

ENGINEERING TRIPOS PART IIA 2011/2012
MODULE 3D2: GEOTECHNICAL ENGINEERING II

- (a) Using $\gamma_w = 10 \text{ kN/m}^3$, $\sigma_v = 120 \text{ kPa}$, $\sigma_h = 156 \text{ kPa}$
- (b) (i) $p_c = 801 \text{ kPa}$
(ii) $\nu = 1.888$
- (c) (i) Yield stress $p' = 144 \text{ kPa}$, $q = 220 \text{ kPa}$, Undrained shear strength = 199 kPa
(ii) –
1. (a) 167 kPa , $K_0 = 0.7$
(b) $G = 16.7 \text{ MPa}$, $G_{ur} = 25 \text{ MPa}$
(c) $c_u = 125 \text{ kPa}$
(d) 92.6 kPa
2. (a) $\gamma_{dry} = 16.6 \text{ kN/m}^3$, $\gamma_{sat} = 20.3 \text{ kN/m}^3$
(b) F.S. = 1.72 for peak and 1.23 for critical
(c) $h_w = 3.35 \text{ m}$, fail at 5 m depth
(d) –
3. (a) (i) $s = 94.1 \text{ kPa}$, $s' = 44.1 \text{ kPa}$, $t = 5.9 \text{ kPa}$
(ii) –
(iii) –
(b) –