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(2125)

15131

B. Tech 5th Semester Examination

Geotechnical Engineering (OS)

CE-5005

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt All questions.

1. (a) Describe dip and strike and their importance for foundation point of view.   (10)

    (b) What is significance of out crops & thickness of bed?   (10)

OR

    (a) What are the different properties of minerals? Describe their importance for formation of rock.   (10)

    (b) Describe importance of faults and folds.   (10)

2. (a) Derive the formula for depth of unsupported cut & describe the method of construction of braced cut. (10)

    (b) What do you mean by heave of the bottom of cut in soft clays? How the factor of safety against heave can be evaluated?   (10)
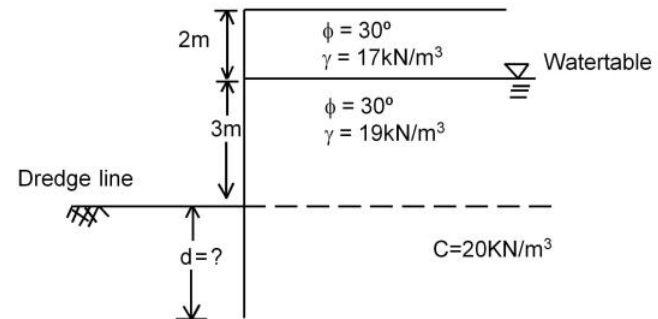
OR

    What are the different types of coffer dams? Describe the application of each with neat sketch.   (20)

3. Compute the depth of embedment for the sheet pile wall as shown in figure.   (20)

OR

    (a) In a sheet pile wall, supporting and penetrating clay, how the thrust is likely to alter when the clay swells or consolidate. What are the different types of failure of sheet pile?   (12)

    (b) What is Rowe's moment reduction method? Why it is applied? What are factors on which it depends?   (8)

4. (a) How does deep dynamic compaction densify granular soils? Describe the influence of water content in process.   (10)

    (b) Discuss the advantages of using flyash in cement grouting over naturally available soil.   (10)

OR

    (a) List the various design criteria for machine foundation. Design of machine foundation is iterative procedure. Explain.   (10)

(b)   In a block vibration test, resonant frequency of 15Hz was observed in vertical direction. The size of concrete test block was 1.50×0.75×0.75m (LBH). Assume the unit weight of concrete 24KN/m^3. Determine the coefficient of elastic uniform compression. If a machine weighing 100KN is to be supported on a rigid block of 6×6×2.5m. What is the natural frequency in vertical direction? (10)

5.   Write short notes on any five:

(a)   Types of machine foundation.

(b)   Idea about stratigraphy of India.

(c)   Application of weep-holes in retaining walls.

(d)   Methods used to control ground water in excavations of soft clays.

(e)   Fixed earth support method.

(f)   Liquifaction of sands during an earthquake.

(g)   Basic properties of Igneous, sedimentary & Metamorphic rocks.

(h)   Basic advantages of stone-column.

(i)   Barker's method for block foundation.

(j)   Blum's equivalent beam method.   (4×5=20)