

SRMInstituteofScienceandTechnologyK attankulathur

DEPARTMENTOFMATHEMATICS

18MAB201T-TRANSFORMSAND BOUNDARYVALUEPROBLEMS



IINIT-V

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	Z-Transforms	Tutorial Sheet -1	
Sl.No.		Questions	Answer
Part -A			
Find the z-transform of $\sin\!\left(\frac{n\pi}{2}\right)$.		$\frac{z}{z^2+1}$	
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 $z[a^{-n}f(n)] = F(az)$.			
Find the z – transforms of $a^n n$			$\frac{az}{(z-a)^2}$
Find $z[n^2 + a^{n+3}]$.			$\frac{z(z+1)}{(z-1)^3} + \frac{a^3 z}{z-a}$
Part -B			
$ \mathbf{If} z[f(n)] = F $ $m > 0.$	$\overline{z}(z)$, then prove that z	$[f(n-m)] = z^{-m}F(z) \text{ for }$	
Find $z[n(n-1)]$	(n-2)		$\frac{6z}{\left(z-1\right)^4}$
$\mathbf{Find} \ z \left[\frac{2n+3}{(n+1)(n+2)} \right]$		$\left(z^2 + z\right) \log\left(\frac{z - 1}{z}\right)$	
Find $z \left[\frac{1}{n(n+1)(n+2)} \right]$			$\frac{1}{2} \left[\left(1 - z \right)^2 \log \left(\frac{z}{z - 1} \right) - z \right]$
Find the z – trans	sforms of $\cos\left(\frac{n\pi}{2} + \frac{\pi}{4}\right)$		$\frac{1}{\sqrt{2}}\frac{z(z-1)}{(z^2+1)}$
	If $z[f(n)]$ Find the z Find $z[n^2]$ If $z[f(n)] = F$ $m > 0$. Find $z[n(n-1)]$ Find $z\left[\frac{2n+(n+1)(n-1)}{(n+1)(n-1)}\right]$	Sl.No. Find the z-transform of	Sl.No. Questions Part -A Find the z-transform of $\sin\left(\frac{n\pi}{2}\right)$. Find the z - transforms of $\cos^2(t)$. If $z[f(n)] = F(z)$, then prove that $z[a^{-n}f(n)] = F(az)$. Find the z - transforms of $a^n n$ Find $z[n^2 + a^{n+3}]$. Part -B If $z[f(n)] = F(z)$, then prove that $z[f(n-m)] = z^{-m}F(z)$ for $m > 0$. Find $z[n(n-1)(n-2)]$ Find $z\left[\frac{2n+3}{(n+1)(n+2)}\right]$ Find $z\left[\frac{1}{n(n+1)(n+2)}\right]$