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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations December-2021

SOIL MECHANICS

(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a Describe in detail about wet and dry sieve analysis of soils. L2 6M
 b What was the relative density? Write the importance of this term? L1 6M

OR

- 2 a Define Flow index , Toughness index and Liquidity index L1 6M
 b Explain Determination of specific gravity in the laboratory. L2 6M

UNIT-II

- 3 Explain the constant head permeability test with the help of neat sketch? L2 12M

OR

- 4 A falling head permeability test was performed on a sample of clean, uniform sand. L3 12M
 One minute was required for the initial head of 100cm to fall to 50cm in the stand pipe of cross-sectional area 1.50cm^2 . If the sample was 4cm in diameter and 30cm long, calculate the coefficient of permeability of sand.

UNIT-III

- 5 Derive an expression for vertical stress at a point due to a point load, using Boussinesq's theory. L2 12M

OR

- 6 A rectangular foundation 4m by 5m carries a u.d.l of 200kN/m^2 . Determine the vertical stress at a point p located and at a depth of 2.5 m. L3 12M

UNIT-IV

- 7 Discuss the spring analogy for primary consolidation. What are its uses? L2 12M

OR

- 8 Discuss the Terzaghi's theory of consolidation, state the various assumptions and their validity. L2 12M

UNIT-V

- 9 Write short notes on L1 12M
 i) Mohr's circle ii) Explain the Mohr's coulomb strength envelope.

OR

- 10 A vane, 10.8 cm long, 7.2 cm in diameter, was pressed into soft clay at the bottom of a bore hole. Torque was applied and the value at failure was 45 N-M. Find the shear strength of the clay on a horizontal plane. L3 12M

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