Code No: 117AB **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2016
ADVANCED FOUNDATION ENGINEERING
(Civil Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Write short notes on bearing capacity of foundations subjected to eccentric loads. [2]
b) Write briefly about foundations on layered soils. [3]
c) Write about efficiency of pile groups. [2]
d) Write briefly about negative skin friction in pile foundations. [3]
e) Define active earth pressure and passive earth pressure. [2]
f) Write about assumptions in Coulomb's theory of earth pressure. [3]
g) Write about applications of braced cuts. [2]
h) Write about earth pressure from strut loads. [3]
i) Define swell pressure and swelling potential. [2]
j) Discuss about remedial measures to reduce swelling for expansive soils. [3]

PART-B

(50 Marks)

2. Determine the width of the square footing if it has to carry a gross allowable load of 250kN. The depth of the footing is 1.5m in a medium dense sand with $\emptyset=32^0$, $\gamma=18.5kN/m^3$ and the load is inclined at an angle of 25^0 to the vertical. Use Meyerhoff's theory. Take factor of safety of 3.0, $N_c=35.49$, $N_q=23.18$ and $N_\gamma=30.22$. [10]

OR

3. Explain in detail about Janbu method of calculating elastic settlement of foundation in clays. [10]

4. A group of nine piles are arranged in a square pattern into a clay stratum with 30cm side and 10m long. The unconfined compressive strength of the clay soil is $90kN/m^2$, Take $\alpha = 0.8$. Calculate the spacing for 100% efficiency of the pile group. Neglect bearing of the piles. [10]

OR

5. Explain about Reese and Matlock Approach for laterally loaded piles with a neat diagram. [10]

6. Explain about stability of the cantilever retaining wall against sliding and overturning with a neat sketch. [10]

OR

7. A retaining wall is of 6m height and retains a cohesionless backfill with $\emptyset=30^0$, $\gamma=18kN/m^3$. Using Rankine's theory, find the point of application of the resultant active thrust when the top of the backfill carrying a uniformly distributed load of $4kN/m^3$ and water table is at 3m depth from the surface. Take saturated unit weight as $19.7kN/m^3$. [10]

8. Explain about depth of embedment of cantilever walls in clays with a neat sketch. [10]

OR

9. Explain about types of anchorage and location of anchorage with a neat sketch. [10]

10. Explain about granular pile anchor method in expansive soils with a neat sketch. [10]

OR

11. Explain about chemical stabilization of expansive soils. [10]

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