

Moderate

Assistant Engineer (Electrical), Class 2025

Building Department

The characteristic equation of a control system is given by $s(s + 4)(s^2 + 2s + s) + k(s + 1) = 0$. What are the angles of the asymptotes for the root loci?

A

0 , 180 , 300

B

0 , 120 , 240

C

60 , 180 , 300

Correct

D

120 , 180 , 240

Correct Answer: C

Full Detailed Explanation

Concept & Reasoning Rewrite the characteristic equation in $1 + KG(s)H(s) = 0$ form and count open-loop poles and finite zeros. If $n - m = 3$, the three asymptotes are equally spaced by 120° and begin at 60° . Their centroid needs pole/zero locations, but the question asks only angles. How to Solve It in the Exam Three asymptotes $60^\circ, 180^\circ, 300^\circ$. Important Exam Point Angles depend on $n - m$, not on the numerical value of K . Related Revision Path This question sits in the revision path Control Systems → Root Locus → Asymptotes.

Open live question on website:

<https://sarkariresultout.com/pyq/question/gpsc-ae-electrical-q203-root-locus-asymptote-angles/>