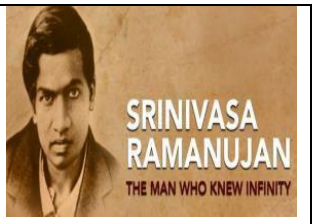
SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s 3 of UGC Act, 1956)	**SRM Institute of Science and Technology Kattankulathur** **DEPARTMENT OF MEATHEMATICS** **18MAB201T Transforms and Boundary Value Problems** **UNIT – V : Z Transforms** **Tutorial Sheet - 14**	

Sl.No.	Questions	Answer
	Part – B	
1	Find the z-transforms of $\sin\frac{n\pi}{2}$.	$z\left\{\sin\frac{n\pi}{2}\right\}=\frac{z}{z^2+1}$
2	Find the z-transforms of $\sin^3\left(\frac{n\pi}{6}\right)$.	$z\left\{\sin^3\left(\frac{n\pi}{6}\right)\right\}=\frac{3z}{4(z^2-z\sqrt{3}+1)}-\frac{z}{4(z^2+1)}$
3	Find the z-transforms of $\sin^2\left(\frac{n\pi}{4}\right)$.	$z\left\{\sin^2\left(\frac{n\pi}{4}\right)\right\}=\frac{z}{2(z-1)}-\frac{z^2}{2(z^2+1)}$
4	Use initial value theorem to find $f(0)$ when $\bar{f}(z)=\frac{ze^{aT}(ze^{aT}\cos bT)}{z^2e^{2aT}-2ze^{aT}\cos bT+1}$.	$f(0)=1$
5	Use final value theorem to find $f(\infty)$ when $\bar{f}(z)=\frac{Tze^{aT}}{(ze^{aT}-1)^2}$.	$f(\infty)=0$
	Part – C	
6	Find the inverse z-transforms of (i) $\frac{z^2+z}{(z-1)^2}$ (ii) $\frac{2z^2+4z}{(z-2)^3}$ by long division division method.	(i) $f(n)=2n+1$ (ii) $f(n)=n^2 2^n$
7	Find the inverse z-transform of $\frac{1+2z^{-1}}{1-z^{-1}}$ by long division division method.	$f(n)=1+2u(n-1)$
8	Find the inverse z-transform of $\frac{5z}{(2z-1)(z-3)}$ by partial fraction method.	$f(n)=3^n-\frac{1}{2^n}$
9	Find the inverse z-transform of $\frac{z^2+2z}{(z-1)(z-2)(z-3)}$ by partial fraction method.	$f(n)=\frac{3}{2}-4.2^n+\frac{5}{2}.3^n$
10	Find the inverse z-transform of $\frac{4z^2-12z}{z^3-3z+2}$ by partial fraction method.	$f(n)=\frac{20}{9}-\frac{8}{3}n-\frac{20}{9}(-2)^n$