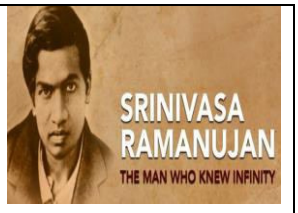
SRM Institute of Science and Technology
Kattankulathur

DEPARTMENT OF MEATHEMATICS

18MAB201T Transforms and Boundary Value Problems

UNIT - V : Z Transforms
Tutorial Sheet - 13



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