INFORMATION TECHNOLOGY UNIVERSITY
Department of Electrical Engineering

Signal and Systems
Fall 2021

Assignment 4

Deadline: 04-02-2022 **Total Points: 25**

Question 1 (15 points) (CLO 4)

(a) Example 5.18
(b) Example 5.19
(c) Example 5.20

Question 2 (5 points) (CLO 4)

Determine the Fourier transform for $-\pi \leq w < \pi$ in the case of the following periodic signals.

$$\sin(\frac{\pi}{3}n + \frac{\pi}{4})$$

Question 3 (5 points) (CLO 4)

For the following Fourier transform use Fourier transform properties (Table 5.1) to determine whether the corresponding time-domain signal is

(i) Real, Imaginary or neither
(ii) Even, Odd or neither.

Do this without evaluating the inverse of the given transforms.

$$X_1(e^{j\omega}) = e^{-j\omega}\sum_{k=1}^{10}(\sin k\omega)$$