Homework 4 – Types of Systems

Submission deadline 14th September EOD

Qn.) A discrete-time system can be

(1) Static or dynamic
(2) Linear or nonlinear
(3) Time invariant or time varying
(4) Causal or noncausal
(5) Stable or unstable

Examine the following systems with respect to the properties above.

1. $y(n) = cos[x(n)]$
2. $y(n) = \sum_{k=-\infty}^{n+1} x(k)$
3. $y(n) = x(n)\, cos(\omega_0 n)$
4. $y(n) = x(-n+2)$
5. $y(n) = |x(n)|$
6. $y(n) = x(n)u(n)$
7. $y(n) = x(n) + nx(n+1)$
8. $y(n) = x(2n)$
9. $y(n) = \begin{cases} x(n), & if\ x(n) \geq 0 \\ 0, & if\ x(n) < 0 \end{cases}$
10. $y(n) = x(-n)$

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