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ET-501(A)

B.Tech. Civil (Construction Management) / B.Tech. Civil (Water Resources Engineering)

00365

Term-End Examination

June, 2014

ET-501(A) : SOIL MECHANICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Assume any missing data suitably. Use of scientific calculator is permitted.*

1. (a) Write a note on consistency limits. Describe briefly the procedure for determining liquid limit for a soil. 7

(b) What are the soil structures in cohesionless soils ? Describe briefly with the help of neat sketches. 7

2. (a) Explain Darcy's law. 7

(b) What are the factors influencing permeability of soils ? Discuss briefly. 7

3. (a) What are the effects of compaction on various soil properties ? Discuss in connection with a highway project. 7

(b) What are the methods of compaction of soils in the field ? Enlist them and describe any one in brief. 7

4. (a) Discuss briefly the procedure of drawing a Flownet for a concrete dam on a permeable soil. 7

(b) Explain Quicksand condition. 7

5. (a) What do you understand by influence charts for vertical stresses ? 7

(b) Explain Boussinesq's theory in brief. 7

6. (a) Explain the mechanical analogy for consolidation of soil. 7

(b) Explain square root of time fitting method with the help of a neat sketch. 7

7. (a) Write Mohr-Coulomb's theory of failure. 7

(b) What are the various factors affecting shear strength of soils ? Discuss briefly. 7

8. A soil has the following parameters :

$w = 25\%$, $G = 2{\cdot}7$ and $e = 0{\cdot}7$

where the terms have their usual meanings.

Calculate

(a) The degree of saturation for the soil. 7

(b) Critical hydraulic gradient. 7
