

THAPAR INSTITUTE OF ENGINEERING TECHNOLOGY

(Deemed to be University)

Department of Electronics and Communication Engineering

Tutorial Sheet -9

Signals & Systems–UEC404

1. Find the DFT of a sequence $x(n) = \{1, 1, 0, 0\}$ and find the IDFT of the sequence $X(k) = \{1, 0, 1, 0\}$.
2. Find the N-point DFT of the following:
 - A. $x(n) = \delta(n)$.
 - B. $x(n) = \delta(n - n_o)$
 - C. $x(n) = (a)^n$
3. Compute the DFT of a sequence $(-1)^n$ for $N=4$.
4. Determine the 8-point DFT of the sequence $x(n) = \{1, 1, 1, 1, 1, 1, 0, 0\}$ using linear transformation method.
5. Find the circular convolution of the two finite duration sequences $x_1(n) = \{1, -1, -2, 3, -1\}$ and $x_2(n) = \{1, 2, 3\}$.
6. Given the sequences $x_1(n) = \{1, 2, 3, 4\}$; $x_2(n) = \{1, 1, 2, 2\}$ find $x_3(n)$ such that $X_3(k) = X_1(k)X_2(k)$.