Question no.1:

Multiple choice question (MCQs)

1. What is the use of random signal?
2. Test dynamic response statistically
3. Time duration
4. Impulse response
5. **Both a, b.**
6. When we use DFT?
7. **When signal is periodic**
8. When signal is Aperiodic
9. Both a, b.
10. None of the above
11. What do you mean by aliasing in DSP?
12. Through which different signals become indistinguishable.
13. Distortion in the reconstructed signal when it is reconstructed from the original continuous signal.
14. **Both a, b.**
15. None of the above
16. What is microprocessor?
17. **Process control oriented tasks.**
18. High performance and repetitive
19. Intensive task
20. All of the above.
21. What is convolution?
22. Technique of adding two signals in time domain.
23. Through FFT it is easy to change domain.
24. **Both a, b**
25. Technique of adding two signals in frequency domain.
26. What is FFT?
27. Fast way to measure DFT.
28. It is much efficient then DFT.
29. This technique is feasible.
30. **All of the above**
31. What is the advantage of a direct form II FIR over form I?
32. **Requires half the number of delay units.**
33. It is in
34. Both a, b
35. None of the above
36. What is interpolation?
37. Decreasing the sample rate in DSP.
38. **Increasing the sample rate in DSP.**
39. Same as Decimation
40. All of the above
41. How many complex multiplications are required to compute X (k)?
42. N2/2
43. **N(N+1)/2**

The total number of complex multiplications required to compute N point DFT by radix-2 FFT is?

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Question no.2:

**Classify the following signal if it is power signal.**

Solution:

We are taking T in between 0 to 2

Solving the integral, respectively.

Where

Power signal becomes,

Solve it further, we will get

P=0.2499999 this value lies in between, so it is a power signal.

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Question no.3:

**Use the graphical interpretation of convolution to find the output y[n] for the input x[n] and impulse response h[n].**

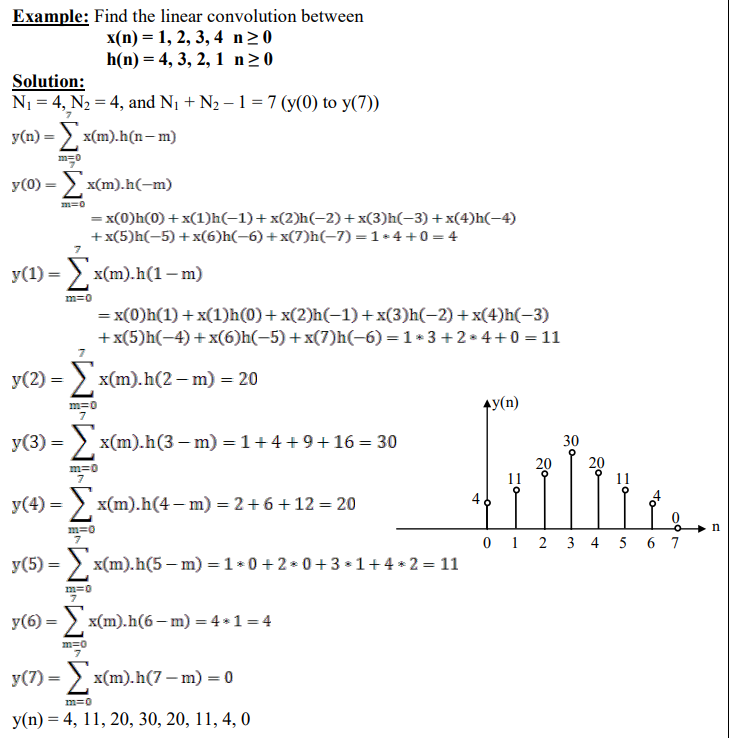
**It is important question!**

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Question no.4:

**Find the linear convolution between**

**Solution:**

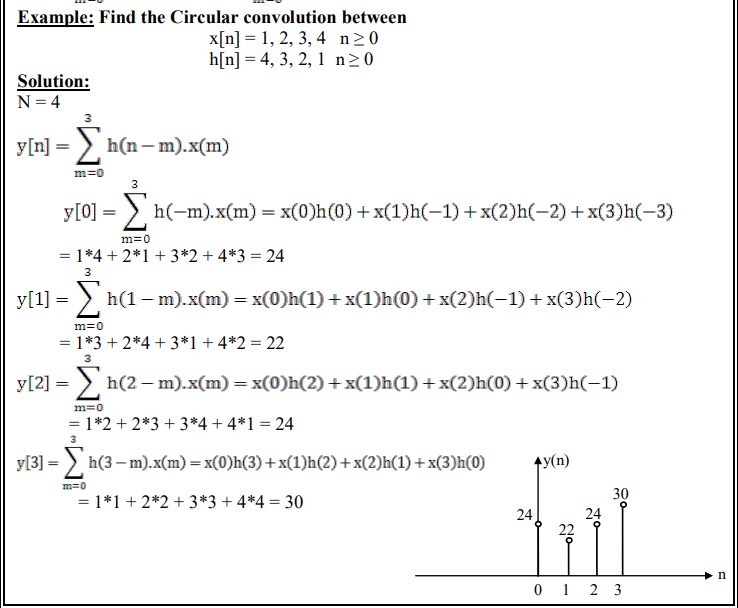


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Question no.5:

Find the circular convolution between

Solution:



Question no.6:

**Give the classification of discrete time signals?**

Solution:

A discrete time signal can be classified as: causal and non – causal, periodic and non – periodic, even and odd, energy and power signals.

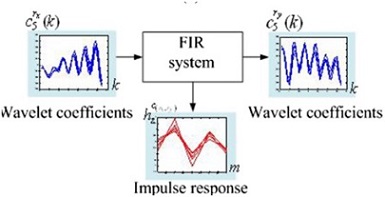
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Question no.7:

**Compare between FIR and IIR systems?**

Solution:

If the system’s impulse response contains finite number of samples, then the system is a FIR system.



If the system’s impulse response contains infinite number of samples, then the system is said to be an IIR system.

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Question no.8:

***What you know about BIBO stability? Discuss the condition to be satisfied for stability?***

Solution:

A system is said to be BIBO stable, if the system’s response is bounded (measureable) for bounded excitation. In other words, if the system’s output is measurable for the measurable input, the system is said to be BIBO stable. For a system to be stable, the impulse response of the system should be absolutely summable.

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Question no.9:

**What you understand about time invariant system.**

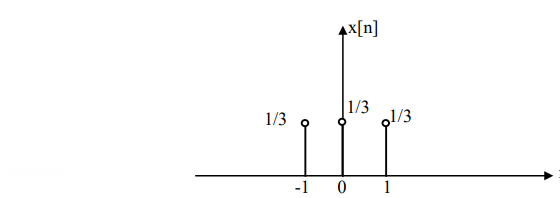
Solution:

For a time invariant system, the system’s operation is independent of time. In other words, we can say that if the delayed system response is equal to system’s response for delayed input, then the system is known as time invariant system.

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Question no.10:

1. **Find the Z-transform of the signal shown below:**



Solution:

By definition:

As we know that, signal exist in between -1 to 1. So, above equation becomes.

1. **Find the Z-transform of exponentially signal given by:**

Solution:

By definition:

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