Appendix C

Bench Function Generator: HP Model 33120A

Figure 1: HP Model 33120A

The HP Sweep/Function Generator provides four waveforms: **sinusoidal, triangle, square, and ramp**. The amplitude of the waveforms is voltage, and can range from a low of 100mV peak-to-peak (V_{pp}) and a high of 20 V_{pp}. The waveforms can be generated at designated frequencies ranging from 0.1 mHz to 15MHz. The connections for the function generator are pins that can go into the breadboard or be attached directly to the probes of the oscilloscope. A DC offset can be set. The nominal output impedance (also known as AC Resistance) is 50 Ω, but it can be adjusted for better use with high impedance unmatched loads (more on this later).

Selecting a waveform

The first four buttons on the left of the top row allow you to select between the four different types of signals. From left to right they are sinusoid, square, triangle and ramp.

Setting parameters of a waveform

Each of the four types of waveforms can be described by several parameters. You will see the buttons to adjust these parameters along the left side of the lower level of buttons.

Frequency: How many times the waveform repeats per second (measured in Hz).

Amplitude: Peak-to-peak voltage of the waveform (measured in mV or V). This is the difference in voltage between the largest and smallest value of the waveform.

Offset: This is the value of the DC offset (or average) that is added to the periodic signal. For example, if we wanted to create a square wave with a low value of 0 V and a high value of 5V, we would need to use an Amplitude of 5 V (peak-to-peak) and a DC offset of 2.5V.

To adjust a parameter, push the button corresponding to the parameter you want to select and then you can adjust the parameter value in one of two ways:

1) Turn the knob until the value you want appears.
2) Use the arrow keys on the right to edit the numerical value one digit at a time. Use the left/right arrow keys to highlight the digit you want to edit and the up/down arrows to increase/decrease that digit.

Setting the Function Generator to High Z

Press [*shift*] and then [*enter*] which will get you to 'Menus'. Press the right arrow button [>] three times until you come to Menu D: Sys Menu. Then use the down arrow [V] until you see Parameters. Immediately, it will say '50 Ohm'. Press the right arrow [>] and it should say 'High Z' Press [Enter].