Reg. No. : | | | | | | | | | | |

Question Paper Code: 31142

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fourth Semester

Civil Engineering

01UCE402 – SOIL MECHANICS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

(Nessam chart and data may be permitted)

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define degree of saturation and shrinkage ratio.
2. Write any two engineering classification system of soil.
3. What are the importances for the study of seepage of water?
4. Define coefficient of permeability..
5. What are the assumption are made in the Boussinque equations?
6. What are the factors which cause the compressibility of clays?
7. State different types of shear failure.
8. Why is there more likelihood of quick condition in sand than in clays?
9. What are the factors leading to the failure of slopes?
10. Define Stability number.

PART - B (5 x 16 = 80 Marks)

11. (a) Sandy soil in a borrow pit has unit weight of solids as 25.8 kN/m^3, water content equal to 11% and bulk unit weight equal to 16.4 kN/m^3. How many cubic meter of compacted fill could be constructed of 3500 m^3 of sand excavated from borrow pit, if required value of porosity in the compacted fill is 30%. Also calculate the change in degree of saturation. (16)

Or

(b) Explain the factors affecting compaction of soils. (16)

12. (a) Explain the method of determining the co-efficient of permeability using the falling head permeameter test with neat sketch. (16)

Or

(b) How will you find the permeability of clay in laboratory? Explain the procedure to determine the co-efficient of permeability. (16)

13. (a) Explain with a neat sketch the Terzhaghi's one dimensional consolidation theory. (16)

Or

(b) Drive an expression for the vertical stress at a point due to line load. Give example of a line load. (16)

14. (a) Briefly explain about direct shear test. State the advantages and limitations of this test. (16)

Or

(b) Explain the procedure involved in the tri-axial compression test with neat sketch. (16)

15. (a) Explain any one method in detail, by which the stability of a finite slope can be investigated. (16)

Or

(b) Explain the procedure involved in the friction circle method with neat sketch. (16)