

# SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution) Coimbatore – 35

### **DEPARTMENT OF MATHEMATICS**

## UNIT -V LAPLACE TRANSFORM

Inverse LAPLACE TRANSFORM

)e/n: If the Laplace Teansform of f(t) is F(s) (i) LIF(t)] = F(s) Then Z(t) is called an inverse haplace Transform of F(s) and is written as Z(t) = 1-1[FCS)] where 1-1 is called the inverse Laplace transpormation operator. Table of ILT:  $L \Gamma_{f}(t) J = F(s)$   $2^{-1} \Gamma_{f}(s) J = f(t)$  $\int L[1] = \frac{1}{3} \implies L^{-1}[\frac{1}{3}] = 1$ 2)  $L[t] = \frac{1}{s^2} \implies L^{-1} \begin{bmatrix} \frac{1}{s^2} \end{bmatrix} = t$ <sup>3</sup>)  $L[tn] = \frac{n!}{s^{n+1}} \implies L^{-1}[\frac{n!}{s^{n+1}}] = t^n$ 4)  $L[e^{at}] = \frac{1}{s-a} \implies L^{-1}[\frac{1}{s-a}] = e^{at}$  $(i) \land [e^{-at}] = \frac{1}{2} \implies 1^{-1} [\frac{1}{3+a}] = e^{-at}$ 6)  $L [sinat] = \frac{\alpha}{s^2 + \alpha^2} \implies L^{-1} [\frac{\alpha}{s^2 + \alpha^2}] = sin \alpha t$ 

T) 
$$L [\underline{sinat}_{a}] = \frac{1}{s^{2}+a^{2}} \implies L^{-1} [\underline{s}_{+a^{2}}] = \frac{sinat}{a}$$



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