SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF MATHEMATICS

18MAB201T - Transforms and Boundary value problems

UNIT V – Z-Transform

TUTORIAL SHEET -15

PART-B

Sl.No	Questions	Answer
1	Find $Z^{-1}\left[\dfrac{2z^2+3z}{(z+2)(z-4)}\right]$ by partial fraction method.	$\dfrac{(-2)^n}{6}+\dfrac{11(4)^n}{6}$
2	If $F(z)=\dfrac{3z}{(z-1)\ (z-2)}$, find the residue of $F(z)z^{n-1}$ at $z=2$.	$3.(2)^n$
3	If $F(z)=\dfrac{z+3}{(z+1)\ (z-2)}$, find the residue of $F(z)z^{n-1}$ at $z=-1$.	$\dfrac{2}{3}(-1)^n$
4	Using convolution Theorem evaluate $Z^{-1}\left[\dfrac{z^2}{(z-1)(z-3)}\right]$.	$\dfrac{1}{2}(3^{n+1}-1)$
5	Solve: $y_{n+1}-2y_n=0$ given $y_0=3$ using Z transforms.	$3.(2)^n$

PART-C

Sl.No	Questions	Answer
6	Find the inverse Z transform of $\dfrac{8z^2}{(2z-1)(4z-1)}$ by using convolution theorem.	$2\left[\left(\dfrac{1}{2}\right)^n-\left(\dfrac{1}{2}\right)^{2n+1}\right]$
7	Find by Residue method if $Z^{-1}\left[\dfrac{2z^2+4z}{(z-2)^3}\right]$.	$n^2.(2)^n$
8	Find $Z^{-1}\left[\dfrac{z^3}{(z-2)(z-1)^2}\right]$ by using method of partial fraction.	$-3.1^n-n+4.2^n$
9	Solve: $y_{n+2}+6y_{n+1}+9y_n=2^n$, given $y_0=y_1=0$, using Z transforms.	$\dfrac{1}{25}.2^n-\dfrac{1}{25}(-3)^n+\dfrac{1}{15}n(-3)^n$
10	Solve $y_{n+2}-7y_{n+1}+12y_n=2^n$, given $y_0=0$, $y_1=0$, using Z transform method.	$\dfrac{1}{2}.2^n-3^n+\dfrac{1}{2}.4^n$