1. Briefly describe three errors in a DAC.
   1. An error in linearity due to the resolution of the converter not being constant. It is defined as the largest difference in actual and theoretical output as a percentage of the full-scale output.
   2. An offset error cause by a non-zero voltage when all input bits are low. This causes all output values to differ from expected values by a constant number.
   3. Resolution error caused by number of bits used. Using more bits will result in a lower resolution error.
2. Setup time is 10 ns for (VDD = 3V), hold time is 10 ns for (VDD = 3V) and pulse width is 25 ns. Therefore, the data required interval is 45 ns and the max frequency is 22 MHz. The SSI frequency is set at 8 MHz (data available for 125 ns).
3. The frequency range of a spectrum analyzer is determined by using the largest and lowest frequency values of the signal.
4. Current from microcontroller is not sufficient to drive the speaker. Therefore, an amplifier is used to increase current to produce a louder sound.