Total No. of Questions : 5 Total No. of Printed Pages : 4

EK-346

B.E. (VIIIth Sem.) (CGPA) Civil Engg. Exam.-2016

GEOTECHNICAL ENGINEERING-II

Paper - CE-801

Time Allowed : Three Hours
Maximum Marks : 60

Note : Attempt all questions.
All question carry equal marks.
Internal choice given.

Q.I Explain what are the types of bearing capacity are considered on shallow foundation ? 6

(a) Explain types of shear failure on footing with neat sketch. 6

(b) Derive how the water table effect on bearing capacity when it is located above the base of footing. 6

or

(a) Discuss Meyerhof's bearing capacity theory. How does it differ from Terzaghi's theory ?

(b) 2M wide strip footing is placed in 1m below the ground level of a clay having following properties - $C = 80\ KN/m^2$ $\phi=0$. When undrained $C'=0$ $\phi'=30^0$ when undrained unit water of soil above the water table is 16 KN/m^3 and unit weight below water table = 20 KN/m^3 of water table is a foundation level. Calculate safe bearing capacity of footing level using factor of safety - 2.5 under long term conditions using Terzaglu's theory. Bearing capacity factors are given in the table—

ϕ	Nc	Nq	N_4
0	5.7	1	0
30^0	37.2	22.5	19.7

Q.II (a) How do you classify pile foundation on the basis of—

(i) Material

(ii) Influence of pile installation

(iii) Load transfer

(b) How do you estimate the bearing capacity of group of piles in sand and clay ?

or

(a) 200 mm diameter, 8 m long piles around a foundations for a column in a uniform deposit of medium clay (qu = 100 KN/m²) the spacing between the piles in 500 mm. There are 9 piles in the ground arranged in square pattern. Calculate the ultimate pile load capacity of the group. Assume Adhesion factor = 0.9.

(b) Explain penetration test for the estimation of load carrying capacity of piles ?

Q.III (a) Explain the compection effect on the properties of soil ?

(b) Describe standard proctor test and the modified proctor test ?

or

(a) What are the various equipment used for compection of soil and their suitability ?

(b) Explain the stablization of soil by geotextile and fabrices ?

Q.IV (a) Describe the parameters of expansive soil ?

(b) How would you design a foundation on expensive soil not susceptible to welting ?

or

(a) Explain modification of expensive soil.

(b) Write note on —

(i) CNS layer

(ii) Swelling potential

Q.V (a) What is machine foundation ? Explain their types and suitability ?

(b) What are classification of sheet piles / bulk head ?

or

(a) Explain the design of block foundation for impact type of machine.

(b) Write short notes on the following—

(a) Coffer dam

(b) Archored sheet pile

(c) Mass spring analogy

(d) Cantilever sheet piles

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