Roll No.



24380

B. Tech. (Civil) 6th Semester Examination – May, 2015 GEOTECHNOLOGY

Paper: CE-306-F

Time: Three Hours]

[Maximum Marks: 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note: Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*.
All questions carry equal marks. Assume missing data, if any, suitably.

1. Explain the following:

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- (a) Slope stability of earth dam
- (b) Taylor' stability number
- (c) Difference between coffer dam and bulkhead
- (d) Inter-lock stresses

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(e) Types of sheet piles and their uses

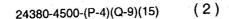
- (f) Method of grouting and its types
- (g) Resonant frequency and natural frequency
- (h) Necessity of soil stabilization



- **2.** (a) Describe the friction circle method for the stability analysis of slopes. Also explain the uses of stability chart.
 - (b) Describe the slope stability of earth dam during steady seepage.
- 3. (a) How a slope is analysed using Swedish circle method. Derive an expression for the factor of safety.
 - (b) Derive an expression for the factor of safety of an infinite slope in a cohesionless soil.10

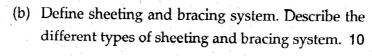
SECTION - B

- 4. (a) What is coffer dam? Name the different types of coffer dams and discuss their relative advantages and disadvantages.
 - (b) Compare the circular type and diaphragm type cellular coffer dam in detail.



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5. (a) Draw different types of apparent pressure diagrams used in braced cuts. What are the factors that affect the pressure distribution?



SECTION - C

- **6.** An anchored sheet pile retains soil to a height of 8 m. determine the depth of embedment for anchored sheet pile with fixed earth support method if $\Phi = 30^{\circ}$, $\gamma = 19$ kN/m³. Also determine the anchor force per unit length.
- 7. (a) Derive an expression for depth of embedment of cantilever sheet pile in cohesionless soil.10
 - (b) What are different types of retaining walls? What are the different methods for estimating lateral earth pressure acting on the walls?

SECTION - D

- 8. (a) What is meant by vibration isolation? Describe it in detail.
 - (b) Briefly explain Barken's method for determining natural frequency of a block foundation subjected to vertical oscillations.

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JobOfficer.com 9. (a)	What is mechanical stabilization? What ⁴ are the					
	factors that	affect	the	mechanical	stability	of
	mixed soil?					10

(b) Write short note on the following:

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(i) Reinforced earth

(ii) Bitumen stabilization

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