Reg. No. : | | | | | | | | | | |

Question Paper Code: 31152

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fifth Semester

Civil Engineering

01UCE502 – FOUNDATION ENGINEERING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is significant depth of exploration?
2. What is bore log report? and Draw a sample bore log report?
3. What are the disadvantages of plate load test?
4. What do you mean by differential settlement and how to minimize it?
5. State the situations under which the raft foundation is adopted.
6. Define floating foundation.
7. What are the differences between working pile and test pile?
8. List out the types of piles based on materials and based on erection.
9. Differentiate between active earth pressure and passive earth pressure.
10. What is unsupported vertical height in cohesive soil?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain wash boring method with neat sketch. Also explain how depth of boring and spacing of borehole is decided. (16)

Or

(b) Explain about standard penetration test in detail and also the corrections applied. (16)

12. (a) Determine the depth at which a circular footing of 2 *m* diameter be founded to provide a factor of safety of 3. The footing has to carry a safe load of 1600 *kN*. The foundation soil has $C = 10\ kN/m^2$; $\varphi = 30°$ and unit weight $\gamma = 18\ kN/m^3$. Use Terzaghi's analysis. Take $N_c = 28$; $N_q = 12$; $N_\gamma = 10$. (16)

Or

(b) Explain the factors affecting bearing capacity of soils . (16)

13. (a) Explain the factors governing the selection of the types of foundations. (16)

Or

(b) Proportionate a trapezoidal combined footing for the data given below:

Load on column *A = 850kN*

Load on column *B = 1500kN*

C/C of columns = *5.50m*

Allowable bearing capacity = $225kN/m^2$. Both the columns lie on property line. (16)

14. (a) A 200 *mm* diameter, 8 *m* long piles are used as foundation for column in a uniform deposit of medium clay ($q_u = 100\ kN/m^2$). The spacing between the piles is 500 *mm*. There are 9 piles in the ground arranged in a square pattern. Calculate the ultimate pile load capacity of the group. Assume adhesion factor = 0.9. (16)

Or

(b) Describe in detail about the pile load tests with neat sketch, also discuss about cyclic load test and draw load penetration curve. (16)

15. (a) Derive the expression for active earth pressure for cohesive backfill. Also draw the pressure distribution diagram and explain the salient features. (16)

Or

(b) A retaining wall, 4 *m* high supports a backfill ($c = 20\ kN/m^2$; $\varphi = 300$; $\gamma = 20\ kN/m^3$) with horizontal top , flush with the top of the wall. The backfill carries a surcharge of 20 kN/m^2. If the wall is pushed towards the backfill, compute the total passive pressure on the wall, and its point of application. (16)

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