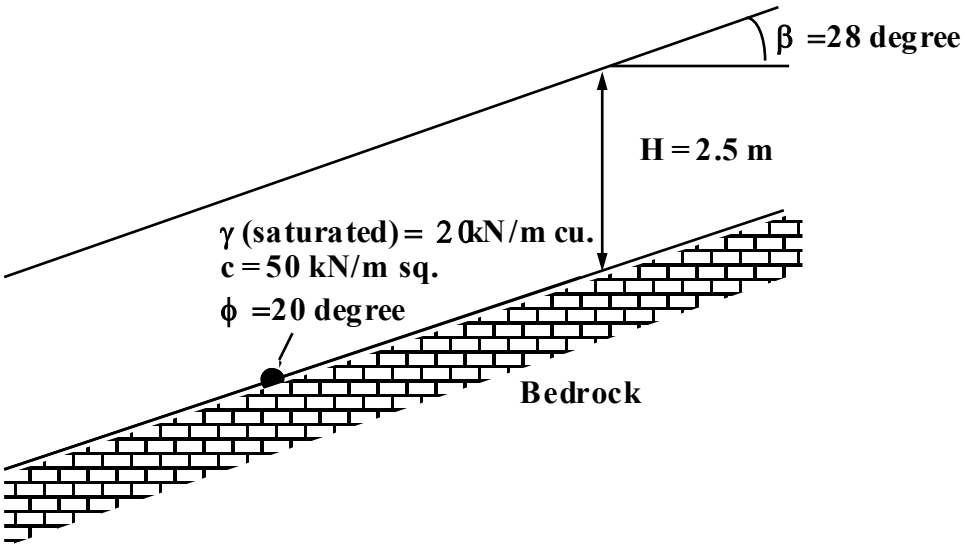

Figure 1

1. For the slope shown in Figure 1:

a. Determine the water pressure at the base of the slope i.e., at the surface of the bedrock.

(5 m)

b. Determine the effective stress at the base of the slope i.e., at the surface of the bedrock, in the direction normal to the surface of the bedrock.

(5 m)

c. Derive a general equation for determining Factor of Safety of the slope.

(5 m)

d. Based on the equation derived in Question 1.c above, and parameter values shown in Figure 1, determine the Factor of Safety of the slope.

(5 m)

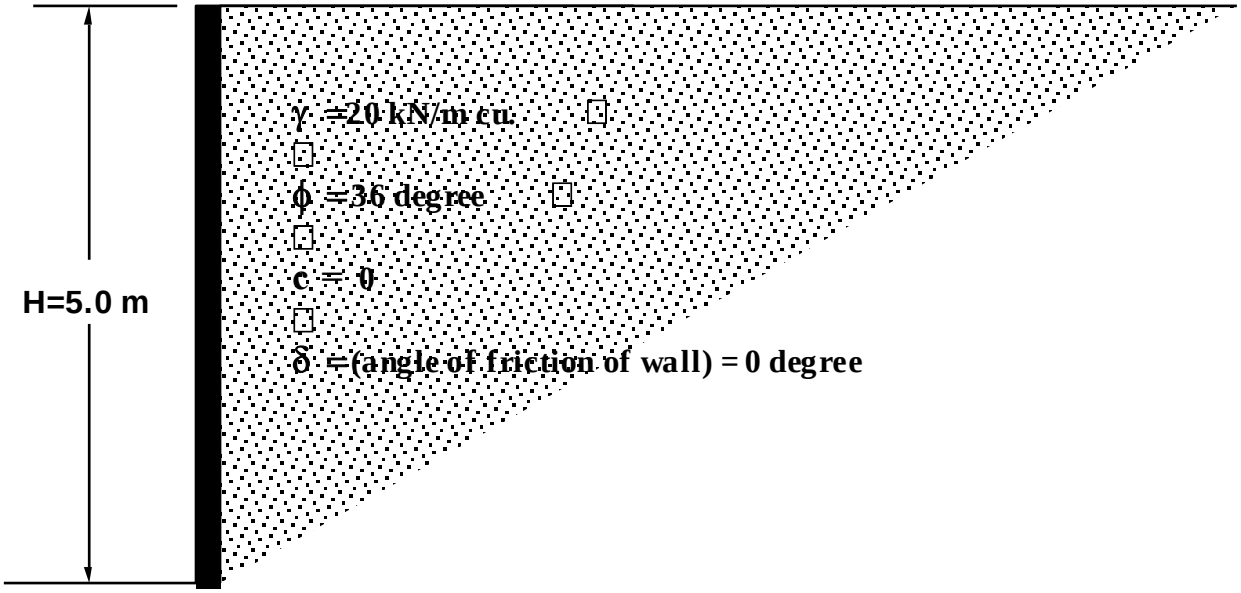

Figure 2

2. For the retaining wall supporting coarse grained soil shown in Figure 2:

a. Assuming an active condition, determine the magnitude of the resultant force per unit length of the retaining wall for Rankine's state.

(5 m)

b. Assuming a passive condition, determine the magnitude of the resultant force per unit length of the retaining wall for Rankine's state.

(5 m)

c. Assuming the wall is restrained from yielding, determine the magnitude of the resultant force per unit length of the retaining wall.

(5 m)

d. Assuming the wall is restrained from yielding, and the retained soil is totally submerged, determine the magnitude of the resultant force per unit length of the retaining wall.

($\gamma_{saturated}$ = 24 kN/m padu)

(5 m)

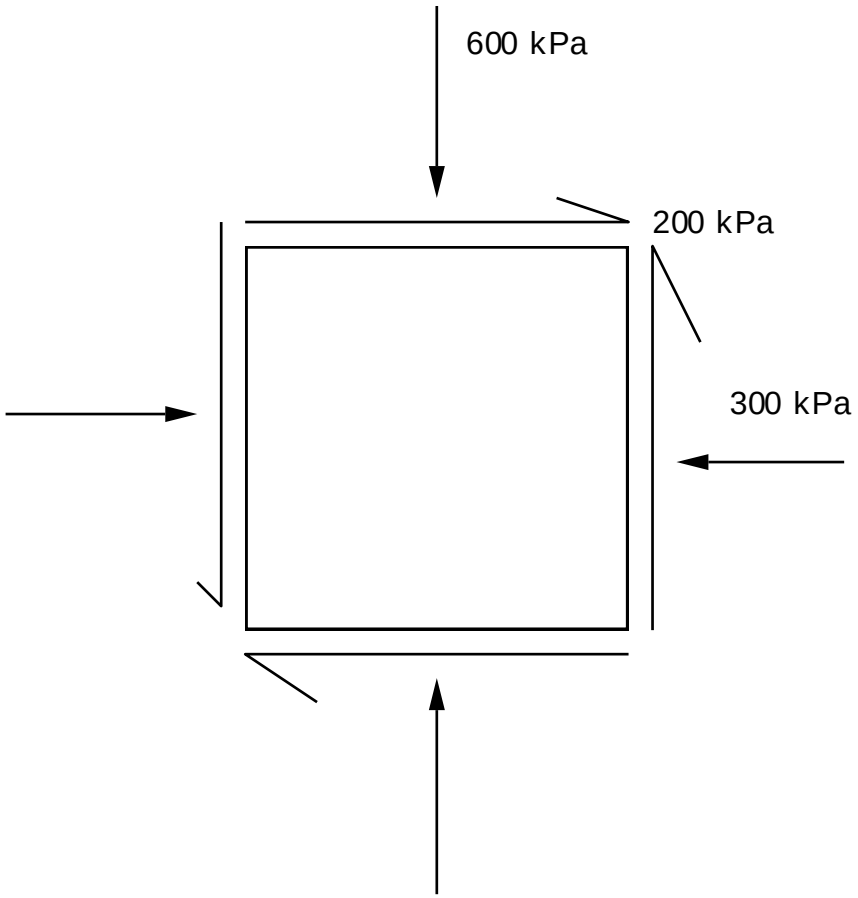

Figure 3

3a. Figure 3 shows a unit on a failing body with stresses indicated. Using Mohr Circle analysis, if c = o kPa, determine the shear strength equation of the material involved.

(10 m)

3b. Table 1 consists of data of a triaxial test on samples of a soil. Using Mohr Circle analysis, approximate the soils shear strength along a plane which normal stress is 2500 kPa.

(10 m)

Table 1

Test	Confining Pressure, kPa	Total Axial Stress (Stress by the shaft + Confining Stress), kPa
1	200	1200
2	350	1350
3	500	1500
4	900	1900