EEE 496: DSP Sessional
Assignment

1. Illustrate the **spectral leakage** phenomenon with suitable example using MATLAB.
2. Illustrate the **Aliasing** phenomenon with suitable example using MATLAB.
3. Wavelet analysis and synthesis are shown in the following figure.

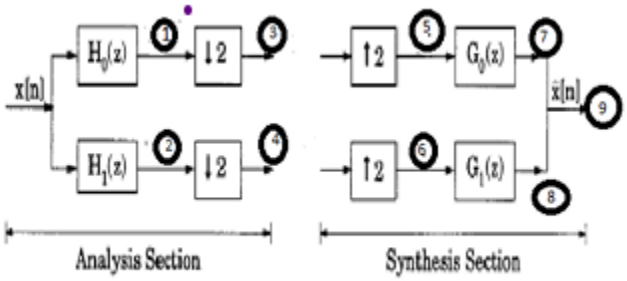

Figure 6: Two-band analysis-synthesis filter bank [3]

Given that, the x[n] is taken from the spectrum shown in figure-4 (see next page) with sampling frequency Fs=8 samples/ sec.

Show all the sequences and their corresponding spectrum at the positions 1-9.
H1,H2, G1, G2 are wavelet filters. You can use any relevant wavelet filters for this task.

4. For all the spectra shown below, determine and plot x[n] and hence show $|X(e^{j\omega})|$. Consider Fs=4x Nyquist rate for all the cases