Classwork 21
FA24
UAH
CPE 381
Instructor: Rahul Bhadani

Name of the Student:

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Total Marks: 10 points

Q1. Compute the z-transform of the sequence given by

$$x[n] = \begin{cases} 0, & n \leq 0 \\ 3, & n = 1 \\ 4, & n = 2 \\ 5, & n = 3 \\ 0, & n > 3 \end{cases}$$

(5 Points)

Solution:

z-transform of a sequence $x[n]$ is given by

$$X(z) = \sum_{n=-\infty}^{\infty} x[n] z^{-n}$$

$$= 3 \cdot z^{-1} + 4z^{-2} + 5z^{-3}$$

Q2. Find the z-transform of discrete impulse function $\delta[n]$.

(5 points)

$$\delta[n] = \begin{cases} 1 & n = 0 \\ 0, & \text{otherwise} \end{cases}$$

Hence its z-transform

$$D(z) = 1 \cdot z^{-0} = 1$$