GATE EE 2023

EE:1205 Signals and System
Indian Institute of Technology, Hyderabad

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Question 19: The Z-transform of a discrete signal $x(n)$ is

$$X(z) = \frac{4z}{\left(z-\frac{1}{5}\right)\left(z-\frac{2}{3}\right)(z-3)} \text{ with ROC= } R \quad (1)$$

Which one of the following statements is true?

(A) Discrete time Fourier transform of $x[n]$ converges if R is $|z| > 3$

(B) Discrete time Fourier transform of $x[n]$ converges if R is $\frac{2}{3} < |z| < 3$

(C) Discrete time Fourier transform of $x[n]$ converges if R is such that $x[n]$ is a left-sided sequence.

(D) Discrete time Fourier transform of $x[n]$ converges if R is such that $x[n]$is a right-sided sequence.