d) Describe the net earth pressure distribution of cantilever sheet pile wall embedded in sandy soil.

OR

Describe the principles of free vibration without damping using simple harmonic motion with graphical representation.

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**Roll No.....**

# CE-801

## B.E. VIII Semester

Examination, December 2016

## Geo. Technical Engineering - II

***Time : Three Hours***

***Maximum Marks : 70***

***Note:*** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is difference between shallow and deep foundation?

b) Draw the configuration of

i) Mat foundation

ii) Strap foundation

c) Discuss the steps for the selection of the type of foundation.

d) A footing of size 3.0m×3.0m carries a load (including its self weight) of 22T. The soil has a $\pi = 32°$ and effective unit weight = 1.8 T/m$^3$. What will be the depth of foundation if factor of safety 2.5? Use Terzaghi's theory. (Given: $N_q = 12$, $N_\gamma = 10$).

OR

A strip footing of width 4.0m is founded at a depth of 3.0m below the ground surface in a c-π soil having $c = 2.0\ T/m^2$, $\pi = 30°$ and a saturated unit weight of soil $1.7\ T/m^3$. The water table is at the ground level. Determine the safe bearing capacity of the soil by Meyerhof's method. ($N_c = 30.1$, $N_q = 18.4$ and $N_\gamma = 15.7$). Assume all constants = 1.0.

2. a) Discuss the load transfer mechanism of single vertical pile.

   b) Estimate point load capacity of single vertical pile. (Given : dia. of pile = 40mm, undrained shear strength = $2.0\ T/m^2$).

   c) How to estimate friction resistance capacity using α-method.

   d) Determine the friction load capacity of a driven circular pipe pile. Given : dia. of pile = 45cm, Length of pile = 22m, undrained shear strength = $2.0\ T/m^2$, degree of internal friction = 0° and effective unit weight = $1.8\ T/m^3$, $\lambda = 0.17$.

OR

A square pile group of nine piles three in each row passes through filled up soil of thickness 3.0m. The diameter of pile is 30cm, spacing of pile is 90cm, undrained shear strength = $2.0\ T/m^2$, and effective unit weight = $1.8\ T/m^3$. Calculate negative skin friction load on the pile group.

3. a) Differentiate between light weight and heavy weight proctor test.

   b) List the various equipments used for field compaction.

   c) Why and which situations soil stabilization techniques are required in the field.







   d) Describe the electrical stabilization technique for improvement of soil in detail.

OR

List the various Geo-synthetic materials used for improvement of soil. Is the Geo-grid is suitable for soil improvement, give comments.

4. a) List the various equipments used in boring of hole in the ground.

   b) In which areas soil exploration involves?

   c) List the various in-situ filed tests involves in soil exploration program.

   d) Define terms

      i) Area ratio

      ii) Degree of disturbance

      iii) Rock quality designation

OR

Discuss the characteristics of expansive soil. Discuss the different treatment techniques for expansive soil.

5. a) Differentiate between rigid and flexible retaining structure.

   b) Differentiate between sheet pile wall and anchored bulk heads.

   c) Draw the various shapes of cofferdam.