

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE310 Signals and Systems
Quiz 05

Name: _____

Campus ID: _____

Total Marks: 10

Time Duration: 15 minutes

Information:

- Time-shift property: $x(t - t_o) \xleftrightarrow{\mathcal{F}} e^{-j\omega t_o} X(j\omega)$
- Synthesis Equation:

$$x(t) = \frac{1}{2\pi} \int_{-\infty}^{\infty} X(j\omega) e^{j\omega t} d\omega$$

Question 1 (4 marks)

Determine and plot the Fourier transform of the following signal

$$x(t) = \begin{cases} 1 & |t| < T, \\ 0 & |t| > T. \end{cases}$$

Question 2 (2 marks)

Plot (with labels) the following signal $y(t) = u(t + 1) - u(t - 4)$.

Question 3 (2 marks)

Determine the Fourier transform of $y(t)$.

Question 4 (2 marks)

Determine and plot the inverse Fourier transform of $z(\omega) = 3 \cos(2\omega) - 4j$.