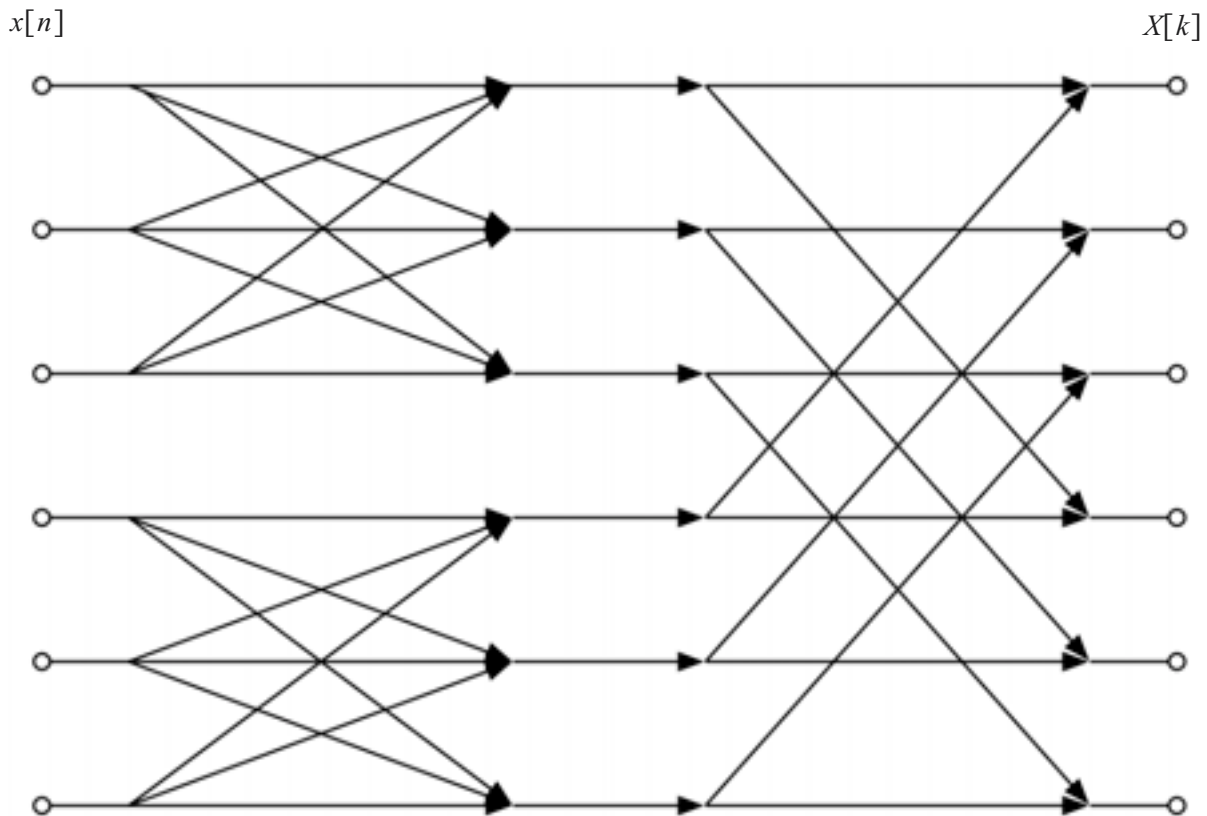


**Question 9 (10%):**

**Your name:** \_\_\_\_\_

The diagram above is a depiction of an implementation of a 6-point decimation-in-time fast Fourier transform structure. The coefficients of a 6-point sequence  $x[n]$  are the input and the output is the six points of the corresponding DFT  $X[k]$ . The following questions can all be answered by writing your responses directly onto the figure above. You may either turn in this page or copy the figure above into your blue-books.

- (a) Label which values of the time function  $x[n]$  are input to each of the 6 inputs to the algorithm.
- (b) Label which values of the DFT coefficients  $X[k]$  appear at each of the outputs of the algorithm.
- (c) Indicate the locations and values of each of the complex twiddle factors  $W_N^{nk}$  except for those that are equal to 1. Don't forget to include the locations in the flowgraph where multiplication by  $-1$  takes place.