

3D1 2006 Answers

- 1 (a) 19.2 kN/m³ (i) 94 kPa (ii) 169 kPa
(b) 94 kPa
(c) 0.142 m, 0.099 m
(d) 5 months
- 3 (a) $\sigma'_{h,\max} = 0, 272 \text{ kPa}, \text{ and } 516 \text{ kPa}$ approximately at 0, 5 and 10 m respectively
 $\tau_{\max} = 0, 68 \text{ kPa}, \text{ and } 123 \text{ kPa}$ approximately at 0, 5 and 10 m respectively
(b) $\sigma'_{\text{hcrit}} = 0, 193 \text{ kPa}, \text{ and } 385 \text{ kPa}$ approximately at 0, 5 and 10 m respectively
 $\tau_{\text{crit}} = 0, 36 \text{ kPa}, \text{ and } 73 \text{ kPa}$ approximately at 0, 5 and 10 m respectively
(c) 5.7 MN in Mode S
(d) 17.1 MN in Mode S, based on cavitation
- 4 (a) 26°, 3.605, 0.047, 0.246
(b) 60 kPa, 31 kPa, $n = 1 + 5.3/z$, $v = \Gamma + \lambda - \kappa - \lambda \ln(5.8z + 31) + \kappa \ln(1 + 5.3/z)$
(c) $c_u \approx 4 + 1.4z \text{ kPa}$