Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EE/EX-224 (CBCS)

B.E., III Semester

Examination, December 2017

Choice Based Credit System (CBCS)

Signals and Systems

Time : Three Hours

Maximum Marks : 60

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. Discuss random signals and its statistical properties.

2. Discuss different advantages of LTI system over linear time variant system. Also discuss two properties of LTI and prove.

3. Make comparison between Fourier transform and Laplace transform.

4. Discuss different advantages of wavelet transform over other transforms. Also discuss few properties that a function need to satisfy.

5. A LTI system is described by following differential equation. Find out its impulse response assuming all initial conditions to be zero.

$$3\frac{d^3y}{dt^3}+4\frac{d^2y}{dt^2}+2\frac{dy}{dt}+y(t)=3x(t)$$

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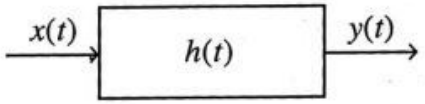
6. For a given LTI system determine formula for convolution integral.



7. Convolve graphically the following sequences and verify the results:

$x(n) = \{1 \quad \underset{\uparrow}{1} \quad 0 \quad 1 \quad 1\}$

$h(n) = \{-1 \quad -2 \quad -3 \quad -4\}$ (↑ under −2)

8. Answer any four of the following:
   a) Explain the two necessary conditions, system needs to satisfy for linearity.
   b) What is the significance of ROC? Discuss.
   c) Explain the term frequency response of the system.
   d) Convolve following sequences using matrix method.

$x(n) = \{1 \quad 2 \quad \underset{\uparrow}{0} \quad 2 \quad 1\}$

$h(n) = \{-2 \quad -3 \quad 1 \quad 2\}$ (↑ under −3)

   e) How do we obtain DFT from DTFT.
   f) Establish a link between DTFT and Z-transform.

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