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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech III Year I Semester Regular Examinations November/December 2018****GEOTECHNICAL ENGINEERING-I**

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 **a** Derive the relationship between e, s, w and G by using three phase diagram 7M
b Briefly explain about the hydrometer analysis with neat sketches. 5M

OR

- 2 **a** Briefly explain about the consistency limits. 7M
b A soil specimen has a water content of 10% and a wet unit weight of 20 kN/m^3 . If the specific gravity of solids is 2.70, determine the dry unit weight, void ratio, and the degree of saturation. 5M

UNIT-II

- 3 **a** Explain about the factors effecting permeability 7M
b Explain about the Darcy's law and write the limitations. 5M

OR

- 4 **a** Determine the effective stresses under hydrostatic conditions. 7M
b A sand deposit is 10m thick and overlies a bed of soft clay. The ground water table is 3m below the ground surface. If the sand above the ground water table has a degree of saturation of 45%, plot the diagrams showing the variation of the total stresses, pore water pressure and the effective stress 5M

UNIT-III

- 5 **a** Determine the vertical stress at a depth of 'Z' from the ground surface by using WESTERGAAD'S theory. 7M
b Explain about the compaction control in the field. 5M

OR

- 6 **a** Explain about the New marks influence chart with neat sketches. 7M
b Explain about the factors affecting compaction. 5M

UNIT-IV

- 7 **a** What are the different types of consolidation and explain primary consolidation with the help of spring analogy. 7M
b Explain about the normal, under and over consolidated clays. 5M

OR

- 8 **a** Explain about the consolidation characteristics with the help of oedometer. 7M
b Explain about the reloading curve with the help of graph. 5M

UNIT-V

- 9 **a** Determine the shear strength of soil by using tri-axial shear test. 7M
b Explain about the shear strength of sand. 5M

OR

- 10 **a** Explain about the strength envelopes with neat sketches. 7M
b Define shear strength of soil and write the importance. 5M

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