
 SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s 3 of UGC Act, 1956)		SRM Institute of Science and Technology Kattankulathur	 SRINIVASA RAMANUJAN THE MAN WHO KNEW INFINITY
		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 $z[n^2 + a^{n+3}]$.	$\frac{z(z+1)}{(z-1)^3} + \frac{a^3 z}{z-a}$	
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 $\cos \left(\frac{n\pi}{2} + \frac{\pi}{4} \right)$.	$\frac{1}{\sqrt{2}} \frac{z(z-1)}{(z^2 + 1)}$	