SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107
AN AUTONOMOUS INSTITUTION

Accredited AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

B.E. – Electronics and Communication Engineering

23ECT201 & Signals and Systems

UNIT V - LINEAR TIME INVARIANT –DISCRETE TIME SYSTEMS

QUESTION BANK

PART – A

1. Find system function for $y[n] = 2\,y[n-1] + x[n] - 3\,x[n-2]$ (Nov/Dec 2010)

                   (or)

   Find system function for $y[n] = 0.5\,y[n-1] + x[n]$ (Apr/May 2012)

   Define System Function.   (Nov/Dec 2009)

2. Define the shifting property of discrete time unit Impulse function.   (Apr/May 2010)
3. Find the impulse response of system $y[n] = x[n - n_0]$ (Nov/Dec 2010)
4. Define IIR System.   (Nov/Dec 2010)

5. Give the impulse response of a linear time invariant as $h(n)=\sin \pi n$,check whether the system is
   stable or not.   (Nov/Dec 2014)
6. Realize the difference equation $y[n] = x[n] - 2\,x[n - 1]$ in Direct Form 1.   (Nov/Dec 2010)
7. Draw the block diagram representation of the system $y[n] = x[n] + x[n - 2]$ (Apr/May 2011)
8. Write the condition for stability of DT-LTI system with respect to position of poles.   (Apr/May 2011)
9. A causal LTI system has impulse response h[n] for which Z Transform is

    $H(Z) = \dfrac{1 + Z^{-1}}{(1 - 0.5\,Z^{-1})(1 + 0.25\,Z^{-1})}$.   Is the System stable? Explain.   (Nov/Dec 2012)

                  (or)

   Check whether the system with system function $H(Z) = \dfrac{1^{-1}}{(1 - 0.5\,Z^{-1})} + \dfrac{1^{-1}}{(1 - 2\,Z^{-1})}$

with ROC $||Z| < 0.5$ is causal and stable. (Nov/Dec 2013)

(or)

Is discrete time system described by the difference equation $y(n) = x(-n)$ causal? (Apr/May 2013)

10. In terms of ROC,state the condition for an LTI discrete time system to be causal and stable.

(Nov/Dec2014)

11. Convolve $x[n] = \{2, -1, 3, 2\}$ and $h[n] = \{1, -1, 1, 1\}$ (Apr/May 2012)

(or)

Convolve $x[n] = \{1, 1, 1, 1\}$ and $h[n] = \{3, 2\}$ (Nov/Dec 2012)

(or)

Convolve the following signals,$x(n)=\{1,1,3\}$and $h(n)=\{1,4,-1\}$. (Nov/Dec 2015)

12. Define Convolution sum with its equation. (Nov/Dec 2013)
13. List the advantages of the state variable representation of a system. (Apr/May 2012,Apr/ May 2011)
14. Write the nth order difference equation. (Apr/May2015)
15. Name the basic building blocks used in LTIDT system block diagram. (Apr/May2015)
16. Compare recursive and non recursive systems. (Apr/May2015)

(or)

Distinguish between recursive and non-recursive systems. (Nov/Dec 2015)

17. From discrete convolution sum, find the step response in terms of h(n). (Apr/May2016)
18. Define the non recursive system. (Apr/May2016)