

Power Electronic Circuits and Devices

Rehearsal questions

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Some rehearsal questions for self assessment:

- Given a linear time invariant system (in continuous time) with system matrices A, B, C, D , and given that the dimension of B is 5 rows and 2 columns, how many states and how many control inputs does the system have?
- Is the system (A, B) with one state and one input with matrices $A = 0$ and $B = 1$ controllable?
- For an uncontrollable system (A, B) , can LQR always find a feedback matrix K such that $(A - BK)$ is stable?
- Regard the continuous time system $\dot{x} = Ax$ with initial value $x(0) \neq 0$ and a matrix A whose eigenvalues all have a negative real part besides one, which has a positive real part. Will the trajectory $x(t)$ grow or decay?