

Easy

Assistant Engineer (Electrical), Class 2025

Building Department

What will be the current density of a metal if a current of 30A is passed through a cross-sectional area of 0.5m²?

A

7.5 A/m²

B

15 A/m²

C

60 A/m²

Correct

D

120 A/m²

Correct Answer: C

Full Detailed Explanation

Concept & Reasoning Current density describes how much current flows through a unit area normal to the current direction. For uniform current distribution, $J = I/A$. The area is already in square metres, so no unit conversion is required. Dividing 30 A by 0.5 m² gives 60 A/m².
How to Solve It in the Exam Current density = current / area. Important Exam Point Check that the area unit matches the required A/m² unit.
Related Revision Path This question sits in the revision path Basic Electrical Engineering → Current and Current Density → Conduction .

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