**5.39*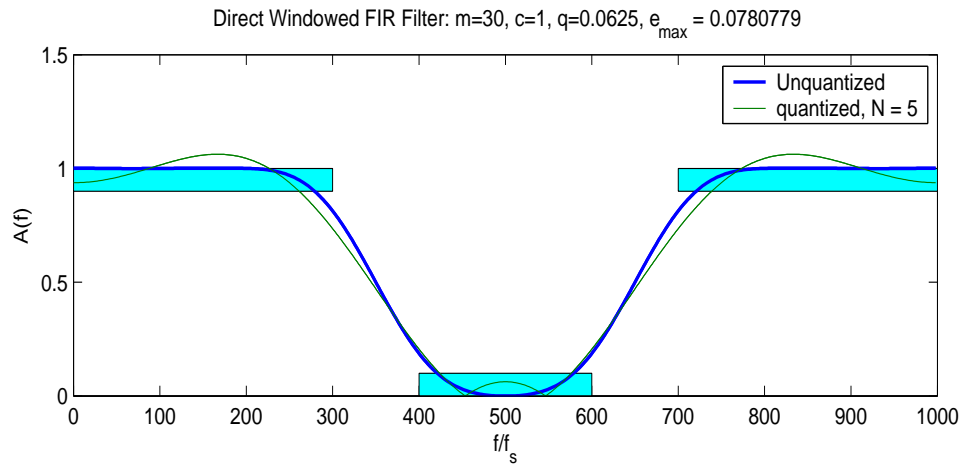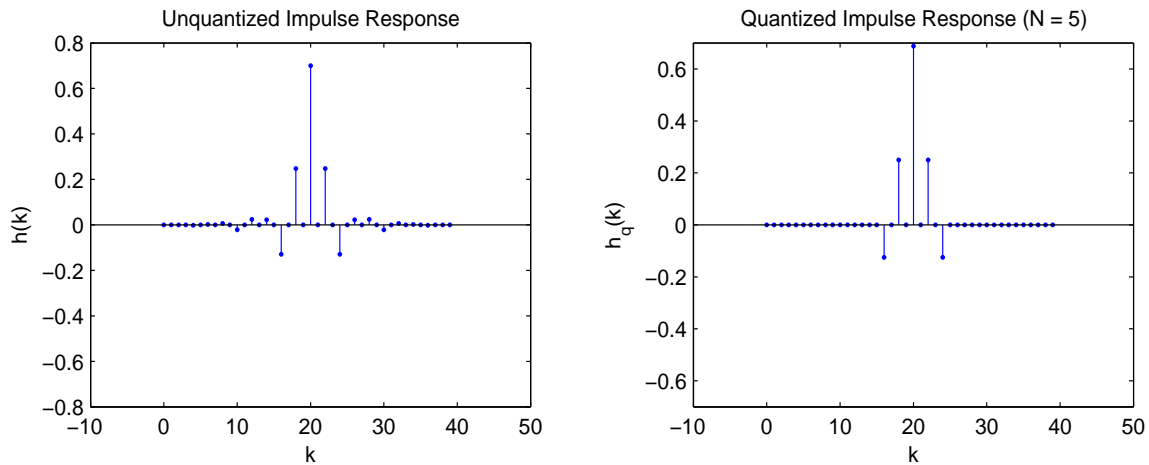* Use the GUI module *g_filters* and select an FIR bandstop filter. Use the default parameter values. Adjust the number of bits of precision N until the quantization level q is larger than 0.05.

    (a) Plot the magnitude response.

    (b) Plot the impulse response
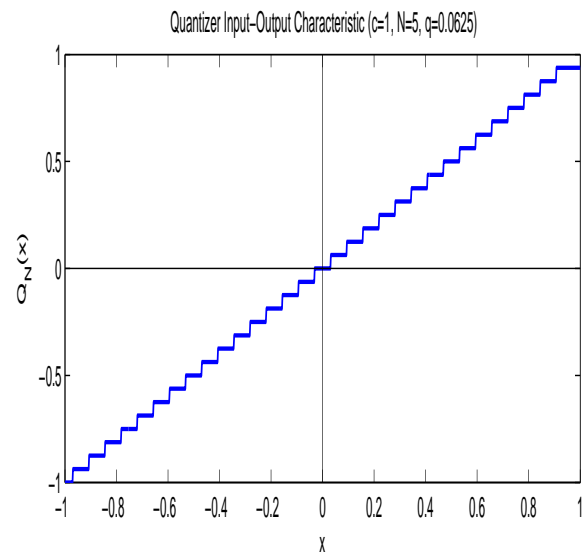
    (c) Plot the quantizer characteristic

Solution

Direct Windowed FIR Filter: m=30, c=1, q=0.0625, e_{max} = 0.0780779

(a) Magnitude Response

Unquantized Impulse Response   Quantized Impulse Response (N = 5)

(b) Impulse Response

(c) Quantizer Characteristic