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T.Y. Civil (Semester – VI) (CBCS)
Examination, December– 2025
Geotechnical Engineering - II
Sub. Code: 81518/ 81795 / 66874

Day and Date : Saturday, 13/12/2025

Total Marks :70

Time : 10.30 a. m. to 1.00 p.m.

- Instructions :**
- 1. All questions are compulsory.**
 - 2. Assume suitable data wherever necessary and mention it boldly.**
 - 3. Draw neat labelled diagram wherever necessary.**
 - 4. Use of scientific calculator is allowed.**

Q.1) Attempt following questions:

- A) Define Percussion Drilling **(05)**
- B) Explain : **(06)**
- a) Core boxes
 - b) Core barrel

Q.2) Attempt following questions:

- A) Describe Terzaghi's bearing capacity theory. **(06)**

OR

Explain Menard's pressure meter test

- B) Determine the ultimate bearing capacity of strip footing, **(06)**

1.20 mt wide and having the depth of foundation 1.0 mt. Use Terzaghi's theory.

Take: $\phi = 35^\circ$; $[\gamma = 18\text{kN/m}^3 \text{ N} = 20]$; $c' = 15\text{kN/m}^3$,

$N_c = 57.8$; $N_q = 41.4$; $N_\gamma = 42.4$.

Q.3) Attempt following questions:

- A) Describe types of shallow foundations and their criteria of selection. (06)

OR

Explain Angular distortion

- B) A rectangular footing $2\text{ m} \times 3\text{ m}$ carries a column load of 600 kN at a depth of 1 m . The footing rests on $C-\phi$ soil strata 6 m thick, having Poisson's ratio of 0.25 and Young's Modulus of Elasticity as 20000 kN/m^2 . Calculate immediate settlement of footing. (06)

Q.4) Attempt following questions:

- A) Describe negative skin friction with neat sketch (06)

OR

Explain classification of piles.

- B) A square concrete pile (30 cm side) and 10 m long is driven into coarse sand [$\gamma = 18.5\text{ kN/m}^3$, $N=20$]. Determine the allowable load factor of safety = 3.0 . (06)

Q.5) Answer the following

- A) Describe coffer dam with its types. (05)
- B) Explain sheet piling and material used for sheet piling (06)

Q.6) Attempt the following

- A) Define Swedish circle method in detail (06)
- B) A long natural slope in an over consolidated clay [$c' = 10\text{ kN/m}^2$, $\phi = 25^\circ$, $\gamma_{\text{sat}} = 20\text{ kN/m}^2$] is inclined at 10° to horizontal. The water table is at surface and seepage is parallel to slope. If a plane slip had developed at a depth 5 m below the surface, determine its Factor of safety. [$\gamma_w = 10\text{ kN/m}^3$] (06)