

9. Write short note on the following : 20

- (a) Grouting
- (b) Chemical stabilization
- (c) Dynamic compaction and consolidation
- (d) Stabilization using stone column

Roll No. ....

**24380**

**B. Tech 6th Semester (Civil)**

**Examination – May, 2016**

**GEOTECHNOLOGY**

**Paper : CE-306-F**

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the question, 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 : Question No. 1 is compulsory. Attempt one question from each Section. All questions carry equal marks Assume missing data, if any, suitably.*

1. Explain the following : 20

- (a) Different factor of safety used in stability of slopes
- (b) Taylor's stability number
- (c) Difference between coffer dam and bulkhead
- (d) Inter-lock stresses
- (e) Differentiate retaining wall and sheet pile wall

- (f) Purpose of sheet piles
- (g) Dynamic compaction and consolidation
- (h) Damped and undamped vibrations

### SECTION - A

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

### SECTION - B

4. (a) What is coffer dam ? Name the different types of coffer dams and discuss their relative advantages and disadvantages. 10
- (b) Describe the method for the design of circular cellular coffer dam on rock. 10

5. (a) Draw different types of apparent pressure diagrams used in braced cuts. What are the factors that affect the pressure distribution ? 10
- (b) What do you mean by braced cuts ? Describe with neat sketches the different components of braced cuts. 10

### SECTION - C

6. (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 ? 10
7. Determine the depth of embedment for the cantilever sheet pile in clay when  $\Phi = 30^\circ$ ,  $\gamma = 16 \text{ kN/m}^3$  above water table and  $\Phi = 30^\circ$ ,  $\gamma = 9 \text{ kN/m}^3$  below water table. The water table is at a height of 2.5 m above the dredge level on both sides. 20

### SECTION - D

8. (a) Define degree of a freedom of a block foundation. Describe the general criteria for design of machine foundation. 10
- (b) What do you mean by damping ? Describe forced vibrations with and without damping. 10