Q4

Part a:

Given: Two sequences <1,0,0,0,0,…,0,1> with K+2 length

Aim: Produce the multiplication of two K+2

So that, P(A) = , P(B) =,. P(A)\*P(B) = , Apply DFT form to the P(A)\*P(B) then the result will become <1,0,0,0,…,2,0,0,…,1>. The length of final equation is 2k+3, the first coefficient and the last coefficient are both 1. What’s more the (k+2)th coefficient is 2.

Part b:

Given: <1,0,0,0,0,…,0,1> with K+2 length

Aim: Show the equation of DFT

Known <A> = <1,0,0,0,0,…,0,1>, use IDFT form transfer to equation P(A) = . Apply the FFT form to P(A), in DFT method we will divide the circle into k+2 part. So the DFT form is .

Take the sequence value of  to function P(A) =  calculate the result Which is <>.