



ISRA UNIVERSITY

Islamabad Campus

Department of Electrical Engineering

Program: B.E. (Electrical)

Semester – Spring 2016

EL-322 Digital Signal Processing

Assignment – 0

Marks: 20

Due Date: 08/06/2016

Handout Date: 30/05/2016

Question # 1:

Find the Z-transform of the following sequences:

1. $x(n) = 2^n u(n) + 3 \left(\frac{1}{2}\right)^n u(n)$

2. $x(n) = \left(\frac{1}{3}\right)^n \cos(n\omega_0) u(n)$

Question # 2:

Evaluate the convolution of the two sequences: (Using Z-transform Property)

$$h(n) = (0.5)^n u(n), \quad \text{and} \quad x(n) = 3^n u(-n)$$

Question # 3:

Find the Inverse Z-transform of the second-order system:

$$X(z) = \frac{1 + \frac{1}{4}z^{-1}}{\left(1 - \frac{1}{2}z^{-1}\right)^2}, \quad |z| > 2$$

Good Luck