

Easy

Assistant Engineer (Electrical), Class 2025

Building Department

To obtain wide bandwidth, network is designed with which of the following?

A

High Q factor

B

Low Q factor

Correct

C

Unity Q factor

D

Zero Q factor

Correct Answer: B

Full Detailed Explanation

Concept & Reasoning: Quality factor measures the sharpness/selectivity of resonance. A high-Q circuit has a narrow response around its resonant frequency, whereas a low-Q circuit responds over a wider frequency range. For the common series or parallel resonant definition, $Q = f_0/BW$, so increasing bandwidth means reducing Q. 'Zero Q' is not the useful design target because it would destroy meaningful resonance. How to Solve It in the Exam: High Q = sharp/narrow; low Q = broad/wide. Important Exam Point: For bandwidth questions, immediately write $BW = f_0/Q$. Related Revision Path: This question sits in the revision path Network Theory → Resonance → Quality Factor and Bandwidth.

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