EE23BTECH11042 - Khusinadha Naik*

26. A causal, discrete time system is described by the difference equation $y[n] = 0.5y[n-1] + x[n]$, for all n, where $y[n]$ denotes the output sequence and $x[n]$ denotes the input sequence. Which of the following statements is/are TRUE?

(a) he system has an impulse response described by $0.5^n u[-n]$ where $u[n]$ is the unit step sequence.
(b) The system is stable in the bounded input, bounded output sense.
(c) The system has an infinite number of non-zero samples in its impulse response
(d) The system has a finite number of non-zero samples in its impulse response.

(GATE BM 2023)