TOPIC
Strength of Materials – Section VIII - Question 3

QUESTION
A hollow aluminum tube (E=69 GPa, v=0.3) with circular cross-section is twisted by a torque of 62.8 N-m. The tube has an outer radius of 32 mm and an inner radius of 16 mm, and is 500 mm long. The maximum shear stress in MPa in the tube most nearly is
   (A) 0.813
   (B) 0.651
   (C) 1.22
   (D) 1.30

HINT
Change mm to meters.
Polar second moment of area, $J = \frac{\pi}{2}(r_o{}^4 - r_i{}^4)$
Shear stress under torsion, $\tau = \frac{Tr}{J}$

CONTRIBUTOR
Autar Kaw