



ISRA UNIVERSITY

Islamabad Campus

**Program: MSc & BSc (Electrical)
Semester – Fall 2018**

Signal & Systems

**Quiz – 3
Marks: 20**

Handout Date: 17/01/2019

Question # 1:

A particular LTI system is described by the difference equation:

$$y[n] + \frac{1}{4}y[n-1] - \frac{1}{8}y[n-2] = x[n] - x[n-1]$$

Find the impulse response $h[n]$ of the system.

Question # 2:

For the continuous-time periodic signal:

$$x(t) = 2 + \cos\left(\frac{2\pi}{3}t\right) + 4 \sin\left(\frac{5\pi}{3}t\right).$$

Determine the fundamental frequency ω_0 and the Fourier series coefficients a_k .

Question # 3:

Using the power series expansion technique, find the inverse z-transform of the following $X(z)$:

$$X(z) = \frac{z}{2z^2 - 3z + 1}, |z| < \frac{1}{2}$$

Good Luck