Reg. No. :

Question Paper Code : 27122

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Fifth Semester

Civil Engineering

CE 6502 — FOUNDATION ENGINEERING

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is mean dilatancy?
2. Write the uses of bore hole report.
3. What is the allowable maximum settlement of commercial, Industrial and ware house building?
4. What is the ultimate bearing capacity of a circular footing of 1.5 m diameter resting on the surface of a saturated clay of unconfined compressive strength of 100 kN/m^2 Take $N_c = 5.7$, $N_q = 1$, $N_\gamma = 0$, $\sigma = \gamma D = 0$.
5. List out the types of footing.
6. Write the components of total settlement?
7. What are the methods available to determine Load caring capacity of pile?
8. For a pile designed for an allowable load of 400 kN driven by a Steam hammer (Single acting) with a energy of 221 t-cm, what is the approximate terminal set of pile?
9. Define surcharge angle.
10. What force is acting on retaining wall?

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about the geophysical method of site exploration with neat sketch.

Or

(b) Write short notes on :

(i) Selection of Foundation based on soil condition (8)

(ii) Disturbed and Undisturbed soil sample (4)

(iii) Uses of soil Exploration. (4)

12. (a) A strip footing 2 m wide carries a load intensity of 560 kN/m² at a depth of 1.2 m in sand. The saturated unit weight of sand is 18 kN/m³ and unit weight have a water table is 16.8 kN/m³.

The shear strength parameters are C = 0 and $\phi = 35°$ determine the factor safety with respect to shear failure for the following cases of location of water table.

(i) Water table is 3 m below ground level

(ii) Water table is at G.L itself level

(iii) Water table is 4 m below ground level

(iv) Water table is 0.5 m below level. (16)

Or

(b) Explain in detail about IS code method for computing the bearing capacity of soil with various types of failure and shape factor.

13. (a) Discuss in detail about the design producer for Rectangular combine footing and Trapezoidal combine footing with suitable sketch.

Or

(b) Write brief notes on :

(i) Mat Foundation (6)

(ii) Floating Foundation (6)

(iii) Seismic force consideration in footing design. (4)

14. (a) Explain in details about the various types of pile foundation with neat sketch and write their functions.

Or

(b) Write short notes on :

(i) Negative skin friction (5)

(ii) Under reared piles (4)

(iii) Piles Cap (2)

(iv) Settlement of pile group in clay. (5)

15. (a) Explain in details about the CUL MANN's graphical method for finding active pressure with a neat sketch.

Or

(b) Discuss in detail about the Rankines theory for the following cases of cohesions soil and cohesive soil.

(i) Submerged back fill (8)

(ii) Back fill with sloping surface. (8)