Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MBCT/MVCT/MVCP-103

M.E./M.Tech. I Semester

Examination, December 2015

Advanced Geotechnical Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if missing.

1. a) Discuss the various factors that govern the sub-soil exploration, bringing out the guiding principles for deciding the location of bore holes, in an engineering project.
   b) Explain the seismic refraction method for sketching the general ground profile at a proposed bridge site.

2. a) What is the basis of Westergaard's equation for determining stresses at different depths in soils under load? Using Westergaard's equation, calculate the intensity of stress at depth of 14m due to load of 1600kN/m^2 over an area of 3.2m×6.5m.
   b) What is Newmark's influence chart? Explain its preparation and uses.

3. Discuss in detail the stability analysis method of well foundations which are heavy enough to rotate about the base.

4. a) Enumerate the various techniques that are deployed in controlling and correcting the tilts in foundation wells. Discuss with sketches, these techniques.
   b) Discuss in detail Barkan's method of machine foundation design.

5. a) Discuss the use of single degree freedom system in the analysis of machine foundations.
   b) Discuss provisions of IS code for the design of foundations of the reciprocating machines.

6. a) Discuss in detail characteristics and treatment of expansive soils.
   b) Explain the methods for determining load carrying capacity of piles in
      i) Clayey soils
      ii) Sands soils

7. a) Describe Deere and Miller, classification of rock masses, highlight its salient features.
   b) Discuss the methods for improvement of rock slope stability.

8. Write short notes on any four of the following:
   a) Soil sampling
   b) Settlement analysis
   c) Coffer dams
   d) Mass spring model of analysis
   e) CNS layer techniques

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