Subject Code : P8IE1

ELECTRONIC CIRCUITS

UNIT – I : Bipolar Transistor Characteristics:

The junction transistor – transistor current components – transistor as an amplifier – common base Configuration – Common Emitter configuration – CE cut off and Saturation regions – typical function voltage values and transistor ratings – Ebers – Moll Model.

UNIT – II : Low Frequency Amplifiers:

Two port devices and the hybrid model – h parameters – Analysis of a transistor amplifier circuit using parameters – emitter follower – comparison of transistor amplifier configurations – cascading transistor amplifiers simplified CE and CC hybrid models – darlington pair – low frequency response of an RC coupled amplifier – effect of emitter by – pass capacitor on low frequency response.

UNIT – III : High Frequency Amplifiers:

Hybrid – transistor model at high frequencies – CE – short circuit current gain – current gain with resistive load generalized voltage gain function – single state CE transistor amplifier response – miller input impedance – gain – band with product emitter follower at high frequencies – Distortion in amplifiers – frequency response of an amplifier band pass of cascaded stages – High frequency response of two cascaded stages – multi stage CE amplifier cascade at high frequencies – transistor noise.

UNIT –IV : Power Amplifiers:

Large signal amplifiers – harmonic distortion – efficiency of class A Amplifier – Class B amplifier – Push – Pull Amplifiers – Class AB Operation.

Feed back Amplifiers:

Feed back concept – transfer gain with Feed back – general characteristics of negative feed back amplifiers – input and output resistances – method of analysis of a feed back k amplifier – voltage series feed back – voltage series feedback pair – Current series feedback – Current Shunt feedback – Voltage shunt feedback – offect of feed back an amplifier bandwidth.

UNIT – V : Oscillators:

Stability of feedback amplifiers – Nyquist Critorion –gain and phase margins – Compensation – dominant pole compensation – pole – Zero compensation – compensation by modification of the network – Sinusoidal oscillators – resonant circuit oscillators – wien bridge Oscillator – Crystal oscillator – Frequency Stability.

Books for Study :

1. Integrated Electronics by Jocob Millman and Christos C.Halkias - McGraw Hill.

Books for Reference:

1. Electronic Devices and Circuits – An Introduction by Allen Mottershead - Prentice Hall.
2. Electronic Devices and Circuits by G.K.Mithal – Khanna Publishers.
3. Solid State Electronic Circuits by Anthony S.Manera - McGraw Hill.
4. Electronic Circuits – Discrete and Integrated by Donald L.Schillling and Charles Belove - McGraw Hill.
5. Micro Electronics – Jacob Milliman - McGraw Hill.