**UNIT-III PART-A**

1. What is the Laplace transform of the function X(t)=u(t)-u(t-2)

2. What are the transfer functions of the following

a) An ideal integrator

b) An ideal delay of T seconds 3. State the convolution Integral for CT LTI systems?

4. What is the impulse response of two LTI systems connected in parallel?

5. Write the Nth order differential equation

6. Write down the convolution integral to find the output of the CT systems

7. Give the system impulse response h(t). State the conditions for stability and causality.

8. Write the equation for the complete response of a CT system in terms of state transition matrix.

9. What is meant by impulse response of any system?

10. Determine the Laplace transform of the signal f(t-5) &u(t-5)

11. Determine the convolution of the signals X(n)={2,-1,3,2} & h(n)={1,-1,1,1}

12. List and draw the basic elements for the bloc diagram representation of the CT systems.

13. Check the causality of the system with response h(t)=e-t

u(t).

14. What are the three elementary operations in block diagram representation of CT system

15. Check whether the causal system with transfer function h(s)= is stable

16. What is the condition of LTI system to be stable?

17. Define LTI CT systems

18. List and state the properties of convolution Integral.

19. What are the tools used for analysis of LTI CT systems?

20. Define Natural, Forced and complete response?

**UNIT-III PART-B**

1. The system produces the output y(t) = $e^{-t}$u(t) for an input x(t) =$e^{-2t}$u(t). Determine i) frequency response ii) magnitude & phase of the response iii) the impulse response
2. i) define convolution Integral and describe its equation.
3. Compute & plot the convolution y(t) of the given signals.

   i) X(t)=u(t-3) – u(t-5) ,h(t)= u(t) ii) X(t)=u(t) ,h(t)= u(t)
4. i) What is Impulse Response? Show that the Response of an LTI system is convolution Integral of its impulse Response with input signal?
5. i) Explain the steps to Compute convolution of two integrals.
6. i). Explain the properties of convolution integral.