



SOMAIYA
VIDYAVIHAR UNIVERSITY

Semester: August 2022-December 2022		
Examination: In-Semester Examination		
Maximum Marks: 30	Duration: 1 Hr. 30 min	
Programme code: 03	Class:S.Y	Semester: III (SVU 2020)
Programme: B.Tech Electronics and Telecommunication Engineering		
Name of the Constituent College: K. J. Somaiya College of Engineering.		Name of the department: EXTC
Course Code: 116U03C301	Name of the Course: Mathematics for communication Engineering I	

Question No.		Max. Marks
Q 1	Attempt any Three questions out of the following.	
(a)	Find Laplace transforms of $t^2 e^{-t} \sin 4t$	6
(b)	Using Laplace transforms evaluate $\int_0^\infty e^{-2t} \int_0^t \frac{e^u \sin u}{u} du dt$	6
(c)	Find inverse Laplace transforms of $\log \frac{s^2+4}{s^2+1}$	6
(d)	Using Convolution find inverse Laplace transforms of $\frac{1}{(s-3)(s+2)}$	6
(e)	Solve the differential equation using Laplace transforms $3 \frac{dy}{dt} + 2y = e^{3t}$ $y = 1$ at $t = 0$	6
Q2	Attempt any Two questions out of the following.	
(a)	Find Fourier Series of $f(x) = x \cos x$ in $(-\pi, \pi)$	6
(b)	Find Fourier Coefficients a_0, a_n for $f(x) = x^2$ in $(0, 2\pi)$	6
(c)	Find Fourier Series of $f(x) = \begin{cases} a(x-l) & \text{if } -l < x < 0 \\ a(x+l) & \text{if } 0 < x < l \end{cases}$	6