

2009-2010

SSP-S 128

DEPARTMENT OF PHYSICS
ANDHRA UNIVERSITY

Common for M.Sc. Physics and M.Sc. Space Physics
I Semester(w.e.f 2009-2010 batch)

P104.SP104: ELECTRONIC DEVICES AND CIRCUITS

UNIT-I

SEMICONDUCTOR DEVICES

Tunnel diode, photo diode, solar cell, LED, Silicon controlled Rectifier,
Uni Junction Transistor, Field Effect Transistor, (JFET & MOSFET), CMOS

UNIT-II

MICROWAVE DEVICES.

Varactor diode, Parametric Amplifier, Thyristors, Klystron, Reflex Klystron,
Gunn Diode, Magnetron, CFA, TWT, BWO, IMPATT, TRAPATT, APD, PIN Diode,
Schottky Barrier Diode.

UNIT-III

OPERATIONAL AMPLIFIERS :

The ideal Op Amp – Practical inverting and Non inverting Op Amp stages. Op Amp
Architecture – differential stage, gain stage, DC level shifting, output stage, offset
voltages and currents
Operational Amplifier parameters- input offset voltage, input bias current,
Common Mode Rejection Ratio, Slew Rate

UNIT-IV

OP- AMP APPLICATIONS:

Summing amplifier, Integrator, Differentiator,
Voltage to Current converter, Current to Voltage converter
Oscillators – Phase shift oscillator, Wien-Bridge Oscillator, Voltage Controlled Oscillator,
Schmitt Trigger
Special applications – Monostable and Astable multivibrators using 555, Phase locked
Loop, Voltage regulators.

TEXT BOOKS:

1. Integrated Electronics - Jacob Millman & C.C. Halkies (TMH)
2. Op.Amps and Linear Integrated Circuits – Ramakant A.Gayakwad (PHI)
3. Electronic Communication Systems – George Kennedy(PHI)

REFERENCE BOOKS:

1. Microelectronics - Jacob Millman & Arvin Grabel (McGraw Hill)
2. Electronic Devices and Circuits – G.K. Mithal (Khanna)
3. Op-amps and Linear Integrated Circuits – D. Mahesh Kumar (MacMillan).