Lab Practical (Answer Sheet) - Distinct-Element Analysis

Below, enter the answers you obtain when prompted to do so during the different exercises:

Part B – Deformable Blocks

This tutorial will demonstrate how to model a discontinuous rock slope using deformable blocks. In this case we will examine the instability mechanism referred to as flexural toppling.

1. Sketch the distribution of the shear and tensile yield indicators, and show where a shear failure surface may be developing (as prompted in step 12)?

Part C – Dynamic Analysis

This tutorial examines the numerical modelling of dynamic loading, such as that experienced during an earthquake or due to blasting. In this case, a granite rock face is modelled for stability before and after it is hit by an earthquake.

1. What is the largest earthquake permissible for which the slope does not fail in terms of the x-velocity magnitude (+/- 0.05; as prompted in step 13)? _____

Part D – Coupled Hydro-Mechanical Analysis

The stability of a slope in jointed rock is affected by the water level behind the slope. In this tutorial, the water level is raised in stages until the slope becomes unstable. The failure of the slope occurs when the fluid pressure in the joints increases (and the effective normal stress in the joints decreases) such that the limiting shear strength of the joints at the slope face is reached.

1. What is the maximum slope displacement for the different water table levels (as prompted in steps 10, 11 and 12)?

   a) Water table = 6m: _____

   b) Water table = 8m: _____

   c) Water table = 10m: _____