KERALA AGRICULTURAL UNIVERSITY

B.Tech.(Agri. Engg) 2016 Admission

IV Semester Final Examination- July 2018

Lwre.2205   Soil Mechanics (2+1)

Marks: 50

Time: 2 hours

1   **Fill in the blanks.**   (10x1=10)

   1   Density index is only determined for ……………….soil.

   2   In calcium carbide method of water content determination ……………is produced

   3   Darcy's law is valid for saturated soils and ……………….

   4   Opposite process of consolidation is called ……………….

   5   The theoretical maximum compaction for any given water content corresponds to ………..
air void conditions.

     Define

   6   Voids ratio

   7   Consolidation

   8   Maximum Hygroscopic Capacity

   9   Compaction

  10   Soil Mechanics (Terzaghi)

II   **Write short notes on ANY FIVE**   (5x2=10)

   1   Derive relationship between e, S_r and n_a

   2   Define Soil water and types of soil water

   3   Derive Darcy's law

   4   The factors affecting compaction

   5   What is soil ? Enlist the field of application of soil mechanics.

   6   A soil sample has porosity of 40 per cent. The specific gravity of solids 2.70.
Calculate (i) voids ratio, (ii) dry density

   7   What are the important points for Mohr's strength theory?

III	**Answer any FIVE of the following.**	(5x4=20)

1 Derive the relationship between γ_d, γ and **w**

2 A course grained soil has a voids ratio of 0.78 and specific gravity of 2.67. Calculate the critical gradient at which quick sand condition will occur.

3 Give limitations of sedimentation analysis.

4 Limits of consistency of soil

5 Assumptions of Rankine's theory of active earth pressure.

6 Textural classification of soils.

7 Components of shearing resistance of soils.

IV	**Answer any ONE of the following**	(1x10=10)

1 The process of consolidation with spring analogy.

2 Explain the terms discharge velocity and seepage velocity of water through soil and derive the relationship between them.

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