

Answers to 3C7: Mechanics of Solids (2011-2012)

1. (c) $\frac{pD}{8t} \left[4 + \frac{3a^2}{r^2} + \frac{5a^4}{r^4} \right]$
2. (a) $T = \frac{\pi G \beta D^4}{32}$
(b) $\psi = G \beta \left[\left(\frac{D}{2} \right)^2 - r^2 \right]$
3. (b)(ii) $x = 0.45$
(b)(iii) $F = 2.68kt$
4. (a) $p = 1.125Yt / r$
(b) $T = 3.14r^2tY$
(c) $d\varepsilon_h^p : d\varepsilon_a^p : d\varepsilon_t^p = -4.25 : 1 : 3.25$