Roll No. 3322199

24380

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

Examination – May, 2014

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 : Answer ***five*** questions selecting ***one*** from each Section and Q. No.1 is ***compulsory.***

1. Answer any ***four*** questions of the following : 4 × 5

(i) What is factor of safety in stability of slopes ?

(ii) What is the critical height of an unsupported vertical cut in a cohesive soil ?

(iii) What are modes of failure of braced cut

(iv) What is the purposes of a sheet pile ?

(v) What is grouting ?

(vi) What is natural frequency of foundation soil system ?

SECTION – A

2. (a) A long natural slope of sandy soil ($\varphi = 25°$) is inclined at 10° to the horizontal. The water table is at the surface and the seepage is parallel to the slope. If the saturated unit weight of the soil is 19.5 kN/m^3, determine the factor of safety of the slope. 8

(b) Explain Fellinius method to locate centre of most critical slip circle. 12

3. Explain the stability of slopes of earth dam. 20

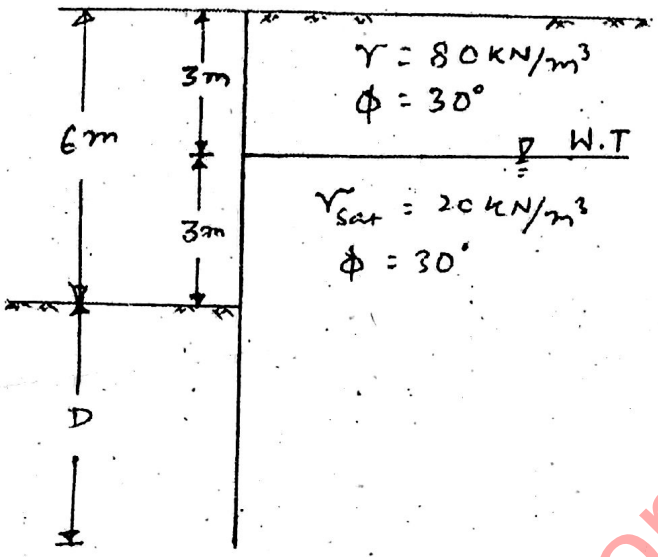
SECTION – B

4. Explain different methods of braced excavations for deep excavations with suitable sketches. 20

5. What is a cofferdam ? Explain different types of cofferdams with suitable sketches. 20

SECTION – C

6. Compute the embedment length D of the sheet pile wall shown in fig. 20



7. Explain the design of anchored bulkhead by fixed earth method and equivalent beam method. 20

SECTION – D

8. What is soil stabilization ? Explain different methods of soil stabilization. 20

9. (a) Derive an expression for natural frequency of the system in free vibrations. 10

(b) Explain Barken's method of determining natural frequency of a block foundation subjected to vertical oscillations. 10
