1. Construct an 4-bit digital to analog converter (DAC) and determine the analog voltage output for the binary bit pattern 1001. Available resources are a few 1kΩ, 2kΩ, 4kΩ and 16kΩ resistors, an 10V Li-ion battery, a 1V battery, and two 12V batteries. Assume 10V as ‘bit-1’ and 1V as ‘bit-0’. Consider feedback resistor is equal to four times that of the minimum resistor.

2. Construct a 6-bit analog to digital converter (ADC) using successive approximation method and hence show the step wise conversion of an analog input signal of 30.09 V into 7-bit digital binary value.