

Roll No.

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

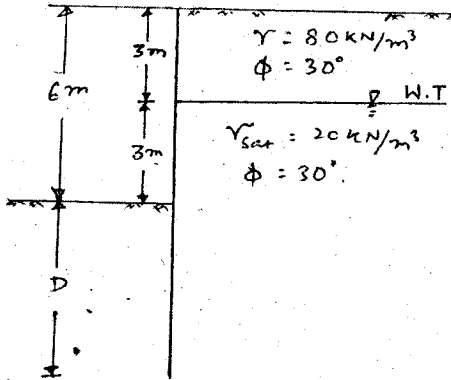
2. (a) A long natural slope of sandy soil ($\phi = 25^\circ$) is inclined at 10° to the horizontal. The water table is at the surface and the seepage is parallel to the slope. If the saturated unit weight of the soil is 19.5 kN/m^3 , determine the factor of safety of the slope. 8
- (b) Explain Fellenius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