SECTION – D

8. (a) Explain the general criteria for the design of machine foundations. 10

(b) Define Barken's soil spring constant. Explain Barken's method for determining the natural frequency of a block foundation subjected to vertical oscillations. 10

9. Write a short note on the following :

(a) Bituminous stabilization

(b) Lime fly ash stabilization

(c) Dynamic compaction and consolidation

(d) Chemical stabilization

(e) Use of admixtures 10

Roll No. .....

24380

B. Tech 6th Semester (Civil) Examination – May, 2018

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 : (1) Question No. **1** is compulsory. Attempt ***one*** question from each Section.

(2) All questions carry equal marks.

(3) Assume missing data, if any, suitably.

1. Explain the following :

(a) Factor of safety used in stability of slopes

(b) Stability chart

(c) Differentiate between coffer dam and bulkhead

(d) Inter-lock stresses

(e) Limiting height of wall

(f) Purpose of sheet piles

(g) Mechanical stabilization

(h) Damped arid undamped vibrations

(i) Characteristics elements of a vibratory systems

(j) Reinforced earth and grouting 20

SECTION – A

2. (a) What are the causes of failure of earthen dams ? Explain briefly the criteria for safe design of earthen dams. 10

(b) Describe the preventive measures to control seepage through the embankment and through the foundation. 10

3. (a) What do you mean by slope stability ? Explain the slope stability of earthen dam during sudden draw down and at the end of construction. 10

(b) What is Taylor's stability number? Explain the procedure for stability analysis of slopes using friction circle method. 10

SECTION – B

4. (a) What are the different modes of failure of braced cuts ? Draw the apparent pressure distribution diagrams recommended by Terzaghi for cuts. 10

(b) Explain the different types of sheeting and bracing systems. Also describe the pressure distribution behind sheeting. 10

5. (a) What are the different types of cofferdams ? Explain stability analysis of cellular coffer dam.

(b) What is the difference between braced cuts and coffer dam ? Describe the design criteria of cellular coffer dam on rocks. 10

SECTION – C

6. (a) Derive an expression for depth of embedment of cantilever sheet pile in cohesionless soil. 10

(b) Find the depth of embedment to penetrate a cantilever sheet pile granular soil. The height of backfill is 5 m, with water table standing to mid height on either side. Take $\Upsilon = 20\ kN/m^3$ and $\Phi = 30°$; $\Upsilon' = 9\ kN/m^3$ and $\Phi = 30°$. Use approximate method. 10

7. (a) Briefly describe different types of sheet piles. 5

(b) An excavation 8 m deep is to be made in cohesion less soil having $\Upsilon = 19\ kN/m^3$, $\Phi = 30°$. The sides of the excavation are supported by anchored sheet piles with fixed end support. Determine the minimum depth of embedment for equilibrium. The anchors are at a depth of 1.5 m below the surface. 15