

## Department of Electronics &amp; Communication Engineering

Faculty of Engineering, Integral University, Lucknow

## Surprise Test 02

Signals &amp; Systems (IEC-402)

Time : 30 Minutes

Candidate Name &amp; Roll Number :

Date :

Maximum Marks : 10

Group: Second Year EC-2

Attempt any two questions.

1. A causal discrete time LTI system is describe by

$$y[n] - 0.75y[n - 1] + 0.125y[n - 2] = x[n]$$

(I). Determine the frequency response, magnitude response & phase response of system.

(II).Find the output response  $y[n]$  for  $x[n] = \delta[n]$  .

2. A casual linear shift invariant system is given by the following difference equation

$$y[n] = y[n - 1] + y[n - 2] + y[n - 3] + x[n - 1]$$

(I). Find the system function  $H(z)$  for the system.

(II).Find the unit sample response  $h[n]$  of the system.

(III). Find the output response  $y[n]$  for  $x[n] = (0.5)^n U(n)$

3. Consider a continuous time LTI systems describe by  $\frac{dy(t)}{dx} + 3y(t) = 2x(t)$  , using Fourier transform ; find the output  $y(t)$  for the input signal  $x(t) = e^{-t} u(t)$  .