Electronics Lab

Electronic Devices and Circuits Laboratory course is intended to enhance the students' understanding of important analytical principles developed in Electronic Devices and Circuits course by engaging them in the real-world application of these principles in the laboratory. An equally important purpose of the course is to further develop the students' laboratory practice for experimentally testing and evaluating electronic circuits and systems. It is important that students develop this practice using modern lab equipment similar to that which is used in industry.

Area in sq.m : 150

Established in the year : 2011

Total investment made(Rs) : 2,92,024/-

MAJOR EQUIPMENTS:

Digital CROs, Function Generators, Dual Power supply Units(DC).

List of Experiments

ELECTRONIC CIRCUITS AND DEVICES LAB

1. Study the characteristics of PN junction diode.
2. Study the characteristics of Zenar diode.
3. Calculation of Ripple factor and regulation of Full wave rectifier with & without filters.
4. Determination of h-parameters of transistor from CE characteristics.
5. Determination of h-parameters of transistor from transistor CB characteristics.
6. Determination of h-parameters of transistor from FET transfer characteristics.
7. Calculation of parameters from FET characteristics.
8. Calculation of Band width of CE Amplifier.
9. Calculation of Band width of CC Amplifier.
10. Study the characteristics SCR Characteristics.

DIGITAL ELECTRONICS LAB

1.a) Basic Gates Function Verification using truth tables.

i) AND Gate using 7408 IC ii) OR Gate using 7432 IC iii) NOT Gate using 7404 IC

b) Universal Gates Functional Verification

i) NAND Gate using 7400 IC ii) NOR Gate using 7402 IC

c) Special Gates Functional verification

i) XOR Gate using 7486 IC ii) XNOR Gate using XOR followed by NOT Gate

2. Realization of following gates using universal gates and its functional verification. AND, OR, XOR, NOT

3. a) Design Half-adder and Full-adder circuits and verify its functionality.

b) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.

4. Design a four bit comparator and verify its functionality (using logic gates or IC's)

5. Design a BCD to Excess-3 code converter and verify its functionality using logic gates.

6. Design a BCD to Gray code converter and verify its functionality using logic gates.

7. Design and verify the functionality of Decoders and multiplexers with different inputs.

8. Verify the functionality of following Flip-Flops.

a) SR Flip-Flop b) JK Flip-Flop c) D Flip-Flop d) T Flip-Flop

9. a) Design and verify UP-Counter using JK/T Flip-Flops.

b) Design and verify MOD-3 Counter.

10. Design and verify Bi-directional Counter using JK/T Flip-Flop

ANALOG ELECTRONICS LAB

1. Realisation of adder, subtractor, comparator circuits using op-Amp
2. Design of LPF,HPF(first order) using Op-Amp
3. Design of Differentiator and Integrator using Op-Amp
4. RC phase shift oscillator using op-amp
5. Wien bridge oscillator using op-amp
6. Design of Monostable and Astable multivibrator circuits using IC 555 timer.
7. Design of Voltage regulator using IC 723
8. PLL characteristics and frequency multiplier using PLL IC 565
9. Implementation of 3-bit DAC using Op-Amp
10. Voltage controlled oscillator using IC 566

11. Design of clipping and clamping circuits using simulation tools.

12. Design of Schmitt trigger.

13. Voltage regulator using LM723

14. Determination of Gain and Bandwidth of two stage RC Coupled amplifier from the frequency response.

15. Verify conduction angles of Class-A and Class-B Power Amplifiers.

16. Study of transistorized Current series Feedback amplifier for Bandwidth improvement.

17. Analysis of Stability and Gain of transistorized Voltage series Feedback amplifier.

18. Analysis of Stability and Gain of transistorized Current shunt Feedback amplifier.

19. Design and Realization of transistorized RC Phase shift Oscillator to generate a sinusoidal signal.

20. Design and Realization of transistorized Colpitts Oscillator to generate a sinusoidal signal.

(The following experiments are to be implemented in Hardware laboratory)

Faculty Incharge : Mr. Ch. Rajesh
Lab Technician : Mr. P. Vajraiah