepts and analytical principles to analyze electronic (diodes, transistors) circuits.
- To learn the basics of Amplifiers.

PART A : (Only for viva voce Examination)

ELECTRONIC WORKSHOP PRACTICE (in 6 lab sessions) :

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards.
2. Identification, Specifications and Testing of Active Devices, Diodes, BJTs, Lowpower JFETs, MOSFETs, Power Transistors, LEDs, LCDs, Optoelectronic Devices, SCR, UJT, DIACs, TRIACs, Linear and Digital ICs.
3. Study and operation of
 - Multimeters (Analog and Digital)
 - Function Generator
 - Regulated Power Supplies
4. Study and Operation of CRO.

PART B : (For Laboratory examination – Minimum of 10 experiments)

1. PN Junction diode characteristics A. Forward bias B. Reverse bias. C. Static & Dynamic Resisitance
2. Zener diode characteristics (Reverse bias)
3. Transistor CB characteristics
 - A. Input and Output Characterstics
 - B. Determination of input and output resistance from the characteristics
4. Transistor CE characteristics (Input and Output)
 - A. Input and Output Characterstics
 - B. Determination of input and output resistance from the characteristics
5. Rectifier without filters (Full wave & Half wave)
6. Rectifier with filters (Full wave & Half wave)
7. FET characteristics
8. CE Amplifier
9. CC Amplifier (Emitter Follower).
10. RC Oscillator
11. SCR characteristics.
12. UJT characteristics.

PART C:Equipment required for Laboratories:

1. Regulated Power supplies (RPS) - 0-30v
2. CROs - 0-20M Hz.
3. Function Generators - 0-1 M Hz.
4. Multimeters
5. Decade Resistance Boxes/Rheostats
6. Decade Capacitance Boxes
7. Micro Ammeters (Analog or Digital) - 0-20 μ A, 0-50 μ A, 0-100 μ A, 0-200 μ A
8. Voltmeters (Analog or Digital) - 0-50V, 0-100V, 0-250V
9. Electronic Components - Resistors, Capacitors, BJTs, LCDs, SCRs
UJTs, FETs, LEDs, MOSFETs, diodes
(germanium), transistors (nnp & pnp type)