SRM Institute of Science and Technology
Department of Mathematics
18MAB102T-Advanced Calculus and Complex Analysis
2020-2021 Even
Unit – III: Laplace Transforms
Tutorial Sheet - II

S.No.	Questions	Answers
	Part – A [3 Marks]	
1	Find the inverse Laplace Transform of $\frac{1}{(s+3)^2-4}$	$\frac{1}{2}e^{-3t}\sinh 2t$
2	Find $L^{-1}\left(\frac{s^2+2s+6}{s^3}\right)$	$1+2t+3t^2$
3	Find $L^{-1}\left(\frac{1}{s(s+a)}\right)$	$\frac{1}{a}\left[1-e^{-at}\right]$
4	Find $L^{-1}\left(\frac{1}{(s+2)^5}\right)$	$\frac{e^{-2t}t^4}{4!}$
5	If $L[f(t)]=\frac{1}{s(s+\beta)}$, then find $\lim_{t\to\infty} F(t)=$	$\frac{1}{\beta}$
	Part – B[6 Marks]	
6	Find $L^{-1}\left(\frac{14s+10}{49s^2+28s+13}\right)$.	$\frac{2}{7}e^{-\frac{2t}{7}}\left(\cos\frac{3}{7}t+\sin\frac{3}{7}t\right)$
7	Find $L^{-1}\left[\tan^{-1}(1+s)\right]$	$\frac{-1}{t}e^{-t}\sin t$
8	Show that $\frac{1}{s^{1/2}}=L\left[\frac{1}{\sqrt{\pi t}}\right]$	
9	Find $L^{-1}\left(\log\left(\frac{s+1}{s-1}\right)\right)$	$\frac{1}{t}\left[e^t-e^{-t}\right]$
10	Find $L^{-1}\left[\cot^{-1}\frac{3+s}{2}\right]$	$\frac{e^{-3t}}{t}\sin 2t$