

Medium

Deputy Executive Engineer (Electric)

2026

Ports Authority of Gujarat / Assistant Engineer (El

Consider the following statements regarding Root Locus Plot: 1. Root locus starts at open-loop poles and ends at zeros. 2. Number of branches equals number of

A**1, 2 and 4 only****Correct****B****1 and 3 only****C****2 and 3 only****D****All of the above**

Correct Answer: A

Full Detailed Explanation

Correct Answer: A - 1, 2 and 4 only Quick Concept Explanation Branches start at open-loop poles and end at finite zeros or zeros at infinity; the number of branches equals the number of open-loop poles. Real-axis breakaway/break-in points can occur where multiple branches meet, and loci can enter the right-half plane. Key relation: Characteristic equation $1+KG(s)H(s)=0$. Exam focus: Start at poles, finish at zeros/infinity. Common trap: Root locus is not confined to the left-half plane. Statement-wise Verification Statement 1 - Correct. Root locus starts at open-loop poles and ends at zeros. Branches start at open-loop poles and end at finite zeros or zeros at infinity Statement 2 - Correct. Number of branches equals number of poles. Branches start at open-loop poles and end at finite zeros or zeros at infinity; the number of branches equals the number of open-loop poles. Statement 3 - Incorrect. Root locus always lies in left half plane. Root-locus branches can cross into the right-half plane as gain varies Statement 4 - Correct. Breakaway points occur on real axis. Real-axis breakaway/break-in points can occur where multiple branches meet, and loci can enter the right-half plane. Core Concept Root locus shows closed-loop pole locations as a gain parameter varies. Branches start at open-loop poles and end at finite zeros or zeros at infinity; the number of branches equals the number of open-loop