ELECTRONICS DESIGN LAB

1. **Study on the Current Mirror.**
    A. To design for a special current and to determine its V-I characteristics
    B. To find out its output resistance and the maximum allowed load resistance
    C. For an N-output current mirror, find the maximum number of outputs for an error not exceeding 5%.

2. **Active Filter (1st order and 2nd order)- to study their frequency response**
    A. Low pass
    B. High Pass
    C. Band Pass
    D. Band Stop

3. **Design RC (CE config.) Amplifier using transistor gain should be 1,000 (EI)**
    a. Calculate the parameters, b. DC condition, c. Signal Handling capacity, d. Gain (with feedback, without feedback), Frequency response and bandwidth.

4. **Design a push pull amplifier (EC)**

    A. Design a Push-Pull Amplifier.
    B. Measure Dc Bias voltage in each stage.
    C. Draw and measure the AC input and output of voltage of each stage (input, push-pull , output stage)
    D. Measure the frequency response and bandwidth.
    E. Calculate the efficiency (η) of this amplifier (input power, output power, efficiency (η)).

5. **Design an Instrumentation Amplifier using IC741 along with a Sensor bridge network (EI)**

    A. Design an Instrumentation amplifier.
    B. Set the sensor Bridge network with null condition.(Sensor as a LDR)
    C. Measure the Resistance of LDR when it is open on light and shaded on light
    D. Measure the amplified output

6. **Design a square wave and saw tooth wave generator (EC)**

    A. Design a single circuit of square wave and saw tooth wave generator.
    B. Measure the square wave output frequency and voltage with 50% duty cycle.
    C. Measure the saw tooth wave output frequency and voltage with 50% duty cycle
    D. Change the square wave output duty cycle with 25% to 75% and measure the saw tooth wave from frequency and voltage.
    E. Draw the waveform and given the name of that wave form in each stage.

7. **Design a binary Multiplication circuit using digital logic gates (EI)**
8. **Design a binary Division circuit using digital logic gates (EC)**

Topics for the Mini Project:

1. A relay circuit to control a bulb with input voltage of 3.5V
2. Infra ray based relay circuit
3. FM Transmitter
4. Implementation of Sampler & Hold circuits
5. Implementation of ALU with logic gates. Then display your roll number.
6. Broad band Class D audio amplifier