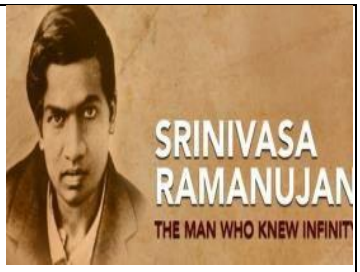
	SRMInstituteofScienceandTechnologyKattankulathur	
	DEPARTMENTOFMATHEMATICS	
	18MAB201T-TRANSFORMSAND BOUNDARYVALUEPROBLEMS	
	UNIT-V **Z-Transforms Tutorial Sheet -1**	

Sl.No.	Questions	Answer
	Part -A	
1	**Find the z-transform of** $\sin\left(\frac{n\pi}{2}\right)$.	$\frac{z}{z^2+1}$
2	**Find the z – transforms of** $\cos^2(t)$.	$\frac{z}{2(z-1)}+\frac{z(z-\cos(2T))}{2(z^2-2z\cos(2T)+1)}$
3	**If** $z[f(n)]=F(z)$ **, then prove that** $z[a^{-n}f(n)]=F(az)$.	
4	**Find the z – transforms of** $a^n n$	$\frac{az}{(z-a)^2}$
5	**Find** $z[n^2+a^{n+3}]$.	$\frac{z(z+1)}{(z-1)^3}+\frac{a^3z}{z-a}$
	Part -B	
6	**If** $z[f(n)]=F(z)$ **, then prove that** $z[f(n-m)]=z^{-m}F(z)$ **for** $m>0$.	
7	**Find** $z[n(n-1)(n-2)]$	$\frac{6z}{(z-1)^4}$
8	**Find** $z\left[\frac{2n+3}{(n+1)(n+2)}\right]$	$\left(z^2+z\right)\log\left(\frac{z-1}{z}\right)$
9	**Find** $z\left[\frac{1}{n(n+1)(n+2)}\right]$	$\frac{1}{2}\left[(1-z)^2\log\left(\frac{z}{z-1}\right)-z\right]$
10	**Find the z – transforms of** $\cos\left(\frac{n\pi}{2}+\frac{\pi}{4}\right)$	$\frac{1}{\sqrt{2}}\frac{z(z-1)}{(z^2+1)}$