S2 [10 pt] The figures on the next two pages show five signals, $x_1(t)$ through $x_5(t)$, and five Fourier transform spectra, $X_A(j\omega)$ through $X_E(j\omega)$. Which Fourier transform corresponds to which signal? For each case give a detailed explanation of your reasoning.
Figure 1: Question S2: Time-domain signals $x_1(t)$ through $x_5(t)$. 
Figure 2: Question S2: Fourier transforms $X_A(j\omega)$ through $X_E(j\omega)$. 
S3 [10 pt] Consider the system shown in Figure 3 below. The system has input signal \( x(t) \) and output signal \( y(t) \).

Figure 3: Question S3: system with input signal \( x(t) \) and output signal \( y(t) \).

(a) Identify the names of each of the components of the system, labelled A, B, C, D. For each component, explain its purpose in 1 sentence.

(b) If the input signal has the Fourier transform shown in Figure 4, sketch the Fourier transform of the output signal, \( Y(j\omega) \).

Figure 4: Question S3: Fourier transform of input signal, \( X(j\omega) \).
Signals & Systems Question S3
Student ID Number: ________________________________