EE3032: Linear Electronics Lab Equipment Introduction

1. Introduction to the bench top Linear DC Power Supplies

- This is a linear regulated DC power supply which gives a very smooth power supplies.
- There are two ON/OFF buttons – the big one is for the main power to the DC Power Supplies, and the smaller one is for the power output to the load, e.g. your circuit.
- It has three output channels: one is fixed at 5V, 3A and the other two are adjustable.
- All the three channels are isolated from each other, meaning they can be tied at one end to any point.
- The adjustable channels have three terminals namely, negative (-), chassis ground (GND) and positive (+).
- If no negative voltages are desired, always ensure that the negative (-) terminals are tied to the chassis ground GND.
- They can work in either CC (controlled current) mode or CV (controlled voltage) mode. CC mode occurs when the current drawn by the load exceeds the current setting. This results in reduction of the voltage output. This is helpful in protection from over current or short circuit.
- The current displayed is current limit setting when output switch is OFF. When output switch is on, the current shown is the actual load current.
- GA will show you how to connect for a dual power supplies (Series). This is especially useful if you need to vary both the +ve and –ve supplies together, e.g. in the Op-amp.

2. Introduction to the portable Switching DC Power Supplies

- The Switching DC Power Supplies allows you to conduct simple experiment outside the lab.
- GA will show you how to set the voltage output by adjusting the screw.
- Take note that it has poorer regulation and higher noise than the bench top DC Power Supplies, so do not expect to get the same result if you have a sensitive circuit.
- Always use the bench top linear DC power supply when working with unfamiliar and sensitive components. This portable power supply may deliver more current than required and cause the component to break down eventually. Servo motor is a good example.

3. Introduction to the bench top Digital Multimeter

- Take note of the range buttons. Try to be familiar with them.
- The display flashes if the value is beyond the range.

4. Introduction to the Signal Generator

- Take note of the two different outputs: the TTL/CMOS Aux and the 50 ohm Main.

- If TTL/CMOS Aux Out is used then only the Display Select, Frequency and Frequency Range functions are enabled. Output waveform is always square with 5V amplitude.

- Use the 50 ohm Main Out for general signals like sine wave, saw-tooth wave etc.

5. Introduction to the Oscilloscope

- GA will show you the AUTO/AUTO SET, Voltage/div, Time/div, Trigger level/source, Run/Stop, etc.

6. Introduction to Bread-boarding

- Take note of the 8 power rails. It is a common practice to use the outside rail for Vcc and inside one for GND.

- Always use proper color code for the wires and lay them neatly.

- Some examples of color code: Red for 5V, Pink for 9V, Orange for another +ve volt, Black for GND, Green for some –ve volt, Blue/Purple for control signals, Yellow/White for data signals, Brown/Grey for others, etc.

Remember, practice makes perfect. Keep on exploring and enjoy learning!