

G 479

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Sixth Semester**

Branch : Civil Engineering

**GEOTECHNICAL ENGINEERING—II (C)**

(Old Scheme—Supplementary/Mercy Chance)

[Prior to 2010 admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.  
Each question carries 4 marks.*



1. What is pressure bulb ?
2. What is soil profile ?
3. Define earth pressure at rest. How it is calculated ?
4. Sketch a steel sheet pile.
5. What are sand drains ?
6. What is meant by allowable soil pressure ?
7. Explain the situation which requires to adopt trapezoidal combined footing.
8. List various types of deep foundations.
9. Sketch the section of open well foundation.
10. Write Engineering news formula. Explain the terms involved.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.  
Each question carries 12 marks.*

11. Write short notes on :

- (a) Inside clearance.
- (c) Rotary drilling.

- (b) Wire line sampling.
- (d) Resistivity sounding.

(4 × 3 = 12 marks)

Or

Turn over

12. Calculate the intensity of stress below the centre of the footing at a depth 15 m. due to a load of  $1.6 \text{ N/mm}^2$  over the footing area of  $3.2 \text{ m.} \times 6.5 \text{ m.}$  Use Bousinesq's point load equation.
13. (a) Give a critical comparison of Coulumb and Rankines earth pressure theories. (5 marks)  
 (b) What is the depth of an unsupported vertical cut that can be made in a saturated pure clay soil having  $r = 18 \text{ kN/m}^3$  and UCC strength  $80 \text{ kN/m}^2$

(7 marks)

Or

14. Explain in detail Culmann's graphical method for computation of earth pressure.
15. (a) Explain any *one* method for finding bearing capacity in the field. (5 marks)  
 (b) A 30 cm. plate settles by 18 mm. in a plate load test conducted on a granular soil when load intensity was  $200 \text{ kN/m}^2$  Estimate likely settlement in a footing 1.5 m. square, resting on the same soil, at same intensity of soil.

(7 marks)

Or

16. Derive Terzaghi's bearing capacity equation.
17. Design a combined trapezoidal footing for 2 columns 400 mm. square and 300 mm. square carrying 1100 kN, 600 kN spaced at 3.8 m c/c. There is boundary restriction on extending the footing on the heavier column side by a distance not more than 100 mm. Take allowable soil pressure as  $150 \text{ kN/m}^2$

(12 marks)

Or

18. Explain in detail step-by-step procedure for proportioning footings for equal settlement. (12 marks)
19. (a) What are various functions of piles ? Explain in brief. (6 marks)  
 (b) Briefly explain the procedure adopted in well sinking and bring out problems that are encountered in open sinking.

(6 marks)

Or

20. (a) Describe any *two* methods for finding pile load capacity. (6 marks)  
 (b) An open Caisson has inside diameter 4 m. and length 16 m. It is made of concrete and is intended to sink by its own weight. Determine steining thickness. (6 marks)

[5 × 12 = 60 marks]

