NATIONAL INSTITUTE OF TECHNOLOGY HAMIRPUR (H.P.)
DEPARTMENT OF CIVIL ENGINEERING
CED – 313 FOUNDATION ENGINEERING

ASSIGNMENT 1

Q 1. (a) Describe Swedish circle method for determining the stability of a finite slope in (i) cohesive soil and (ii) c – ϕ soil. How will you locate the centre of the critical slip circle?

(b) A canal 3 m deep runs through a soil having the following properties: c=10 kN/m^2, ϕ_u = 15°, e = 0.8 and G = 2.70. The angle of slope of banks is 45°. Calculate the factor of safety with respect to cohesion when canal is full up to top of the banks. What will be the factor of safety in case of sudden drawdown?

Q 2. Discuss the friction circle method of stability of a finite slope. Explain Taylor's stability number.

Q 3. Discuss Bishop's method of analysis of stability of slopes. Explain in detail how it has been modified by Morgenstern?

Q 4. Discuss the stability of an earth dam:
(i) D/s slope during steady seepage
(ii) U/s slope during sudden drawdown.

Q 5. A 8 m deep cut has side slopes of 1.5 H: 1 V. The soil mass was tested and found to have the following properties: c = 24.5 kN/m^3, ϕ = 14°. Determine the factor of safety with respect to cohesion against failure of the slope when (i) water level in the cut rises up to the full height (ii) the water level goes down suddenly. Given that G = 2.7 and i = 36°.

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21-40	15.9.2020
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