

Name: IJIGA OBEKPA

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Department: ELECTRICAL ELECTRONICS ENGINEERING

Question

① Explain Root ~~locus~~ Locus technique

Answer

When we see Control theory and stability root locus analysis is a graphical representation for examining how the roots of a system changes with variation of a certain system parameter commonly a gain with a feedback system.

This technique is used as a stability criteria in the field of classical control theory which determines stability of the system. The root of the locus plots the pole of the closed loop transfer function in the complex s -plane as a function of a gain parameter.

② Describe the use of Routh Hurwitz to find the stability of a closed loop system when:

(a) Positive rows zero on the routh table

(b) to determine the poles on the $j\omega$ axis.

Answer

(a) In this case, in order for ~~the~~ us to find the stability

we will first of all find an auxiliary equation, the auxiliary equation can be formed by using the elements of the row, just above the row of zeros in the routh array and after finding the auxiliary equation we will differentiate it to obtain elements of the zero row. If there is no sign change in the new routh array formed by using auxiliary equation, then we conclude the system given is limited stable while in any other case it is unstable.

(b) After the table has been completed the number of sign changes in the first column will be the number of ~~negative~~ non-negative poles. But sometimes we see the coefficient of the routh table in a whole row become zero & thus the calculation of the elements of the array is not possible.