

Moderate

Assistant Engineer (Electrical), Class 2025

Building Department

In the case of a single pulse width modulation with the pulse width = $2d$, to eliminate the n th harmonic from the output voltage

A

 $d =$

B

 $2d =$

C

 $nd =$

Correct

D

 $nd = 2$

Correct Answer: C

Full Detailed Explanation

Concept & Reasoning: Fourier analysis of the single-pulse waveform shows that the amplitude of an n th harmonic is proportional to $\sin(nd)/n$ (with additional symmetry restrictions on even/odd harmonics). Therefore harmonic elimination is achieved by choosing a pulse width such that the sine factor vanishes. How to Solve It in the Exam: See $\sin(nd)$ in harmonic coefficient; set nd to π for first non-zero root. Important Exam Point: Check whether d is half pulse width; the question defines full pulse width as $2d$. Related Revision Path: This question sits in the revision path Power Electronics → Inverters → Pulse Width Modulation.

Open live question on website:

<https://sarkariresultout.com/pyq/question/gpsc-ae-electrical-q169-selective-harmonic-elimination-in-single-pulse-pwm/>