

b) Write short notes on the following :- 10

i) Standard penetration test ii) Group action in Pileo

OR

10. Write short notes on the following : 5x4=20

i) Group action in piles

ii) Field compaction control

iii) Classification of sheet piles

iv) CNS layer

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**CE-801**

**B.E. VIII Semester**

Examination June, 2013

**Geo. Technical Engineering-II**

*Time : Three Hours*

*Maximum Marks : 100*

*Minimum Pass Marks :35*

*Note:* Attempt any five questions. One question should be attempted from each unit. All questions carry equal marks.

### Unit - I

1. a) Derive an expression for getting the minimum depth of foundation by Rankine's analysis. 10
- b) Critically explain regarding 'General shear failure' and 'Local shear failure' phenomenon including the parameters governing them. 10

OR

2. a) A strip footing 1 m wide at its base is located at a depth of 0.8 M below the G. L. The properties of the foundation soil are :

$$V = 18 \text{ KN/M}^2, C = 30 \text{ KN/M}^2 \text{ and } \phi = 20^\circ$$

Determine the safe bearing capacity, using a factor of safety = 3.0. Use Terzaghi's analysis. Assume the soil fails by local shear. The bearing capacity factors are :

$$N_c^{\phi} = 11.8$$

$$N_q^{\phi} = 3.9$$

$$N_{\gamma}^{\phi} = 1.7$$

10

- b) A strip footing '2M' wide carries a load intensity of 400 KN/M<sup>2</sup> at a depth of 1.2 M in sand. The saturated unit weight of sand = 19.5 KN/M<sup>3</sup> and unit wt above W.T = 16.8 KN/M<sup>3</sup>. The  $c = 0$  and  $\phi = 35^\circ$ . Find out the factor of safety with respect to shear failure for the following cases of location of water table (W. T) :-
- W. T is located at a depth of 5 M below G. L.
  - W. T at G.L. itself
  - W. T at 0.5 M below G.L. 10

### Unit - II

- Critically explain the Hiley's formula. Also write down the general comments about the use of Dynamic formula in core of pile foundations. 10
  - Write a brief note on :  
'Negative skin friction'. 5
    - Write a brief note on :  
'Tilts and shifts' in well foundations. 5

OR

- A R. C. C pile weighing 40 KN(inclusive of helmet and dolly) is driven by a drop hammer weighing 50 KN and having an effective fall of 0.8 meter. The average set per blow is 1.4 cm. The total temporary elastic compression is 1.8cm. Assuming the coefficient of restitution as 0.25 and factor of safety of 2.0 determine the ultimate bearing capacity and the allowable load for the pile. 10
  - Write a brief note on 'Under Reamed pile foundations'. 5
    - Draw a typical section of a well foundation showing the names of the various component parts on it. 5

### Unit - III

- What do you mean by compaction? Explain in brief about 'Proctor compaction test' for finding out OMC and MDD in the laboratory. 10
    - What are the various factors affecting compaction? Explain in brief. 5
      - What do you mean by soil stabilization? Explain in brief about cement stabilization 5
- OR
- Explain the difference between 'Standard proctor test' and 'Modified proctor test'. 5
      - What do you mean by 'Placement water content'. Explain in brief. 5
    - Explain the following :- 10
      - Mechanical stabilization
      - Lime Stabilization

### Unit - IV

- What are the various boring methods in soil exploration. Explain the 'Rotary Boring' method. 10
    - Name the various types of soil samples. Explain any one of them. 10
- OR
- Write a short note on 'Disturbed and undisturbed samples and samplers for collecting them. 10
    - Write down the characteristics of expansive and collapsible soils. 10

### Unit - V

- What is coffer-dams? Name the various types of coffer dams. 10