

Tutorial -6

Z-Transform

Q.1 Find the Z-transform of the below sequences.

$$a) f(k) = \begin{cases} 5^k & k < 0 \\ 3^k & k \geq 0 \end{cases}$$

$$b) f(k) = c^k \cos \alpha k$$

$$c) f(k) = 2^k \sin(3k + 2)$$

$$d) f(k) = a^k \quad k < 0$$

Q.2 Find the Inverse Z-Transform of

$$a) \frac{1}{(z-2)(z-3)}, \text{ in the regions (i) } |z| < 2 \text{ (ii) } 2 < |z| < 3 \text{ (iii) } |z| > 3.$$

$$b) \frac{1}{(z-a)^2}, \text{ in the region (i) } |z| > 2$$

$$c) \frac{2z^2 - 10z + 13}{(z-3)^2(z-2)}, \text{ in the region (i) } 2 < |z| < 3$$