TWO MARKS QUESTIONS AND ANSWERS

1. Define convolution sum?

If x(n) and h(n) are discrete variable functions, then its convolution sum y(n) is given by,

y(n)=_ x(k) h(n-k)

2. List the steps involved in finding convolution sum?

   o folding
   o Shifting
   o Multiplication
   o Summation

3.List the properties of convolution?

   o Commutative property of convolution x(n) * h(n) = h(n) * x(n) = y(n)
   o Associative property of convolution
   [x(n) * h1(n)] * h2(n) = x(n) * [h1(n) * h2(n)]
   o Distributive property of convolution
   x(n) * [h1(n) + h2(n)] = x(n) * h1(n) + x(n) * h2(n)

4. Define LTI causal system?

A LTI system is causal if and only if ,h(n) = 0 for n<0.This is the sufficient and necessary condition for causality of the system.

5. Define LTI stable system?

The bounded input x(n) produces bounded output y(n) in the LTI system only if, _ | h(k)| <_ ∞. When this condition is satisfied ,the system will be stable.

6. Define FIR system?

The systems for which unit step response h(n) has finite number of terms, they are called Finite Impulse Response (FIR) systems.

7. Define IIR system?

The systems for which unit step response h(n) has infinite number of terms, they are called Infinite Impulse Response (IIR) sysrems.

8. Define non recursive and recursive systems?

When the output y(n) of the system depends upon present and past inputs then it is called non-recursive system.

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9. State the relation between fourier transform and z transform?

The fourier transform is basically the z-transform of the sequence evaluated on unit circle.

i.e., $X(z)|z=e^{J\omega}$

= X(w) at |z|=1 i.e., unit circle.

10. Define system function?

H(z)= Y(z) is called system function.It is the z transform of the unit sample X(Z) response h(n) of the system.

11.   What is the advantage of direct form 2 over direct form 1 structure?

The direct form 2 structure has reduced memory requirement compared to direct form 1 structure.

12. How unit sample response of discrete time system is defined?

The unit step response of the discrete time system is output of the system to unit sample sequence. i.e., T[ð(n)]=h(n). Also h(n)=z {H(z)}.

13.A causal DT system is BIBO stable only if its transfer function has

_____.

Ans:A causal DT system is stable if poles of its transfer function lie within

the unit circle.

14. If u(n) is the impulse response response of the system, What is its step response?

Here h(n) = u(n) and the input is x(n)= u(n). Hence the output y(n) = h(n) * x(n)
= u(n) * u(n)

15. Convolve the two sequences x(n)={1,2,3} and h(n)={5,4,6,2}

Ans: y(n)={5,14,29,26,22,6}

16. State the maximum memory requirement of N point DFT including twiddle factors?

Ans: [2N+N/2]

17. Determine the range of values of the parameter „a‟ for which the linear time invariant system with impulse response h(n)=an u(n) is stable?

Ans: H(z)= z , There is one pole at z=a. The system is stable, if all its poles. z-a i.e., within the unit circle. Hence |a| < 1 for stability.