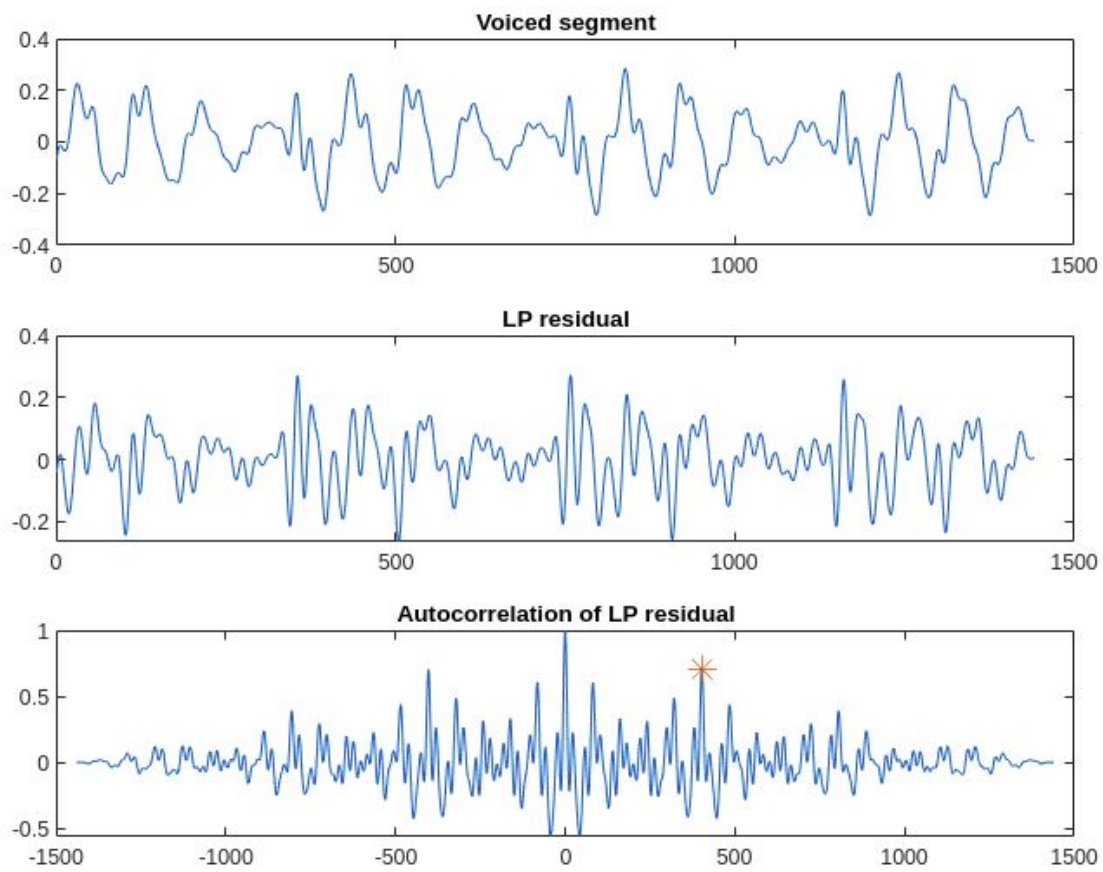


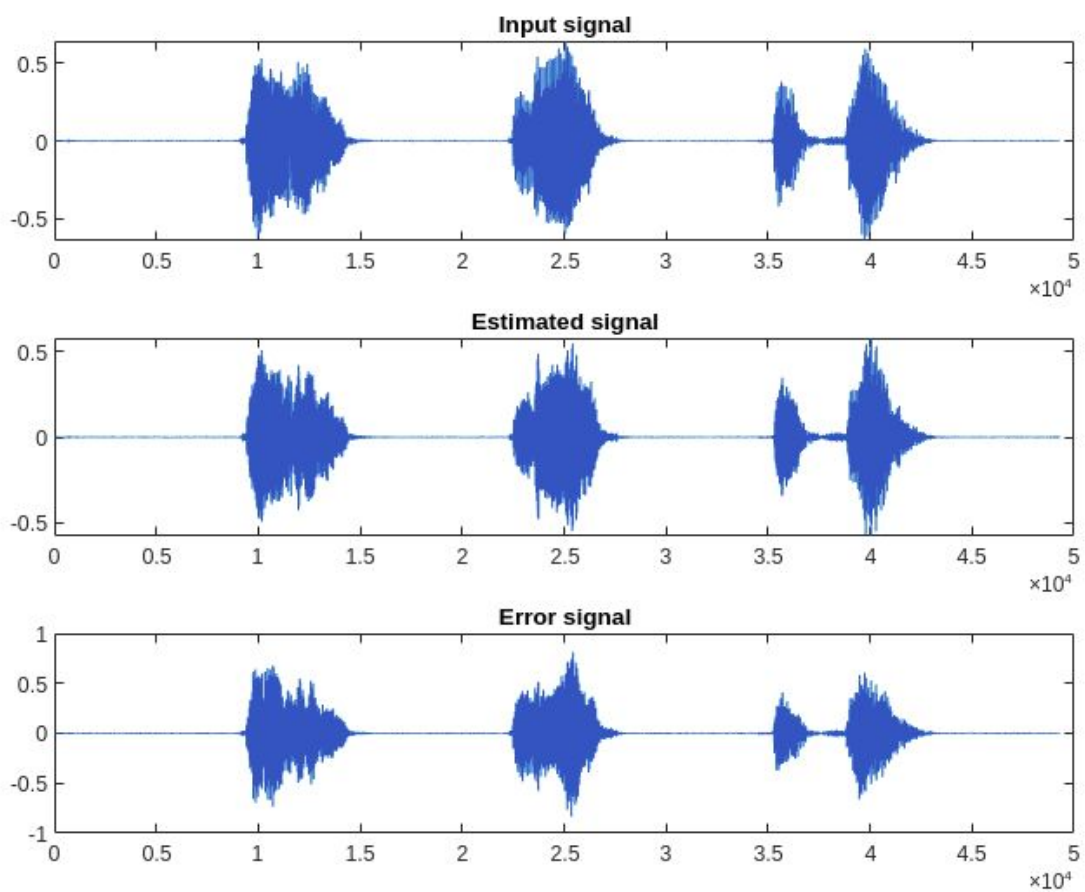
Question 1



Pitch comes out to be 119.1 Hz

Question 2

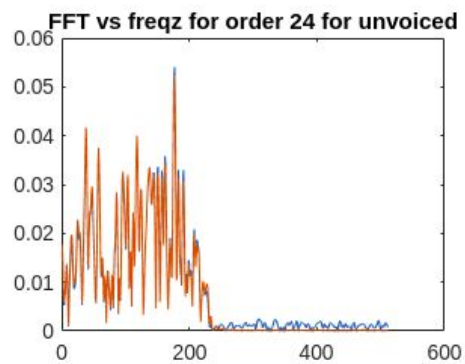
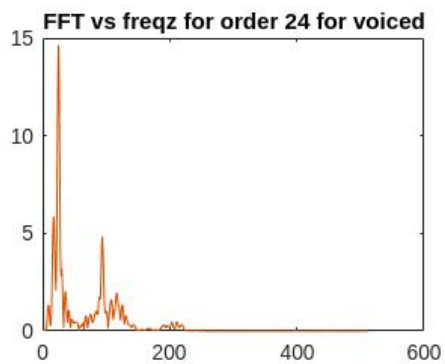
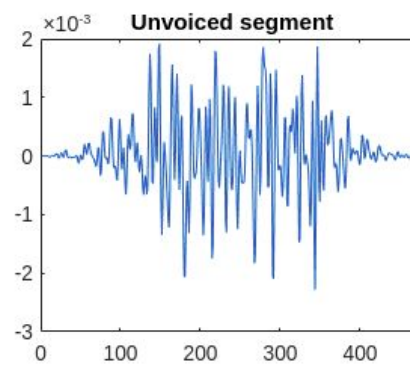
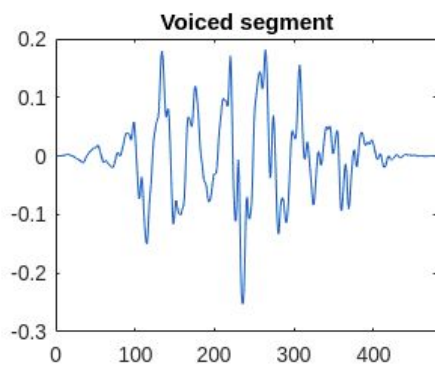
Part 1

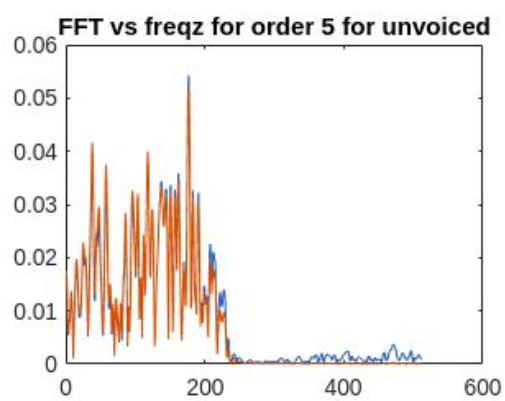
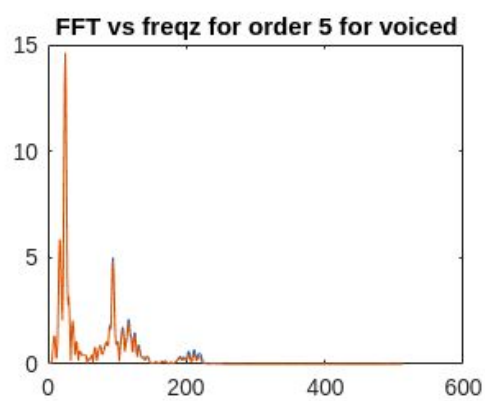
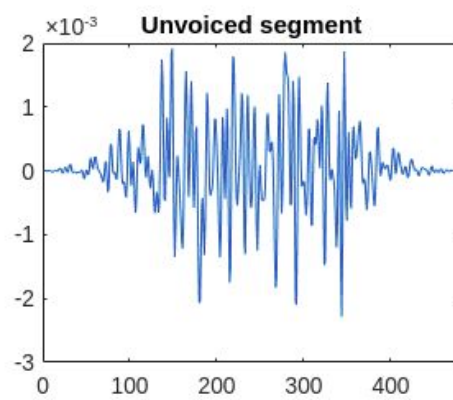
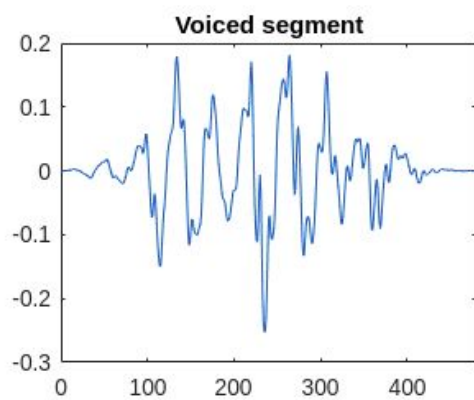


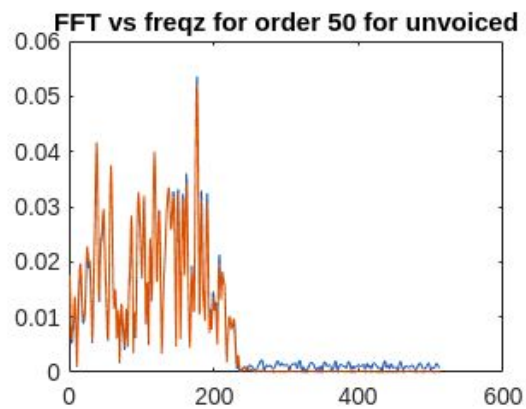
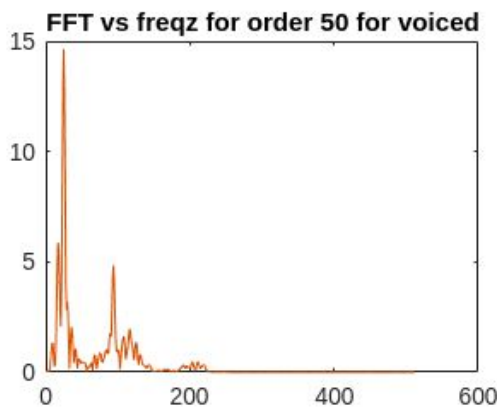
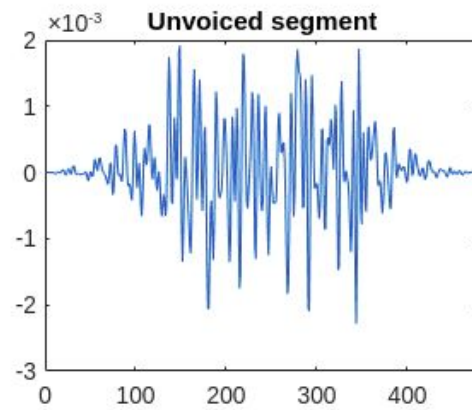
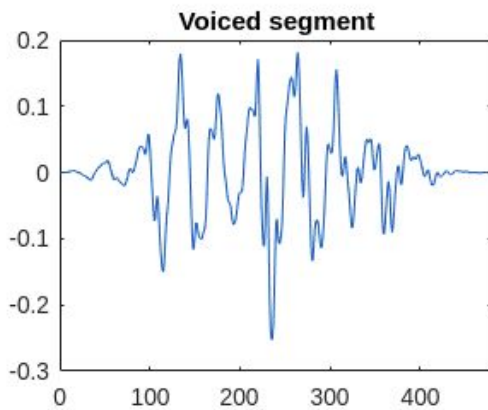
We can see there is some minute error in the estimated and original signal. There is a very minute difference between the original audio and estimated audio. As we know LP analysis

works well in voiced regions and thus there is almost no error in those parts as seen in the plot. But there is some error in unvoiced regions. So while hearing I could detect a big difference in the 'f' I spoke in 'football'. Both sounded similar but not exactly the same. Also there is some disturbance in the estimated audio. But the audios were quite similar and LP analysis is thus a good technique.

Part 2







As we can see in general the FFT and freqz plots of original and estimated signals are almost the same. In the voiced regions they are exactly the same. In the unvoiced regions there is some error because of the random nature. LP analysis depends on previous p samples for predictions and randomness is not good for prediction. In the voiced region there is periodicity and thus good predictions.

As order p increases we expect better plots and that we can see. The order 5 has more errors between orange and blue plots than order 24. The order 24 plots have more error than order 50 plots. And for every order unvoiced plots have more error than voiced plots. We can see better errors in the log plots. The orange colour represents the original plot and blue represents estimated plot. Thus LP analysis is a good technique. The log plot is shown below for order 24.

