

EE1T5

**1/4 B.Tech FIRST SEMESTER
BASIC ELECTRONIC ENGINEERING**

Credits: 3

**Lecture: 4 periods/week
Tutorial: 1 period /week**

**Internal assessment: 30 marks
Semester end examination: 70 marks**

Objective :

- To familiarize the student about different components which are used in various electronic circuits.
- To get knowledge about CRO (eye of electronic engineering)

Learning outcomes:

- Students will have the knowledge of basic electronic devices .
- Students will learn how to simplify an electrical circuit using different theorems and laws.
- Students will gain the knowledge about the materials (conductors, semi conductors ,insulators and magnetic materials) .
- Student will be knowing how charging and discharging takes place in secondary cells.
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Unit 1: Electronic Components

Passive components – resistors – Types, color coding, applications, capacitors – Types, applications, inductors – applications, Active components – Types, symbolic representation

Unit 2: Introduction to Semi-Conductors

Atomic theory, conductors, semi-conductors, insulators, types of semi-conductors, conductivity in semiconductors, energy band diagrams. generation and recombination of carriers, hall effect, continuity equation, fermi level, effect of temperature on fermi level.

Unit 3: PN Junction Diodes

Diode formation, energy band diagram, current equation, VI characteristics – forward and reverse bias, diode approximations – ideal diode

Unit 4: Special Purpose Diodes

Zener diode- characteristics, operation, applications, varactor diode- characteristics, operation, applications, tunnel diode - characteristics, operation, applications

Unit 5: BJT Characteristics

Structure of BJT, classifications of BJT, operation of BJT, Basic current equations, Characteristics, modes of operation and parameters of BJT, BJT as a Switching device

Unit 6: FET Characteristics

Structure of FET, classifications of FETs, operation of JFET, FET as a switch, Comparison of BJT and FET

Unit 7: Opto-Electronic Devices

Introduction to optical devices, Photo resistor- construction, characteristics, applications, Photo diode- construction, characteristics, applications, Photo transistor- construction, characteristics, applications, LED - construction, characteristics, applications, LCD, comparison between LED

Unit 8: CRO

Introduction, Charged particles, force, field intensity, potential and energy, two dimensional motion of electron, parallel electric fields, perpendicular electric fields, electro static deflection in cathode ray tube

Text books:

1. Electronic Devices -Thomas L. Floyd, Pearson, 7th edition.
2. Electronic Devices and Circuits- David A.Bell,Oxford, 5th edition.
3. Solid State Electronic Devices -Streetman Baneree, PHI publications, 5th edition.
4. Solid State Electronic Devices-Ben G. Streetman, Sanjay Banerjee, Pearson, 6^h edition.
5. Basic Electronics & linear circuits – NN Bhargava, DC Kulshreshtha, SC Gupta, Technical Teachers Training Institute Chandigarh.

References:

1. Electronic Devices and Circuits – R.L. Boylested and Louis Nashelstry Pearson/Prantic Hall, 9th Edition, 2006.
2. Electronic Devices and Circuits – J. Milliman, C.C. Halkias, Tata Mc. Graw Hill.
3. Integrated Electronics – J. Milliman, C.C. Halkies, Tata Mc. Graw Hill, 2009
4. Microelectronic Circuits – Adel S. Sedra & Kenneth C. Smith, Oxford Univ. Press, 2011