BABU BANARASI DAS
Engineering College, Lucknow
[AKTU College Code: 508]

Department of Applied Sciences

Academic Session 2020-21 [Odd Sem]

Mathematics III [KAS303]

2nd Year/ III Semester (CE 2) **Faculty: Dr. Shikha Yadav**

Assignment-1

Each question carries equal marks. Max Marks 5

Q.No.	Questions	CO	Ki
1.	**(a)** Evaluate $\int_0^\infty \frac{\sin t}{t} dt$ **(b)** Obtain the Laplace transform of $t^2 e^t sin4t$	CO1	K1
2.	**(a)** Find the inverse Laplace transform of $\frac{5s+3}{(s-1)(s^2+2s+5)}$ **(b)** Using the convolution theorem find $L^{-1}\left[\frac{s^2}{(s^2+a^2)(s^2+b^2)}\right]$	CO1	K2
3.	**(a)** Find the Laplace transform of $\int_0^t \frac{e^{-at}-e^{-bt}}{t} dt$ (**b**) Express the following function in term of unit step function $f(t) = \begin{cases} t-1, & 1 < t < 2 \\ 3-t, & 2 < t < 3 \end{cases}$ and find Laplace transformation	CO1	K1
4.	Solve by the method of Laplace transform $(D^2+n^2)x = a\sin(nt+\propto)$, $x = Dx = 0$ at $t = 0$	CO1	K2
5.	Apply Laplace Transform to solve the equation (D^2+1)y = t cos2t , t > 0	CO1	K1

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given that y = Dy = 0 for t=0