1. Consider the message signal . Set  *msec*.

A) Plot .

B) Determine and plot the magnitude of the Fourier transform of  using the FFT. The frequency resolution should be 1 *Hz*.

2. Generate the DSB-SC signal , where =10000

A) Plot .

B) Determine and plot the magnitude of the Fourier transform of  using the FFT. The frequency resolution should be 1 *Hz*.

3. Generate the AM signal , where =10000

A) Find the minimum value  of  for correct envelope detection.

B) Plot  for .

C) Determine and plot the magnitude of the Fourier transform of  using the FFT for . The frequency resolution should be 1 *Hz*.

D) What do you notice when increasing and reducing the value of ? Demonstrate two case studies.

E) Describe the challenges and difficulties upon addressing the task of D).