

COURSE NAME: Digital Signal Processing

COURSE CODE: PCEC-111

Assignment-2 (only for Section B1)

Date of Submission: 11.11.2024

Q1.

a. Obtain IZT using residue method when

$$X(Z) = \frac{1}{(Z-1)(Z-3)}$$

b. A causal system has difference equation given by

$$y(n] = 0.5y(n-1) - 0.25y(n-2) + x(n]$$

What is ROC of the transfer function of system.

Q2.

a. Obtain DFT of a sequence

$$x(n] = \left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, 0, 0, 0, 0\right)$$

Using DIFFFT Algorithm.

b. Find the Z-transform and ROC of the following

$$x(n] = \frac{1}{2}\delta(n+1) + 5\left(\frac{1}{2}\right)^{-n}u(-n) + u(-n-1)$$