

Hard

Assistant Engineer (Electrical), Class 2025

Building Department

Find V_{AB} if $i_{AB} = 5 \text{ A}$.

A

32.76V

B

35.56V

C

36.12V

D

34.21V

Correct

Correct Answer: D

Full Detailed Explanation

Concept & Reasoning This is a pure resistive-network question, so V_{AB} is obtained from the equivalent resistance between terminals A and B. The vertical 5 and 10 resistors prevent treating the two outer paths as simple independent series branches; the network must be reduced using node-voltage/bridge transformation or solved by applying a test voltage/current. If a 1 V test source is applied across A-B and the resulting input current is calculated from nodal equations, R_{eq} is obtained as V_{test}/I_{test} . Scaling to the specified 5 A terminal current then gives the terminal voltage. The official answer corresponds to $R_{eq} = 6.842$ and hence 34.21 V.

How to Solve It in the Exam For a complicated passive network, apply a 1-V test source and solve nodal voltages; the input current immediately gives R_{eq} .

Important Exam Point Do not combine resistors as series/parallel when their common node has another branch attached.

Related Revision Path This question sits in the revision path Network Theory → Resistive Networks → Bridge/Network Reduction .

Open live question on website:

<https://sarkariresultout.com/pyq/question/gpsc-ae-electrical-q116-equivalent-resistance-and-terminal-voltage/>