

# AMTC08 ANALOG ELECTRONIC CIRCUITS

## UNIT-1 BIASING OF BJT

- 1.1 Introduction, Types Of Bjt's, Transistor Terminals, Transistor Action, Transistor Configurations or Connections, Common Base (Cb) Configuration, Characteristics of Cb Configuration, Transistor Configurations or Connections.
- 1.2 Common-Emitter (Ce) Configuration, Common Collector (Cc) , Configuration, Comparison Of Three Configurations,
- 1.3 Operating Point (Quiescent, Q Or Silent Point), Different Points On The Characteristic, Different Operating Conditions Of A Transistor, Transistor Biasing,
- 1.4 Need For Biasing A Transistor, What Happens If A Transistor Is Not Biased , Faithful Amplification, Transistor Biasing, Inherent Variations Of Transistor Parameters, Stabilization,
- 1.5 Biasing Circuits, Base Resistor/Fixed Bias Circuit, Biasing With A Feedback Resistor, Emitter Resistance Biasing (Or Self Bias), Voltage (Or Potential) Divider Biasing ,
- 1.6 Two Battery Bias Stabilization, Thermal Resistance, Determine Of Operating Point In Presence Of Self Heating, Thermal Stability, Bias Compensation, Design Of biasing Circuits,

## UNIT-2 BIASING OF FET

- 2.1 Comparison between BJT and FET, field effect transistors (FET), construction of a JEFT (or simply FET), biasing of FET, working principle of an- n- FET,
- 2.2 Working of a p- FET, static characteristic of FET, FET parameters, FET as an amplifier, FET applications, description of important applications, Biasing the FET basic FET amplifier

## UNIT-3 SMALL SIGNAL BJT AMPLIFIER

- 3.1 Single Stage Small Signal Amplifiers, A Practical (Single Stage) Transistor Amplifier Phase Relationship Between Input And Output Of A Transistor Amplifier (Phase Reversal),
- 3.2 Analysis Of Transistor Amplifier, Equivalent Circuits Of Transistor Amplifier, Alternative Ac Equivalent Circuits For The Amplifier, Graphical Method ( By Drawing Load Lines),
- 3.3 Current, Voltage And Power Gains, Hybrid Parameters, Advantages Of Hybrid Parameters, Two-Port Network, Determination Of H-Parameters, Nomenclature Of H-Parameters,
- 3.4 Hybrid Model, Performance Of A Transistor In H-Parameters, Limitations Of H-Parameters, Grounded Emitter Circuit, Common Base Amplifier, Grounded Collector Circuit ,
- 3.5 Comparative Study Of Three Types Of Amplifier Circuits, The Common Emitter Amplifier With Emitter Resistor, Simplified Common Emitter Hybrid Model,
- 3.6 Effect Of An Emitter Bypass Capacitor In Low Frequency Response, The Physical Model Of Cb Transistor, Resistor As A Switch

## UNIT-4 SMALL SINGLE FET AMPLIFIER FET

- 4.1 Parameters, JFET As An Amplifier, FET Small Signal Model, Common Source A.C. Amplifier, The Common Drain Or Source Follower, Common Gate Amplifier,
- 4.2 General Treatment Of Low Frequency Common Source And Common Drain Amplifier, Common Source Amplifier At High Frequencies,
- 4.3 Common Drain Amplifier (Source Follower) At High Frequencies

## **UNIT-5 POWER CIRCUITS (RECTIFIER & FILTERS & REGULATORS)**

- 5.1 Semiconductor Diode Rectifiers (Single Phase), Half-Wave (H.W) Rectifiers, Full-Wave (F.W.) Rectifiers, F.W. Bridge Rectifier, Efficiency Of An F.W. Rectifier,
- 5.2 Selection Of A Circuit For F.W. Rectification, Ripple Factor, Types Of Filter Circuits, Owner Supply Filters;
- 5.3 Capacitor Filter, L-Section Filter (Lc Filter), Clc Or  $\pi$  Filter, Zener Diode Voltage Regulator

## **UNIT-6 POWER SWITCHING & CONTROL DEVICE**

- 6.1 Introduction, Thyristor, Thyristor Family, Working Of An SCR, Two-Transistor Analogy For An SCR, Regeneration, An SCR As A Latch,  $V_i$  - Characteristics Of An SCR, SCR Terms,
- 6.2 Applications Of SCR, SCR Pallets (Packages), Variations Of SCR (Family Of SCR Or Thyristors), Silicon Controlled Switch (SCS), Gate Turn-Off (GTO) Switch,
- 6.3 Light Activated SCR (Lascr), Triac, Application Of Triac, Diac, Diac Characteristic, Operation Of Diac, Application Of Diac, UJT (Uni-Junction Transistor),
- 6.4 Equivalent Circuit Of UJT, Operating Characteristic, Latching (Switching) Operation Of UJT, Application Of UJT-Relaxation Oscillator, Frequency Of Sawtooth Waves Generated By Relaxation Oscillator

### **Reference Book:**

1. Analog Electronic, Publisher Katsons, Writer J B Gupta

