DEPARTMENT OF CIVIL ENGINEERING
19CEB301 – SOIL MECHANICS
UNIT V – SLOPE STABILITY

Student Worksheet – 2
Infinite Slope

A long Natural slope cohesion less (sandy soil) is inclined at 12 ° to the horizontal. Determine the factor of safety of the slope. If the slope is completely submerged, what will be the change in the factor of safety? $here\ \ \phi = 30^0\ \ ,\ \ \gamma_{rat}\ = 19.5\ KN/m^3$

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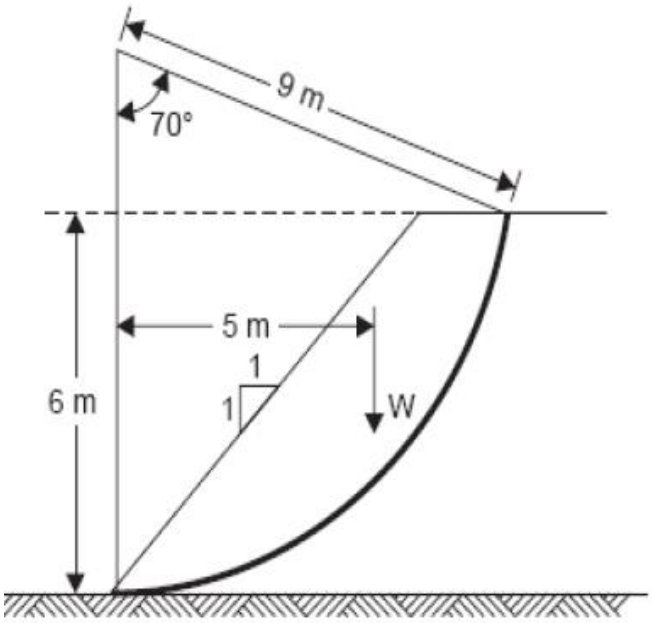
Student Worksheet – 3
Fellenius Method

1. **An embankment shown in Fig made of cohesive soi $\phi = 0$ and $c = 30$ kN/m². The unit weight of soil is 18 kN/m³. Determine the factor of safety against sliding along the trial circle. The weight of the sliding mass is 360 kN acting at an eccentricity of 5.0 m from the centre of rotation. Assume that no tension crack develops. The central angle is 70^0**



2. **An embankment 10 m high is inclined at 35 to the horizontal. A stability analysis by the method of slices gave the following forces: Σ*N* = 900kN, Σ*T* = 420kN, Σ*U* = 200kN. If the length of the failure arc is 23.0 m, find the factor of safety. The soil has c = 20kN /m² and Φ = 15°.**

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Student's Worksheet – 4

Taylor's Stability Number

A new canal is excavated to a depth of 5 m below ground level through a soil having the following characteristics: C = 14 kN/m^2; Φ = 15°; e = 0.8 and G = 2.70. The slope of banks is 1 in 1. Calculate the factor of safety with respect to cohesion when the canal runs full. If it is suddenly and completely emptied, what will be the factor of safety?

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Student's Worksheet – 5

Methods of Improving Slope Stability

Analyse the Given Case Study and Give your Inference.

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Student's Worksheet – 6

Methods of Improving Slope Stability

Compare the Various Methods of Improving Slope Stability

Method	Drainage	Earthwork	Structural Improvements